



EDITION 11.0

# HVAC Components and Controls Catalog

[usa.siemens.com/hvac](http://usa.siemens.com/hvac)



Siemens offers a 5-year warranty on valves, actuators, damper actuators, sensors and thermostats.

**SIEMENS**

# New Interactive HVAC Catalog

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## Climatix Variable Frequency Drives

Climatix



## Variable Frequency Drives

Specifically for use in tight spaces with a size 40% smaller than other VFDs – ideal for RTU retrofits.

### Additional Features

- Built-in Safe Torque Off (STO)
- Multi-motor control – up to 4 motors
- Built-in PID
- Phase loss protection
- Plenum rated
- DC braking
- Operating temperature -4° to 122° F (-20° to 50° C) without derating
- Certifications: UL, CE, RCM, TUV (SIL 2), RoHS, REACH

### Accessories

- Replacement fan kit VFD frames B-E
- EMC filter
- Remote mounting kit
- Line / load reactors
- DC choke

### Conformal Coated PCBs

Durable in harsh environments, the Climatix VFD printed circuit boards are built to withstand dust and moisture build-up.

### Ease of Use

- Easy commissioning with Climatix mobile app
- Compatible with existing induction motor or permanent magnet motors
- VFD configuration for induction motors with 10 or fewer parameters (25 or fewer for permanent magnet motors)
- Real-time status monitoring with pre-configured Climatix IC dashboards
- Easy access to boards via screwless front cover
- Removeable fan for easy maintenance
- Flexible mounting options for easy installation

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# We're **happy** to assist you

Our customer support team is ready to assist you with general inquiries, ordering, fulfillment, shipping questions, and more.

Call your dedicated support specialist at 800-516-9964 from 6:30 am–5:30 pm Central time Monday–Friday.

Additionally, product information and order support is available online for your convenience at [usa.siemens.com/iMall](https://usa.siemens.com/iMall).

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# Technical support

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When you need assistance

- Call 800-877-7545, option 2
- Email [support.us.i-bt@siemens.com](mailto:support.us.i-bt@siemens.com)
- For Siemens Partners and team members, access support here: [usa.siemens.com/supportrequest](https://usa.siemens.com/supportrequest)

# HIT

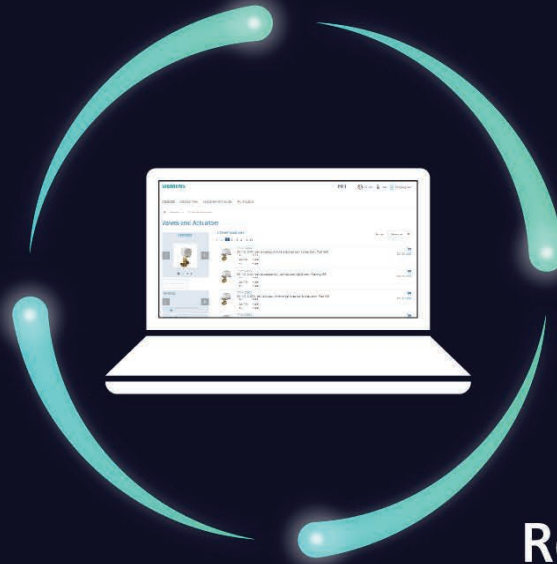
## HVAC Integrated Tool



Order



Selection



Projects



Replacement

4

An intuitive selection tool that **makes it faster and easier to find the right products** for your projects.

Siemens HVAC Integrated Tool (HIT) is an intuitive online selection tool with enhanced filters and calculators that make it faster and easier to find the right products for your projects. HIT is continually updated with the latest products and pricing for accurate planning and budgeting.

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- **Cross Reference** — Our replacement guide helps you quickly find current Siemens products for competitive and discontinued parts
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## Terms and Conditions for Sale of Products (Including Software Licenses)

1. **Applicable Terms.** These terms govern the sale of products, equipment, components, parts, and materials provided by Siemens ("Products"). Products include licenses for software products owned or licensable by Siemens ("Software"), however Software does not include cloud services and applications. Those seeking Siemens provided cloud services and applications must procure any of these pursuant to separate written agreement. Whether these terms are included in an offer or an acceptance by Siemens Industry, Inc., Smart Infrastructure ("Siemens"), such offer or acceptance is conditioned on Buyer's assent to these terms. Any additional, different or conflicting terms contained in Buyer's request for proposal, specifications, purchase order or any other written or oral communication from Buyer shall not be binding in any way on Siemens. Siemens failure to object to any such additional, different or conflicting terms shall not operate as a waiver of these terms.
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3. **Pricing & Payment.** The prices are: (a.) as stated in Siemens' proposal or if none are stated, (b.) Siemens' standard price in effect at the time of release for shipment. In the event of a price increase or decrease, the price of Products on order shall be adjusted to reflect such increase or decrease. This does not apply to a shipment held by request of Buyers. Products already shipped are not subject to price increase or decrease. Prices herein are List Prices. Net pricing is determined by annual volume. Contact your local Siemens sales representative for your pricing. Cash discounts are not applicable to notes or trade acceptances, to prepaid transportation charges when added to Siemens' invoices or to discountable items if there are undisputed past due items on the account. Cash discounts shall only be allowed on that portion of the invoice paid within the normal discount period. Discounts, if any, are only applicable for payments made by cash, check, ACH or wire. Published prices do not include any additional services such as design layout, system drawings, installation drawings, jobsite labor, shop labor, air freight, or special delivery charges. All labor and expenses for such services shall be charged at the rates prevailing at the time and place of performance.
  - a) Payment – Unless otherwise stated, all payments are net 30 days from invoice date payable in US Dollars.
  - b) Credit Approval – All orders are subject to credit approval by Siemens. The amount of credit or terms of payment may be changed or credit withdrawn by Siemens at any time for any reason without advanced notice. Siemens may, in its discretion, withhold further manufacture or shipment; require immediate cash payments for past and future shipments; or require other security satisfactory to Siemens before further manufacture or shipment is made; and may, if shipment has been made, recover the Products from the carrier, pending receipt of such assurances.
  - c) Installment Shipment – If these terms require or authorize delivery of Products in separate shipments to be separately accepted by Buyer, Buyer may only refuse such portion of such shipment that fails to comply with the requirements of these terms. Buyer may not refuse to receive any lot or portion of hereunder for failure of any other lot or portion of a lot to be delivered or to comply with the terms hereof. Payment shall be made for the Products without regard to whether Buyer has made or may make an inspection of the Products. Products held for Buyer are at Buyer's sole risk and expense.
  - d) Taxes, Shipping, Packing, Handling – Except to the extent expressly stated in these terms, Siemens' prices do not include any freight, storage, insurance, taxes, excises, fees, duties, tariffs charged on the importation of goods into the United States or other government charges related to the Product, and Buyer shall pay such amounts or reimburse Siemens for any amounts Siemens pays. If Buyer claims a tax or other exemption or direct payment permit, it shall provide Siemens with a valid exemption certificate or permit and indemnify, defend and hold Siemens harmless from any taxes, costs and penalties arising out of same. Siemens' prices include the costs of its standard domestic packing only. Any deviation from this standard packing (domestic or export), including U.S. Government sealed packing, shall result in extra charges. To determine such extra charges, consult Siemens' sales offices. Any and all increases, changes, adjustments or surcharges (including, without limitation, fuel surcharges) which may be in connection with the freight charges, rates or classification included as part of these terms, shall be for the Buyer's account. Each order is subject to a minimum billing charge of US\$50 and orders less than \$400 are subject to a US\$25 handling fee.
  - e) Finance Charge – Buyer agrees to pay FINANCE CHARGES on the unpaid balance of all overdue invoices, less any applicable payments and credits, from the date each invoice is due and payable at an ANNUAL PERCENTAGE RATE of EIGHTEEN PERCENT (18%), or the highest applicable and lawful rate on such unpaid balance, whichever is lower.
  - f) Disputed Invoice – In the event Buyer disputes any portion or all of an invoice, it shall notify Siemens in writing of the amount in dispute and the reason for its disagreement within 21 days of receipt of the invoice. The undisputed portion shall be paid when due, and FINANCE CHARGE on any unpaid portion shall accrue, from the date due until the date of payment, to the extent that such amounts are finally determined to be payable to Siemens.
  - g) Collection – Upon Buyer's default of these terms, Siemens may, in addition to any other rights or remedies at contract or law, subject to any cure right of Buyer, declare the entire balance of Buyer's account immediately due and payable or foreclose any security interest in Products delivered. If any unpaid balance is referred for collection, Buyer agrees to pay Siemens, to the extent permitted by law, reasonable attorney fees in addition to all damages otherwise available, whether or not litigation is commenced or prosecuted to final judgment, plus any court costs or expenses incurred by Siemens, and any FINANCE CHARGES accrued on any unpaid balance owed by Buyer.

4. **Delivery; Title; Risk of Loss.** Except as provided in this section, Product shall be delivered F.O.B. Siemens point of shipment with title to the Product and risk of loss or damage for the Product passing to Buyer at that point. Buyer shall be responsible for all transportation, insurance and related expenses including any associated taxes, duties or documentation. Siemens may make partial shipments. Shipping dates are approximate only and Siemens shall not be liable for any loss or expense (consequential or otherwise) incurred by Buyer or Buyer's customers if Siemens fails to meet the specified deliver schedule. A 5% handling charge shall be added to the price for all Product furnished from a local branch.
5. **Deferment and Cancellation.** Buyer shall have no deferment rights and Buyer shall be liable for cancellation charges, which shall include without limitation a) payment of the full product price for any finished Product or works in progress; b) payment for raw materials ordered pursuant to a firm purchase order; and c) such other direct costs incurred by Siemens as a result of such cancellation..
6. **Force Majeure / Delays.** If Siemens suffers delay in performance due to any cause beyond its reasonable control, including without limitation acts of God, strikes, pandemic, labor shortage or disturbance, fire, accident, war or civil disturbance, delays of carriers, failure of normal sources of supply, or acts of government, the time performance shall be extended a period equal to the period of the delay and its consequences. Siemens will give to Buyer notice within a reasonable time after Siemens becomes aware of any such delay.
7. **Buyer's Requirements.** Timely performance by Siemens is contingent upon Buyer's supplying to Siemens all required technical information and data, including drawing approvals, and all required commercial documentation.
8. **Limited Warranty.**
  - 8.1 **The five-year Limited Warranty.** Products manufactured by Siemens that carry a five-year warranty are valves, valve actuators, damper actuators, sensors and thermostats, except for the PL-link devices, Series 2200/3200 sensor units with display and pneumatic thermostats which carry a two-year warranty and the IAQ multi-sensor which carries a 3-year warranty.
  - 8.2 **The three-year Limited Warranty.** Products that are manufactured by Siemens that carry a three-year warranty are: Climatix RTU Solution (hardware components only), Climatix Variable Frequency Drives, and BT300 standalone Variable Frequency Drives (the last two Products families are denoted herein as "VFDs"). BT300 VFDs with bypass carry only an eighteen-month warranty.
  - 8.3 **The two-year Limited Warranty.** Products manufactured by Siemens that carry a two-year warranty are: Fire Safety Systems, HVAC building automation controllers, Room Pressurization and Fume Hood Controls Portfolio, Pneumatic Controls, and Gamma Lighting Controls.
  - 8.4 The warranty periods for the Siemens manufactured BT300 VFD product family products are individuated by Product. This portfolio consists of the following BT300 VFD product family products: (1) Drives only – three-year warranty, and (2) Drives with bypass (starts with BTE, BTC, VBA) – 18 months warranty and Siemens accepts no returns for this Product.
  - 8.5 **Limitation on Warranty and Warranty Disclaimer.** Siemens warrants hardware products free from defects in material and workmanship under normal use for the period commencing on the date of purchase, subject to the caveats set forth in paragraph 1. The written proof of purchase is required for such warranty period to apply. In the event a written proof of purchase cannot be supplied to Siemens, the limited warranty period shall commence on the Product's date of manufacture. The date of manufacture is determined from the Product's date code marking.
  - 8.6 **Other Products.** Any hardware, equipment, software, firmware, or products not manufactured by Siemens or not bearing its nameplate ("Other Products") are provided on an "as is" basis. However, the Other Products may include warranties by other manufacturers, suppliers, or publishers, which Siemens shall assign or pass through to the Customer, without recourse to Siemens, to the extent allowable by the other manufacturers, suppliers, or publishers.
  - 8.7 **Warranty Remedy.** During the warranty period, and at Siemens' sole option, Siemens will repair, replace defective parts of the Product, or issue a credit for the original purchase price of the Product. Repaired or replaced Product will be warranted hereunder for the greater of the remaining portion of the original Product warranty period or six (6) months commencing on the date Siemens ships the repaired or replaced Product. All returned Products replaced under the Limited Warranty will become the property of Siemens. Any claim under the Limited Warranty must be made in writing to Siemens within thirty (30) days after discovery of the claimed defect, unless discovered directly by Siemens. Any claim under this Limited Warranty must include a description of the problem encountered and any pertinent information that will assist Siemens in the replication or resolution of the problem.
  - 8.8 **Miscellaneous.** This Limited Warranty is transferable during its term to the initial end user of the Product. Any transfer shall not extend or alter the terms of this Limited Warranty. This Limited Warranty extends only to Products purchased from Siemens or its authorized reseller and does not extend to any Product that has been damaged or rendered defective as a result of (a) modification, repair, alteration, improper installation, or handling by any person other than Siemens or its authorized representative; (b) unreasonable or improper use or storage, use beyond rated conditions, operation other than per Siemens' or the manufacturer's instructions, or being otherwise subjected to improper maintenance, negligence or accidents including acts of nature such as lightning (c) any use of the Product after Customer has, or should have, knowledge of any defect in the Product. **THE EXPRESS WARRANTIES PROVIDED ABOVE ARE IN LIEU OF AND EXCLUDE ALL OTHER WARRANTIES, STATUTORY, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIEMENS EXPRESSLY DISCLAIMS ALL WARRANTIES NOT STATED IN THIS LIMITED WARRANTY. ANY IMPLIED WARRANTIES THAT MAY BE IMPOSED BY LAW ARE LIMITED TO THE TERMS OF THIS LIMITED WARRANTY.** Siemens' warranty liability shall not exceed the original purchase price of the defective Product. Siemens is not liable for any damages caused by the Product or Other Products or the failure of the Product or Other Products to perform, including any lost profits, lost savings, incidental or consequential damages. Siemens is not responsible for charges resulting from the removal and/or replacement of Product or Other Product. Siemens is not liable for any claims made by third parties or by the Customer for a third party. This limitation applies whether damages are sought, or a claim is made, under this Limited Warranty or as tort claim, product liability claim, contract claim, or any other claim. This limitation cannot be waived by any person. This limitation of liability will be effective even if Siemens or its authorized representative has been advised by the Customer of the possibility of such damages.



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11. **Compliance with Laws.** Buyer agrees to comply with all applicable laws and regulations relating to the purchase, resale, exportation, transfer, assignment, disposal or use of the Products.
12. **Changes in Work.** Siemens shall not implement any changes in the scope of work unless Buyer and Siemens agree in writing to the details of the change and any resulting price, schedule or other contractual modifications. Any change to any law, rule, regulation, order, code, standard or requirement which requires any change hereunder shall entitle Siemens to an equitable adjustment in the prices and any time of performance.
13. **Non-waiver of Default.** Each shipment made hereunder shall be considered a separate transaction. In the event of any default by Buyer, Siemens may decline to make further shipments. If Siemens elects to continue to make shipments, Siemens' actions shall not constitute a waiver of any default by Buyer or in any way affect Siemens' legal remedies for any such default. Any waiver of Siemens to require strict compliance shall not be deemed a waiver of Siemens' right to insist upon strict compliance thereafter.
14. **Final Written Agreement; Modification of Terms.** These terms, together with any quotation, purchase order or acknowledgement issued or signed by Siemens, comprise the complete and exclusive agreement between the parties (the "Agreement") and supersede any terms contained in Buyer's documents, unless separately signed by Siemens. These terms may only be modified by a written instrument signed by authorized representatives of both parties.
15. **Assignment.** Neither party may assign the Agreement, in whole or in part, nor any rights or obligations hereunder without the prior written consent of the other; provided however that Siemens may assign its rights and obligations under these terms to its affiliates and Siemens may grant a security interest in the Agreement and/or assign proceeds of the Agreement without Buyer's consent.
16. **Applicable Law and Jurisdiction.** These terms are governed and construed in accordance with the laws of the State of Delaware, without regard to its conflict of laws principles. The application of the United Nations Convention on Contracts for the International Sale of Goods is excluded. BUYER WAIVES ALL RIGHTS TO A JURY TRIAL IN ANY ACTION OR PROCEEDING RELATED IN ANY WAY TO THESE TERMS.
17. **Severability.** If any provision of these terms is held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions will not in any way be affected or impaired, and such provision will be deemed to be restated to reflect the original intentions of the parties as nearly as possible in accordance with applicable law.
18. **Export Compliance.** Buyer acknowledges that Siemens is required to comply with applicable export laws and regulations relating to the sale, exportation, transfer, assignment, disposal, and usage of the Products provided under this Agreement, including any export license requirements. Buyer agrees that such Products shall not at any time directly or indirectly be used, exported, sold, transferred, assigned or otherwise disposed of in a manner which will result in non-compliance with such applicable export laws and regulations. It is a condition of the continuing performance by Siemens of its obligations hereunder that compliance with such export laws and regulations be maintained at all times. BUYER AGREES TO INDEMNIFY AND HOLD SIEMENS HARMLESS FROM ANY AND ALL COSTS, LIABILITIES, PENALTIES, SANCTIONS AND FINES RELATED TO NONCOMPLIANCE WITH APPLICABLE EXPORT LAWS AND REGULATIONS.
19. **Returns.** All returns require written authorization that can be obtained by contacting the Siemens Customer Support. All returned goods that are unused must be in the original package, be the current revision of product, be in sellable condition as a new product, and be returned within 90 days from date of sales. A proper Return Material Authorization ("RMA") number must be acquired for all returned goods. Only goods returned with a completed RMA form and a copy of the original purchase order will be considered for credit. Unless stated otherwise in writing, all returned goods, except those due to shipping errors by Siemens, are subject to a 15% restocking charge. Returned goods must be sent freight pre-paid.

All part numbers beginning with BT300 will be eligible for a credit under unused returns. Such returns will not be allowed for part numbers beginning with BTE or BTC, which are customized VFDs. To be eligible for credit as an unused return the following criteria must be met: (1) the Product must be in its original packaging; (2) the Product must be the current version of the Product; (3) the Product must be in saleable condition as new Product and never been installed; and (4) the request for the return must be received by Siemens no later than 50 days from date of original shipment by Siemens. Returns not meeting the stated criteria will not be accepted and will be returned to the sender at the sender's expense. Unless otherwise agreed by Siemens in writing, VFD unused returns are subject to a 25% restocking charge and must be returned via freight pre-paid.

**20. Product Specific Terms for Desigo CC and Cerberus DMS Software**

The product specific terms and conditions set for in this section are specific to Siemens' Desigo CC and Cerberus DMS Software and not to any other software offered by Siemens. These terms are additional to the terms in this Agreement and the EULA for Desigo CC and Cerberus DMS Software. To the extent that these product specific terms are in conflict with the terms of this Agreement or the EULA for Desigo CC and Cerberus DMS Software, these terms will take precedence with respect to Desigo CC and Cerberus DMS Software.

- a) Only Desigo CC and Cerberus DMS Software that has not been activated (i.e., when a user has or had someone else enter that software into the Siemens licensing system) by a corresponding license key can be returned.
- b) Return requests must be sent within 6 months of purchase.
- c) A credit to refund must be provided for the cost of the returned licenses.
- d) There is a deduction of \$350 restocking charge from the credit for each order returned.
- e) Credits for valid returns to Siemens will be made within a reasonable amount of time from its receipt.

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12-inch Pneumatic Valve Actuator	155-162P25	<b>A-199</b>
SAX Valve Actuator/ Floating or Proportional Control	155-182P25 / 155-186P25	<b>A-201</b>
Electro-Mechanical Rack and Pinion Actuator	155-541P25	<b>A-203</b>
SKD Valve Actuator Proportional Control	155-180P25	<b>A-205</b>
SKD Valve Actuator Floating Control	155-181P25	<b>A-207</b>
SKB/SKC Valve Actuator Proportional Control	155-163P25	<b>A-209</b>
SKB/SKC Valve Actuator Floating Control	155-171P25	<b>A-211</b>
<b>599 Series Two-Way and Three-Way Ball Valves</b>		
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Two-Way Ball Valves	155-704P25	<b>A-215</b>
Three-Way Ball Valves	155-704P25	<b>A-221</b>
<b>599 Series Six-Way Ball Valves</b>		
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Six-Way Ball Valves	155-803	<b>A-229</b>
<b>Magnetic Valves</b>		
Introduction		<b>A-233</b>
MX... Control Valves for Hot and Chilled Water	CA1N4455E-P25	<b>A-235</b>
M3P...FY Control Valves for Hot and Chilled Water with ZM Signal Module	CA1N4454E-P25	<b>A-239</b>
MVF461H Modulating Control Valves for Hot Water and Steam	125-4361	<b>A-243</b>
MXG461B Modulating Control Valves for Domestic Water	125-4461	<b>A-247</b>
<b>Refrigeration Valves</b>		
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RWR462.10... Polycool controller for 1 or 2 refrigeration circuits		<b>A-253</b>
MVL661...Modulating Refrigerant Valves with Magnetic Actuators	155-400	<b>A-255</b>
MVS661...N Modulating Refrigerant Valves	155-404	<b>A-259</b>
M3FB...LX Modulating Control Valve for Hot Gas Control	CA2N4721E-P25	<b>A-263</b>
M2FP03GX Modulating Pilot Valve	155-403	<b>A-267</b>

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Valves



## Overview

Designed for precise regulation and control of water, steam and other media, Siemens valves and actuators are highly dependable. They include:

- Zone Valves for economical control of baseboard, fan coil and radiant heat applications
- Powermite Globe Valves for reliable control of terminal unit and zone equipment
- Flowrite Globe Valves for dependable control of small to medium coils and larger HVAC systems
- Pressure Independent Control Valves automatically adjust to pressure fluctuations to maintain a consistent flow in all applications
- Ball Valves control hot or chilled water in a variety of applications
- Magnetic Valves are quick response, high performance valves for demanding critical applications
- Diverting and 2-port Refrigeration Valves with Magnetic Actuators for refrigeration applications
- Service Valves are excellent for replacing hard to find valves for baseboard, terminal unit and radiant heat applications
- Resilient Seat Butterfly Valves are excellent for isolation and distribution applications

## Selection Guide

Application	Valves								
	Zone	Powermite Globe	Flowrite Globe	PICV	Ball	Magnetic	Service	Butterfly	Refrigeration
Terminal	•	•		•	•	•	•		
AHU/Unitary		•	•	•	•	•			
Distribution			•	•	•	•		•	
Central Equipment			•	•				•	
Refrigeration									•

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Valves

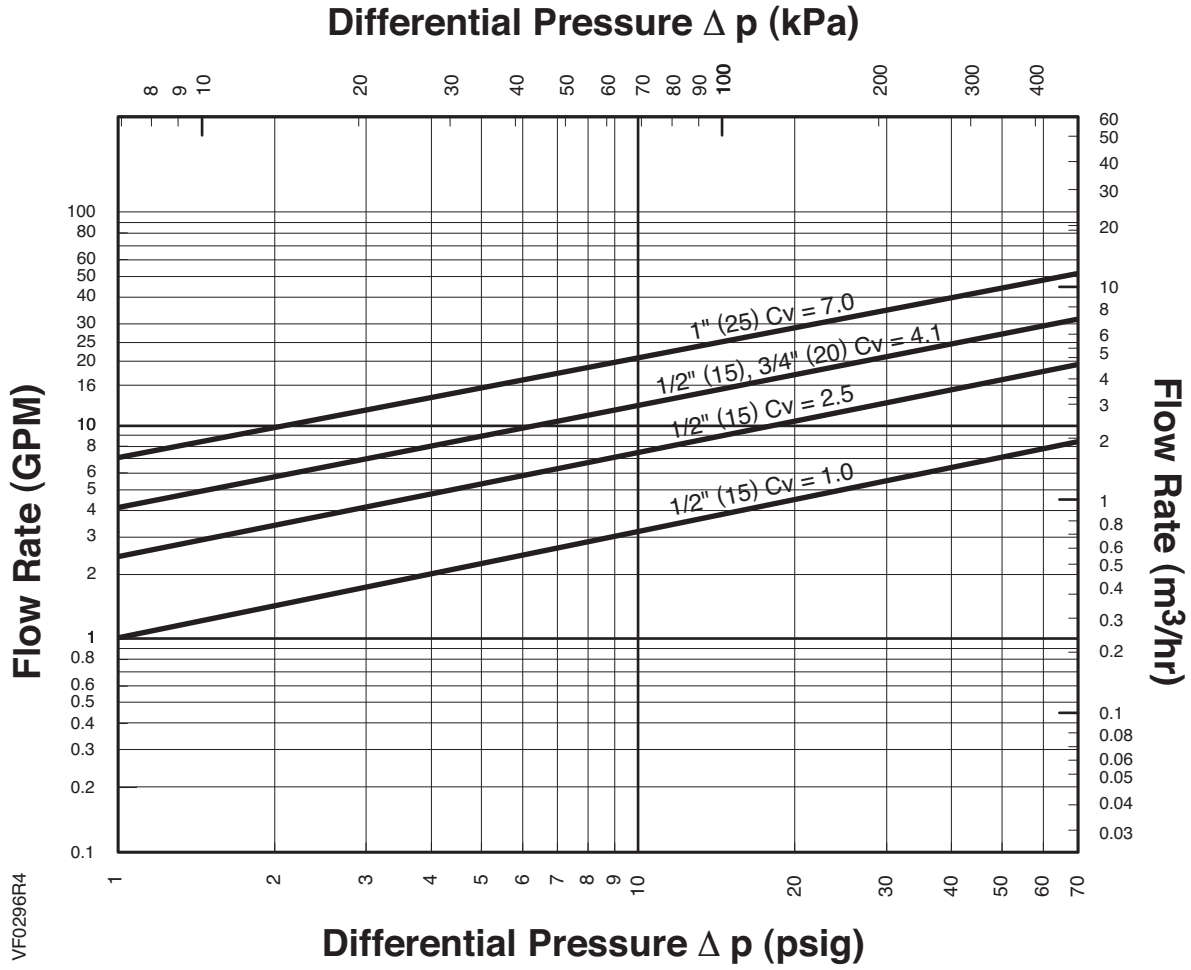
## Valve Selection Matrix by Application

Application	Controlled Medium	Valve Size	Type of Valve	Refer to Page
Baseboard/Fan Coil/Radiant Heat	Water	1/2 to 1"	PICV, Zone	<b>A-83, A-113</b>
Baseboard/Terminal Unit	Water	1/2 to 1"	PICV, Powermite MZ Series	<b>A-83, A-129</b>
Terminal Unit	Water and Low Pressure steam <sup>1</sup>	1/2 to 1"	PICV (Water Only), Powermite MT Series	<b>A-83, A-137</b>
Unitary/Fan Coil	Water and Low Pressure steam <sup>1</sup>	1/2 to 1"	PICV (Water Only), Powermite MT Series	<b>A-83, A-137</b>
Unitary/Fan Coil	Water (Equal Percentage) and High Pressure steam (Linear)	1/2 to 2"	PICV (Water Only), Flowrite Globe	<b>A-83, A-163</b>
Air Handling Unit	Water (Equal Percentage) and High Pressure steam (Linear)	1/2 to 2"	PICV (Water Only), Flowrite Globe	<b>A-83, A-163</b>
Central Plant	Water (Equal Percentage) and High Pressure steam (Linear)	2-1/2 to 6"	PICV (Water Only), Flowrite Globe	<b>A-83, A-163</b>
Fan Coil/VAV/Isolation and Control/AHU	Water	1/2 to 2"	PICV, Ball	<b>A-83, A-203</b>
High Performance Control and Domestic Water	Water (including Domestic), Low Pressure Steam and High Pressure Steam	1/2 to 4"	Magnetic	<b>A-223</b>
Refrigeration Systems	CO <sub>2</sub> and Commonly Used Safety Refrigerants	1/2 to 5"	Refrigerant with Magnetic Actuator	<b>A-243</b>
Baseboard/Terminal Unit/Radiant (Replacement)	Water and Low Pressure Steam	1/2 to 1-1/4"	Service	<b>A-259</b>
Central Plant Isolation and Distribution	Water	2 to 24"	Butterfly	<b>A-271</b>

### Table Notes:

1. Low pressure steam = 15 psi or less

# Zone Valves Water Capacity Graph



VF0296R4

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Valves

## Zone Valves Water Capacity Tables and Close-off Pressure

### Water Capacity Tables

Valve Size Inches	Pressure Differential – psi English (AB→A)															
	Cv1	2	3	4	5	6	8	10	15	20	25	30	40	50	60	75
1/2	1.0	1.4	1.7	2.0	2.2	2.4	2.8	3.2	3.9	4.4	5.0	5.5	6.3	7.1	7.7	8.7
1/2	2.5	3.5	4.3	5.0	5.6	6.1	7.1	7.9	9.7	11.2	12.5	13.7	15.8	17.7	19.4	22.0
1/2 / 3/4	4.1	5.7	7.1	8.2	9.2	10.0	11.6	13.0	15.9	18.3	20.5	22.4	25.9	29.0	31.8	35.5
1	7.0	9.9	12.1	14.0	15.6	17.1	19.8	22.1	27.1	31.3	35.0	38.3	44.3	49.5	54.2	60.6

**Table Notes:**

Table is expressed in U.S. Gallons per minute (GPM).

Valve Size mm	Pressure Differential – psi Metric (AB→A)													
	1	10	20	30	40	50	60	80	100 (Kvs)	150	200	300	400	500
15	0.09	0.27	0.38	0.47	0.54	0.60	0.66	0.76	0.85	1.04	1.20	1.47	1.70	1.90
15	0.22	0.68	0.96	1.18	1.36	1.52	1.67	1.92	2.15	2.63	3.04	3.72	4.30	4.81
15 / 20	0.35	1.11	1.57	1.92	2.21	2.47	2.71	3.13	3.50	4.29	4.95	6.06	7.00	7.83
25	0.60	1.90	2.68	3.29	3.79	4.24	4.65	5.37	6.00	7.35	8.49	10.39	12.00	13.42

**Table Notes:**

Table expressed in Cubic Meters per Hour (m<sup>3</sup>/hr).

### Close-off Pressures

Valve Size Inch (mm)		Spring Return or Non-Spring Return Actuators				
		Cv	SFA APC 240, 242	SFP APC 241, 243	SSA/SSP APC 244, 245, 248	SSE/SSF APC 245, 248
1/2	(15)	1.0	87 (600)	80 (552)	94 (648)	125 (862)
		2.5 / 4.0	51 (352)	44 (303)	65 (448)	75 (517)
3/4	(20)	4.1	51 (352)	44 (303)	65 (448)	75 (517)
1	(25)	7.0	29 (200)	25 (172)	36 (248)	50 (345)

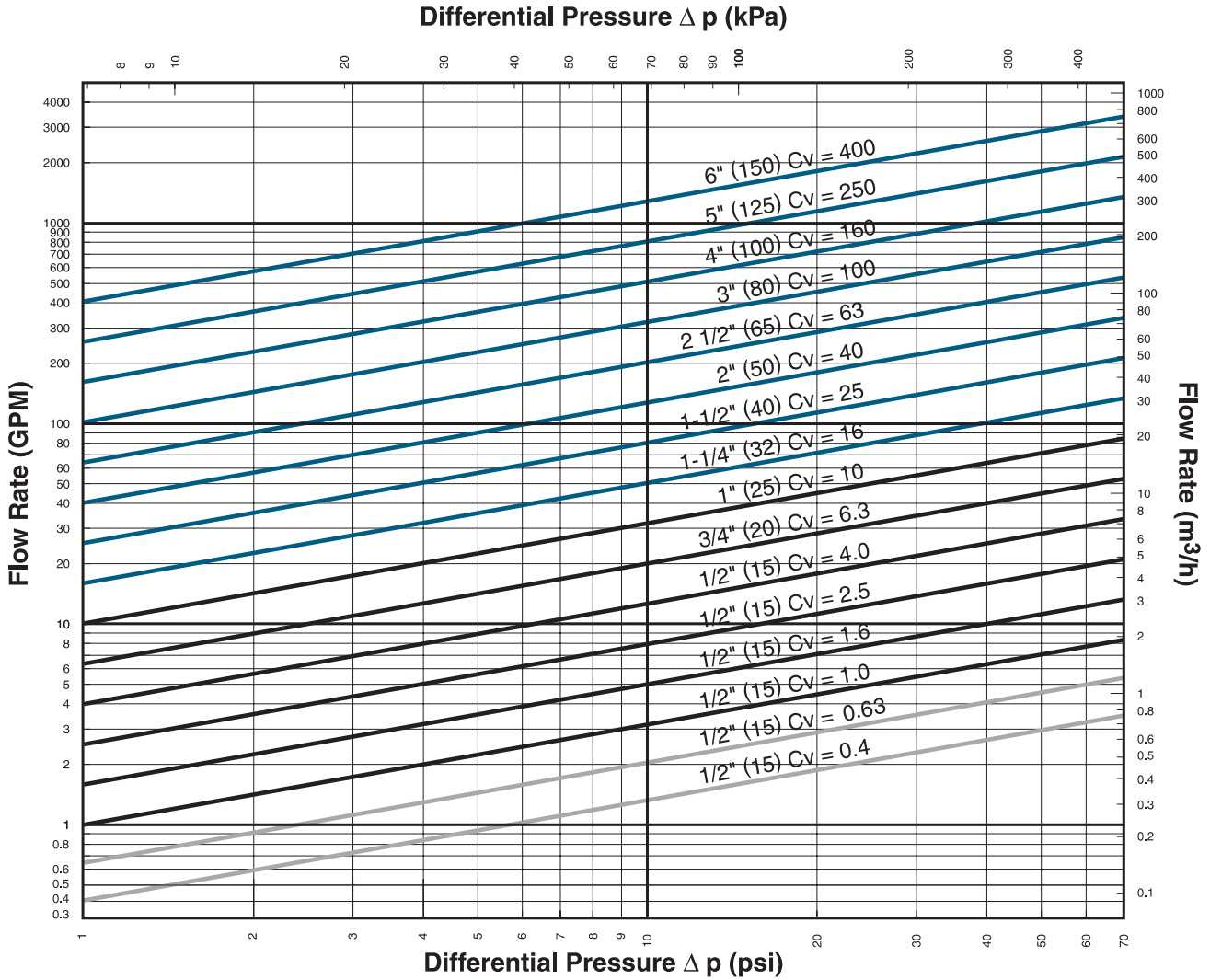
**Table Notes:**

All close-off values within table are in psi (kPa) unless otherwise indicated.

# Powermite/Flowrite **Globe** Water Capacity Graph

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Valves



**Key**

- Flowrite 599 Series
- Powermite or Flowrite 599 Series
- Powermite 599 Series



For more precise Valve Sizing, use the Water Capacity tables on the next page.

## Powermite/Flowrite **Globe** Water Capacity Tables

Valve Size Inches	English Pressure Differential															
	Cv/1	2 psi	3 psi	4 psi	5 psi	6 psi	8 psi	10 psi	15 psi	20 psi	25 psi	30 psi	40 psi	50 psi	60 psi	75 psi
1/2	0.4	0.6	0.7	0.8	0.9	1.0	1.1	1.3	1.5	1.8	2.0	2.2	2.5	2.8	3.1	3.5
1/2	0.63	0.9	1.1	1.3	1.4	1.5	1.8	2.0	2.4	2.8	3.2	3.5	4.0	4.5	4.9	5.5
1/2	1.0	1.4	1.7	2.0	2.2	2.5	2.8	3.2	3.9	4.5	5.0	5.5	6.3	7.1	7.8	8.7
1/2	1.6	2.3	2.8	3.2	3.6	3.9	4.5	5.1	6.2	7.2	8.0	8.8	10.1	11.3	12.4	13.9
1/2	2.5	3.5	4.3	5.0	5.6	6.1	7.1	7.9	9.7	11.2	12.5	13.7	15.8	17.7	19.4	22
1/2	4	5.7	7	8.0	8.9	10	11.3	12.6	15.5	17.9	20.0	21.9	25	28	31	35
3/4	6.3	8.9	10.9	12.6	14.1	15.4	17.8	20	24	28	32	35	40	45	49	55
1	10	14.1	17.3	20	22	24	28	32	39	45	50	55	63	71	77	87
1-1/4	16	23	28	32	36	39	45	51	62	72	80	88	101	113	124	139
1-1/2	25	35	43	50	56	61	71	79	97	112	125	137	158	177	194	217
2	40	57	69	80	89	98	113	126	155	179	200	219	253	283	310	346
2-1/2	63	89	109	126	141	154	178	199	244	282	315	345	398	445	488	546
3	100	141	173	200	224	245	283	316	387	447	500	548	632	707	775	866
4	160	226	277	320	358	392	453	506	620	716	800	876	1012	1131	1239	1386
5	250	354	433	500	559	612	707	791	968	1118	1250	1369	1581	1768	1936	2165
6	400	566	693	800	894	980	1131	1265	1549	1789	2000	2191	2530	2828	3098	3464

**Table Notes:**

Table is expressed in U.S. gallons per minute (GPM).

Valve Size mm	Metric Pressure Differential													
	1 kPa	10 kPa	20 kPa	30 kPa	40 kPa	50 kPa	60 kPa	80 kPa	100 (Kvs)	150 kPa	200 kPa	300 kPa	400 kPa	500 kPa
15	0.03	0.11	0.15	0.19	0.22	0.24	0.26	0.30	0.34	0.42	0.48	0.59	0.68	0.76
15	0.05	0.17	0.24	0.30	0.34	0.38	0.42	0.48	0.54	0.66	0.76	0.94	1.08	1.21
15	0.09	0.27	0.38	0.47	0.54	0.60	0.66	0.76	0.85	1.0	1.2	1.5	1.7	1.9
15	0.14	0.43	0.61	0.75	0.87	0.97	1.06	1.23	1.37	1.7	1.9	2.4	2.7	3.1
15	0.21	0.68	0.96	1.17	1.35	1.51	1.66	1.91	2.15	2.6	3.0	3.7	4.3	4.8
15	0.34	1.1	1.5	1.9	2.2	2.4	2.7	3.1	3.4	4.2	4.9	6.0	6.9	7.7
20	0.54	1.7	2.4	3.0	3.4	3.8	4.2	4.9	5.4	6.7	7.7	9.4	10.9	12.1
25	0.86	2.7	3.8	4.7	5.4	6.1	6.7	7.7	8.6	10.5	12.2	14.9	17.2	19.2
32	1.4	4.4	6.2	7.6	8.7	9.8	10.7	12.3	13.8	16.9	19.5	23.9	27.6	30.9
40	2.2	6.8	9.6	11.8	13.6	15.2	16.7	19.2	22	26	30	37	43	48
50	3.4	10.9	15.4	18.8	22	24	27	31	34	42	49	60	69	77
65	5.4	17.1	24	30	34	38	42	48	54	66	76	94	108	121
80	8.5	27	38	47	54	60	66	76	85	104	120	147	170	190
100	14	43	61	75	87	97	106	123	137	168	194	237	274	306
125	21	68	96	117	135	151	166	191	214	262	303	371	428	479
150	34	108	153	187	216	242	265	306	342	419	484	592	684	765

**Table Notes:**

Table expressed in Cubic Meters per Hour (m<sup>3</sup>/hr).

Cv values of 0.4 to 10 are Powermite globe valves; Cv values of 1.0 to 400 are Flowrite globe valves.

# Powermite/Flowrite **Globe** Maximum Steam Capacity at Various Pressure Differentials

Valve Size Inches	Cv	English Inlet Pressure							
		2 psi		5 psi			10 psi		
		Pressure Differential							
		1 psi	2 psi	3 psi	4 psi	5 psi	6 psi	8 psi	10 psi
1/2	0.4	4.78	6.66	8.78	10	11	14	15	17
	0.63	7.53	11	14	16	17	21	24	26
	1	12	17	22	25	28	34	38	42
	1.6	19	27	35	40	44	54	61	67
	2.5	30	42	55	62	69	85	96	104
	4	48	67	88	100	110	136	153	167
3/4	6.3	75	105	138	157	174	214	241	263
1	10	120	166	219	250	275	339	382	417
1-1/4	16	191	266	351	400	441	542	611	667
1-1/2	25	299	416	549	625	689	847	955	1042
2	40	478	666	878	1000	1102	1356	1529	1667
2-1/2	63	753	1048	1383	1574	1735	2135	2408	2626
3	100	1195	1664	2194	2499	2754	3389	3822	4168
4	160	1913	2663	3511	3998	4407	5422	6115	6669
5	250	2988	4160	5486	6247	6885	8472	9554	10421
6	400	4781	6657	8778	9996	11017	13555	15287	16674

**Table Notes:**

Table is expressed in pounds per hour (lbs./hr.).

Valve Size Inches	Cv	English Inlet Pressure										
		15 psi			25 psi			50 psi			100 psi	
		Pressure Differential										
		9 psi	12 psi	15 psi	5 psi	15 psi	20 psi	15 psi	30 psi	32.5 psi	50 psi	57.5 psi
1/2	0.4	18	19	22	16	26	29	35	45	47	79	83
	0.63	28	31	34	26	41	46	55	72	74	125	132
	1	45	48	54	41	65	72	87	114	117	198	209
	1.6	72	78	87	65	104	116	139	183	188	318	334
	2.5	112	121	135	101	163	181	217	286	294	497	522
	4	179	194	217	162	261	290	348	458	471	796	835
3/4	6.3	282	305	341	255	411	456	548	722	742	1253	1315
1	10	447	485	542	405	653	724	870	1147	1178	1989	2088
1-1/4	16	716	775	867	648	1044	1158	1392	1835	1885	3182	3340
1-1/2	25	1118	1211	1355	1013	1632	1810	2175	2867	2946	4972	5220
2	40	1789	1938	2168	1620	2611	2895	3480	4587	4713	7956	8351
2-1/2	63	2818	3053	3414	2552	4112	4560	5480	7225	7424	12530	13153
3	100	4473	4845	5419	4050	6527	7238	8699	11468	11784	19889	20878
4	160	7156	7753	8671	6481	10443	11581	13919	18348	18855	31823	33405
5	250	11181	12114	13549	10126	16317	18095	21748	28669	29462	49723	52195
6	400	17890	19382	21678	16201	26108	28953	34797	45870	47139	79556	83512

**Table Notes:**

Table is expressed in pounds per hour (lbs./hr.).

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Valves

## Powermite/Flowrite **Globe** Temperature Pressure Ratings

### Powermite Valve Bodies

Temperature Range		Pressure	
		ANSI Class 250	
<b>Bronze/Brass 1/2 to 1"</b>			
-20 to 150°F	-30 to 66°C	400 (2758)	
200°F	93°C	385 (2655)	
250°F	121°C	365 (2586)	
300°F	149°C	335 (2300)	
350°F	177°C	300 (2068)	

### Flowrite Valve Bodies

Temperature Range		Pressure	
		ANSI Class 250	
<b>Bronze 1/2 to 2"</b>			
-20 to 150°F	-30 to 66°C	400 (2758)	
200°F	93°C	385 (2655)	
250°F	121°C	365 (2586)	
300°F	149°C	335 (2300)	
350°F	177°C	300 (2068)	
Temperature Range		Pressure	
		ANSI Class 125	ANSI Class 250
<b>Flanged Iron 2-1/2 to 6"</b>			
-20 to 150°F	-30 to 66°C	200 (1387)	500 (3447)
200°F	93°C	190 (1310)	460 (3171)
250°F	121°C	175 (1206)	415 (2861)
300°F	149°C	165 (1137)	375 (2585)
400°F	204°C	140 (965)	290 (1999)
450°F	232°C	125 (861)	250 (1723)

**Table Notes:**

All close-off values within table are in psi (kPa) unless otherwise indicated.

# Powermite **Globe** Close-off Pressures

## MZ Series

Valve Size	Electronic	
	SSB	
	2-Way	3-Way
<b>Normally Open</b>		
1/2", Cv ≤ 1.6	60 (414)	25 (172)
1/2", Cv ≤ 4	35 (241)	15 (103)
3/4 to 1", Cv ≤ 10	30 (207)	10 (69)
<b>Normally Closed</b>		
1/2", Cv ≤ 1.6	70 (482)	70 (482)
1/2", Cv ≤ 4	40 (276)	40 (276)
3/4 to 1", Cv ≤ 10	30 (207)	30 (207)

### Table Notes:

All close-off values within table are in psi (kPa) unless otherwise indicated.

For 3-Way valve close-offs, use this chart to determine upper port (NC) and bottom port (NO).

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Valves

## MT Series

2-Way Valve Size	Pneumatic			Electronic	
	599-01088			SAS	SSC
	3 to 8 psi (21 to 55 kPa)	8 to 13 psi (55 to 90 kPa)	10 to 15 psi (69 to 103 kPa)		
<b>Normally Open</b>					
1/2", Cv ≤ 1.6	95 (655)	45 (310)	20 (138)	160 (1103)	120 (868)
1/2", Cv ≤ 4	45 (310)	25 (172)	15 (103)	85 (586)	65 (448)
3/4 to 1", Cv ≤ 10	35 (241)	10 (69)	—	70 (482)	55 (379)
<b>Normally Closed</b>					
1/2", Cv ≤ 1.6	40 (276)	95 (655)	95 (655)	95 (655)	95 (655)
1/2", Cv ≤ 4	28 (193)	50 (345)	50 (345)	50 (345)	50 (345)
3/4 to 1", Cv ≤ 10	18 (124)	40 (276)	40 (276)	40 (276)	40 (276)

3-Way Valve Size	Pneumatic			Electronic	
	599-01088			SAS	SSC
	3 to 8 psi (21 to 55 kPa)	8 to 13 psi (55 to 90 kPa)	10 to 15 psi (69 to 103 kPa)		
<b>Normally Open</b>					
1/2", Cv ≤ 1.6	95 (655)	45 (310)	20 (138)	160 (1103)	95 (655)
1/2", Cv ≤ 4	45 (310)	25 (172)	15 (103)	85 (586)	50 (379)
3/4 to 1", Cv ≤ 10	35 (241)	10 (69)	—	70 (482)	40 (276)
<b>Normally Closed</b>					
1/2", Cv ≤ 1.6	40 (276)	95 (655)	120 (827)	95 (655)	95 (655)
1/2", Cv ≤ 4	28 (193)	50 (345)	65 (448)	50 (345)	50 (345)
3/4 to 1", Cv ≤ 10	18 (124)	40 (276)	50 (345)	40 (276)	40 (276)

### Table Notes:

All close-off values within table are in psi (kPa) unless otherwise indicated.

For 3-Way valve close-offs, use this chart to determine upper (NC) and bottom port (NO).

Normally open close-off pressures are at 20 psi actuator pressure.

Normally closed close-off pressures are at 0 psi actuator pressure.



**Pneumatic**

Valve Size in. (mm)	Spring Range							
	3 to 8 psi (21 to 55 kPa)					10 to 15 psi (69 to 103 kPa)		
	4" Actuator	8" Actuator		12" Actuator		4" Actuator	8" Actuator	12" Actuator
	15 psi (103 kPa)	15 psi (103 kPa)	30 psi (207 kPa)	15 psi (103 kPa)	30 psi (207 kPa)	0 psi (0 kPa)	0 psi (0 kPa)	0 psi (0 kPa)
Normally Open					Normally Closed			
1/2 (15)	142 (979)	250 (1724)	250 (1724)	—	—	236 (1627)	250 (1724)	—
3/4 (20)	80 (552)	231 (1593)	250 (1724)	—	—	155 (1069)	250 (1724)	—
1 (25)	52 (359)	150 (1034)	250 (1724)	250 (1724)	250 (1724)	91 (627)	250 (1724)	250 (1724)
1-1/4 (32)	32 (221)	93 (641)	250 (1724)	250 (1724)	250 (1724)	52 (359)	148 (1020)	250 (1724)
1-1/2 (40)	20 (138)	60 (414)	198 (1365)	205 (1413)	250 (1724)	32 (331)	92 (634)	250 (1724)
2 (50)	12 (83)	37 (255)	123 (848)	130 (896)	250 (1724)	20 (138)	55 (379)	185 (1275)
2-1/2 (65)	—	31 (213)	100 (689)	95 (655)	250 (1724)	—	36 (248)	114 (786)
3 (80)	—	20 (138)	66 (444)	63 (434)	200 (1378)	—	23 (158)	74 (610)
4 (100)	—	—	—	40 (275)	129 (889)	—	—	46 (317)
5 (125)	—	—	—	26 (179)	82 (565)	—	—	29 (199)
6 (150)	—	—	—	18 (124)	57 (393)	—	—	20 (137)

**Table Notes:**

All close-off values within table are in psi (kPa) unless otherwise indicated.  
 For 3-Way valve close-offs, use this chart to determine upper port (NC) and bottom port (NO).  
 Normally open close-off pressures are at 15 psi actuator pressure.  
 Normally closed close-off pressures are at 0 psi actuator pressure.

**Pneumatic High Pressure Close-off**

Valve Size in. (mm)	Spring Range			
	3 to 8 psi (21 to 55 kPa)		10 to 15 psi (69 to 103 kPa)	
	8" Actuator	12" Actuator	8" Actuator	12" Actuator
	Normally Open		Normally Closed	
2-1/2 (65)	200 (1378)	—	200 (1378)	—
3 (80)	200 (1378)	—	200 (1378)	—
4 (100)	—	200 (1378)	—	200 (1378)
5 (125)	—	200 (1378)	—	200 (1378)
6 (150)	—	200 (1378)	—	200 (1378)

**Table Notes:**

All close-off values within table are in psi (kPa) unless otherwise indicated.

# Flowrite **Globe** Close-off Pressures

## Electronic

Valve Size in. (mm)	Rack & Pinion w/GMA	Rack & Pinion w/GCA APC 298, 299	SAX NSR APC 371, 373	SKD APC 267, 274-276	SKB APC 289-291	SKC APC 292-294
<b>Normally Open</b>						
1/2 (15)	250 (1724)	250 (1724)	250 (1724)	250 (1724)	250 (1724)	—
3/4 (20)	174 (1200)	231 (1593)	211 (1456)	250 (1724)	250 (1724)	—
1 (25)	136 (938)	149 (1028)	137 (945)	201 (1386)	250 (1724)	—
1-1/4 (32)	84 (580)	92 (634)	85 (586)	124 (855)	250 (1724)	—
1-1/2 (40)	55 (380)	59 (407)	55 (379)	80 (552)	250 (1724)	—
2 (50)	30 (207)	36 (248)	34 (235)	49 (338)	201 (1386)	—
2-1/2 (65)	—	25 (172)	26 (179)	38 (262)	153 (518)	—
3 (80)	—	18 (124)	17 (117)	25 (172)	101 (342)	—
4 (100)	—	—	—	—	—	65 (448)
5 (125)	—	—	—	—	—	42 (289)
6 (150)	—	—	—	—	—	29 (199)
<b>Normally Closed</b>						
1/2 (15)	250 (1724)	250 (1724)	250 (1724)	250 (1724)	250 (1724)	—
3/4 (20)	174 (1200)	250 (1724)	250 (1724)	250 (1724)	250 (1724)	—
1 (25)	136 (938)	173 (1193)	159 (1097)	203 (1400)	250 (1724)	—
1-1/4 (32)	84 (580)	100 (690)	92 (634)	117 (807)	250 (1724)	—
1-1/2 (40)	55 (380)	61 (421)	57 (393)	73 (503)	208 (1434)	—
2 (50)	30 (207)	37 (255)	35 (241)	44 (303)	126 (869)	—
2-1/2 (65)	—	25 (172)	26 (179)	34 (234)	97 (668)	—
3 (80)	—	18 (124)	17 (117)	22 (152)	63 (434)	—
4 (100)	—	—	—	—	—	39 (268)
5 (125)	—	—	—	—	—	25 (172)
6 (150)	—	—	—	—	—	17 (117)

**Table Notes:**

All close-off values within table are in psi (kPa) unless otherwise indicated.

## Electronic High Pressure Close-off

Valve Size in. (mm)	Electro-Hydraulic 24 VAC	
	SKD	SKC
<b>Normally Open</b>		
2-1/2 (65)	200 (1378)	—
3 (80)	200 (1378)	—
4 (100)	—	200 (1378)
5 (125)	—	200 (1378)
6 (150)	—	200 (1378)
<b>Normally Closed</b>		
2-1/2 (65)	200 (1378)	—
3 (80)	200 (1378)	—
4 (100)	—	200 (1378)
5 (125)	—	200 (1378)
6 (150)	—	200 (1378)

**Table Notes:**

All close-off values within table are in psi (kPa) unless otherwise indicated.

A-14

Valves

## Ball Valve Flow Coefficients

### ✕ 2-Way, Full-Port (no flow optimizer) Ball Valve Part Nos. and Flow Coefficients

Valve Size in. (mm)	Valve Part No.	Effective (Installed) Cv (Kvs)							
		Supply Line Size in Inches (mm)							
		1/2 (15)	3/4 (20)	1 (25)	1-1/4 (32)	1-1/2 (40)	2 (50)	2-1/2 (65)	3 (80)
1/2 (15)	599-10307 or 599-10307S	10.0 (8.62)	6.94 (5.93)	6.19 (5.29)					
3/4 (20)	599-10311 or 599-10311S		25.00 (21.55)	18.66 (15.99)	15.35 (13.12)				
1 (25)	599-10316 or 599-10316S			63.00 (54.31)	39.78 (34.00)	33.56 (28.69)			
1-1/4 (32)	599-10321 or 599-10321S				100.00 (86.21)	69.19 (5.13)	51.45 (43.98)		
1-1/2 (40)	599-10326 or 599-10326S					160.00 (137.93)	93.80 (80.17)	76.34 (65.25)	
2 (50)	599-10329 or 599-10329S						100.00 (86.21)	94.30 (80.60)	86.12 (73.61)

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Valves

### ✕ 3-Way, Full-Port (no flow optimizer) Ball Valve Part Nos. and Flow Coefficients

Valve Size in. (mm)	Valve Part No.	Effective (Installed) Cv (Kvs)							
		Supply Line Size in Inches (mm)							
		1/2 (15)	3/4 (20)	1 (25)	1-1/4 (32)	1-1/2 (40)	2 (50)	2-1/2 (65)	3 (80)
1/2 (15)	599-10357 or 599-10357S	10.0 (8.62)	6.94 (5.93)	6.19 (5.29)					
3/4 (20)	599-10360 or 599-10360S		16.00 (13.79)	13.9 (11.98)	12.4 (10.69)				
1 (25)	599-10363 or 599-10363S			25.00 (21.55)	22.5 (19.4)	21.2 (18.27)			
1-1/4 (32)	599-10366 or 599-10366S				40.00 (34.48)	36.9 (31.81)	33.3 (28.70)		
1-1/2 (40)	599-10369 or 599-10369S					63.00 (54.31)	55.3 (47.67)	51.00 (43.96)	
2 (50)	599-10372 or 599-10372S						100 (86.21)	94.3 (81.29)	86.1 (74.23)

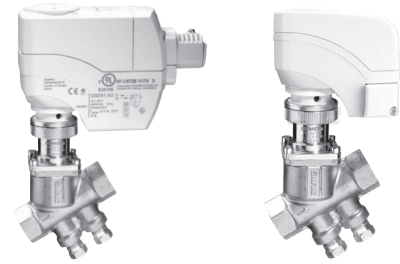
For more information on selecting ball valves, refer to Engineering, Section G.

Key  Valve may be oversized  Optimal valve size  Valve may be undersized





# Two-Way PICV Assemblies

ANSI Class 250

Electronic Spring Return or Non-Spring Return Actuators

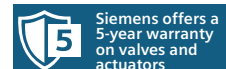


- Normally Open
- Field adjustable maximum flow
- 200 psi close-off with ANSI Class IV leakage

NO 1/2 to 1-1/4"			Spring Return Actuator		Non-Spring Return Actuator	
2-Way Valve Body Part No.	Valve Size in.	Factory Preset Max. GPM	Floating	0-10 V	Floating	0-10 V
			SSD81.5U	SSD61.5U	SSD81U	SSD61U
<b>Normally Open</b>						
	1/2	0.5	232-04320-0.5	233-04320-0.5	230-04320-0.5	231-04320-0.5
		1	232-04321-1	233-04321-1	230-04321-1	231-04321-1
		1.5	232-04321-1.5	233-04321-1.5	230-04321-1.5	231-04321-1.5
		2	232-04321-2	233-04321-2	230-04321-2	231-04321-2
		2.5	232-04321-2.5	233-04321-2.5	230-04321-2.5	231-04321-2.5
		3	232-04321-3	233-04321-3	230-04321-3	231-04321-3
		3.5	232-04321-3.5	233-04321-3.5	230-04321-3.5	231-04321-3.5
		4	232-04321-4	233-04321-4	230-04321-4	231-04321-4
		4.5	232-04321-4.5	233-04321-4.5	230-04321-4.5	231-04321-4.5
		5	232-04321-5	233-04321-5	230-04321-5	231-04321-5
5.5	232-04321-5.5	233-04321-5.5	230-04321-5.5	231-04321-5.5		
	3/4	2	232-04322-2	233-04322-2	230-04322-2	231-04322-2
		2.5	232-04322-2.5	233-04322-2.5	230-04322-2.5	231-04322-2.5
		3	232-04322-3	233-04322-3	230-04322-3	231-04322-3
		3.5	232-04322-3.5	233-04322-3.5	230-04322-3.5	231-04322-3.5
		4	232-04322-4	233-04322-4	230-04322-4	231-04322-4
		4.5	232-04322-4.5	233-04322-4.5	230-04322-4.5	231-04322-4.5
		5	232-04322-5	233-04322-5	230-04322-5	231-04322-5
		5.5	232-04322-5.5	233-04322-5.5	230-04322-5.5	231-04322-5.5
		6	232-04322-6	233-04322-6	230-04322-6	231-04322-6
		6.5	232-04322-6.5	233-04322-6.5	230-04322-6.5	231-04322-6.5
7	232-04322-7	233-04322-7	230-04322-7	231-04322-7		
7.5	232-04322-7.5	233-04322-7.5	230-04322-7.5	231-04322-7.5		
8	232-04322-8	233-04322-8	230-04322-8	231-04322-8		
	1	5	232-04323-5	233-04323-5	230-04323-5	231-04323-5
		6	232-04323-6	233-04323-6	230-04323-6	231-04323-6
		7	232-04323-7	233-04323-7	230-04323-7	231-04323-7
		8	232-04323-8	233-04323-8	230-04323-8	231-04323-8
		9	232-04323-9	233-04323-9	230-04323-9	231-04323-9
		10	232-04323-10	233-04323-10	230-04323-10	231-04323-10
		11	232-04323-11	233-04323-11	230-04323-11	231-04323-11
		12	232-04323-12	233-04323-12	230-04323-12	231-04323-12
		13	232-04323-13	233-04323-13	230-04323-13	231-04323-13
		14	232-04323-14	233-04323-14	230-04323-14	231-04323-14
15	232-04323-15	233-04323-15	230-04323-15	231-04323-15		
16	232-04323-16	233-04323-16	230-04323-16	231-04323-16		
	1-1/4	10	232-04314-10	233-04314-10	230-04314-10	231-04314-10
		11	232-04314-11	233-04314-11	230-04314-11	231-04314-11
		12	232-04314-12	233-04314-12	230-04314-12	231-04314-12
		13	232-04314-13	233-04314-13	230-04314-13	231-04314-13
		14	232-04314-14	233-04314-14	230-04314-14	231-04314-14
		15	232-04314-15	233-04314-15	230-04314-15	231-04314-15
		16	232-04314-16	233-04314-16	230-04314-16	231-04314-16
		17	232-04314-17	233-04314-17	230-04314-17	231-04314-17
18	232-04314-18	233-04314-18	230-04314-18	231-04314-18		

**Table Notes:**

Part numbers in red indicate complete assemblies.







## Two-Way PICV Assemblies

ANSI Class 250

Electronic Non-Spring Return Actuators

- Normally Open or Closed
- Field adjustable maximum flow
- 100 psi close-off with ANSI Class IV leakage



NO/NC 1-1/2 to 2"			Spring Return Actuator 0(2)-10 V and 4-20mA*		Non-Spring Return Actuator 0-10 V and 4-20mA
2-Way Valve Body Part No.	Valve Size in.	Factory Preset Max. GPM	 599-03617NO and 599-03617NC		 SAY61.03U
<b>Normally Open or Closed (See Notes Below for SAY)</b>					
	1-1/2	15	337NO-04315-15	337NC-04315-15	335-04315-15
		20	337NO-04315-20	337NC-04315-20	335-04315-20
		25	337NO-04315-25	337NC-04315-25	335-04315-25
		30	337NO-04315-30	337NC-04315-30	335-04315-30
		35	337NO-04315-35	337NC-04315-35	335-04315-35
		40	337NO-04315-40	337NC-04315-40	335-04315-40
	2	30	337NO-04316-30	337NC-04316-30	335-04316-30
		35	337NO-04316-35	337NC-04316-35	335-04316-35
		40	337NO-04316-40	337NC-04316-40	335-04316-40
		45	337NO-04316-45	337NC-04316-45	335-04316-45
		50	337NO-04316-50	337NC-04316-50	335-04316-50

**Table Notes:**

Part numbers in red indicate complete assemblies.

For Normally Closed operation SAY actuator requires either AZX61.1 Function Module accessory or signal inverted from controller

\* Requires 985-124 Resistor Assembly Kit

A-17

Valves

# Two-Way PICV Assemblies

ANSI Class 250







Electronic Spring Return or Non-Spring Return Actuators

- Normally Closed
- Field adjustable maximum flow
- 45 psi close-off with ANSI Class IV leakage



A-18

Valves

NC 1/2 to 3/4"			Spring Return Actuator		Non-Spring Return Actuator	
			Floating	0-10 V	Floating	0-10 V
2-Way Valve Body Part No.	Valve Size in.	Factory Preset Max. GPM	 SSD81.5U	 SSD61.5U	 SSD81U	 SSD61U
Normally Closed						
	1/2	0.5	232-04300-0.5	233-04300-0.5	230-04300-0.5	231-04300-0.5
		1.0	232-04300-1	233-04300-1	230-04300-1	231-04300-1
		1.5	232-04300-1.5	233-04300-1.5	230-04300-1.5	231-04300-1.5
		2.0	232-04300-2	233-04300-2	230-04300-2	231-04300-2
		2.5	232-04300-2.5	233-04300-2.5	230-04300-2.5	231-04300-2.5
		3.0	232-04301-3	233-04301-3	230-04301-3	231-04301-3
		3.5	232-04301-3.5	233-04301-3.5	230-04301-3.5	231-04301-3.5
		4.0	232-04301-4	233-04301-4	230-04301-4	231-04301-4
		4.5	232-04301-4.5	233-04301-4.5	230-04301-4.5	231-04301-4.5
		5.0	232-04301-5	233-04301-5	230-04301-5	231-04301-5
		5.5	232-04301-5.5	233-04301-5.5	230-04301-5.5	231-04301-5.5
		6.0	232-04301-6	233-04301-6	230-04301-6	231-04301-6
		6.5	232-04301-6.5	233-04301-6.5	230-04301-6.5	231-04301-6.5
		7.0	232-04301-7	233-04301-7	230-04301-7	231-04301-7
7.5	232-04301-7.5	233-04301-7.5	230-04301-7.5	231-04301-7.5		
	3/4	1.0	232-04302-1	233-04302-1	230-04302-1	231-04302-1
		1.5	232-04302-1.5	233-04302-1.5	230-04302-1.5	231-04302-1.5
		2.0	232-04302-2	233-04302-2	230-04302-2	231-04302-2
		2.5	232-04302-2.5	233-04302-2.5	230-04302-2.5	231-04302-2.5
		3.0	232-04302-3	233-04302-3	230-04302-3	231-04302-3
		3.5	232-04302-3.5	233-04302-3.5	230-04302-3.5	231-04302-3.5
		4.0	232-04302-4	233-04302-4	230-04302-4	231-04302-4
		4.5	232-04302-4.5	233-04302-4.5	230-04302-4.5	231-04302-4.5
		5.0	232-04303-5	233-04303-5	230-04303-5	231-04303-5
		5.5	232-04303-5.5	233-04303-5.5	230-04303-5.5	231-04303-5.5
		6.0	232-04303-6	233-04303-6	230-04303-6	231-04303-6
		6.5	232-04303-6.5	233-04303-6.5	230-04303-6.5	231-04303-6.5
		7.0	232-04303-7	233-04303-7	230-04303-7	231-04303-7
		7.5	232-04303-7.5	233-04303-7.5	230-04303-7.5	231-04303-7.5
8.0	232-04303-8	233-04303-8	230-04303-8	231-04303-8		
8.5	232-04303-8.5	233-04303-8.5	230-04303-8.5	231-04303-8.5		

**Table Notes:**

Part numbers in red indicate complete assemblies.









## Two-Way PICV Assemblies

ANSI Class 250

Electronic Spring Return or Non-Spring Return Actuators

- Normally Closed
- Field adjustable maximum flow
- 45 psi close-off with ANSI Class IV leakage



NC 1 to 1-1/4"			Spring Return Actuator		Non-Spring Return Actuator	
			Floating	0-10 V	Floating	0-10 V
2-Way Valve Body Part No.	Valve Size in.	Factory Preset Max. GPM	 SSD81.5U	 SSD61.5U	 SSD81U	 SSD61U
<b>Normally Closed</b>						
	1	4	232-04304-4	233-04304-4	230-04304-4	231-04304-4
		5	232-04304-5	233-04304-5	230-04304-5	231-04304-5
		6	232-04304-6	233-04304-6	230-04304-6	231-04304-6
		7	232-04304-7	233-04304-7	230-04304-7	231-04304-7
		8	232-04304-8	233-04304-8	230-04304-8	231-04304-8
		9	232-04304-9	233-04304-9	230-04304-9	231-04304-9
	1-1/4	9	232-04305-9	233-04305-9	230-04305-9	231-04305-9
		10	232-04305-10	233-04305-10	230-04305-10	231-04305-10
		11	232-04305-11	233-04305-11	230-04305-11	231-04305-11
		12	232-04305-12	233-04305-12	230-04305-12	231-04305-12
		13	232-04305-13	233-04305-13	230-04305-13	231-04305-13

**Table Notes:**

Part numbers in red indicate complete assemblies.

A-19

Valves







# Two-Way Flanged PICV Assemblies

ANSI Class 125 and 250

Electronic Spring Return or Non-Spring Return Actuators

- Normally Open or Normally Closed
- Field adjustable maximum flow
- 100 psi close-off with ANSI Class IV leakage



NO/NC 2-1/2 to 6"			Spring Return Actuator		Non-Spring Return Actuator		
			NO	NC	NO or NC (See Note Below)		
			Floating, 0-10 V, 4-20 mA		0-10 V	0-10 V	
							
			SQV91P30U	SQV91P40U	SAX61.03U	SAV61.00U	
<b>ANSI CLASS 125</b>							
	599-07330	2-1/2	132	<b>238-07330</b>	<b>239-07330</b>	<b>371-07330</b>	—
	599-07331	3	195	<b>238-07331</b>	<b>239-07331</b>	<b>371-07331</b>	—
	599-07332	4	370	<b>238-07332</b>	<b>239-07332</b>	—	<b>378-07332</b>
	599-07313	5	485	<b>238-07313</b>	<b>239-07313</b>	—	<b>378-07313</b>
	599-07318		595	<b>238-07318</b>	<b>239-07318</b>	—	<b>378-07318</b>
	599-07314	6	650	<b>238-07314</b>	<b>239-07314</b>	—	<b>378-07314</b>
599-07319	860		<b>238-07319</b>	<b>239-07319</b>	—	<b>378-07319</b>	
<b>ANSI CLASS 250</b>							
	599-07335	2-1/2	132	<b>238-07335</b>	<b>239-07335</b>	<b>371-07335</b>	—
	599-07336	3	195	<b>238-07336</b>	<b>239-07336</b>	<b>371-07336</b>	—
	599-07337	4	370	<b>238-07337</b>	<b>239-07337</b>	—	<b>378-07337</b>
	599-07323	5	485	<b>238-07323</b>	<b>239-07323</b>	—	<b>378-07323</b>
	599-07328		595	<b>238-07328</b>	<b>239-07328</b>	—	<b>378-07328</b>
	599-07324	6	650	<b>238-07324</b>	<b>239-07324</b>	—	<b>378-07324</b>
599-07329	860		<b>238-07329</b>	<b>239-07329</b>	—	<b>378-07329</b>	

**Table Notes:**

Part numbers in red indicate complete assemblies.

For Normally Closed operation SAX and SAV actuators requires either AZX61.1 Function Module accessory or signal inverted from controller.

A-20

Valves



Siemens offers a 5-year warranty on valves and actuators








## Two-Way **Zone** Valve Assemblies

Electronic Spring Return or Non-Spring Return Actuators





- Normally Open or Normally Closed
- Brass Trim
- NPT Connection
- Higher close-offs



NO/NC 1/2 to 1"			Spring Return Actuator							
			NO				NC			
			2P 120 Vac				2P 24 Vac			
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv								
			<b>NPT Connection</b>							
	599-00210	1.0	80	<b>241-00210</b>	87	<b>240-00210</b>	80	<b>243-00210</b>	87	<b>242-00210</b>
	599-00211	1/2	44	<b>241-00211</b>	51	<b>240-00211</b>	44	<b>243-00211</b>	51	<b>242-00211</b>
	599-00214		44	<b>241-00214</b>	51	<b>240-00214</b>	44	<b>243-00214</b>	51	<b>242-00214</b>
	599-00212	3/4	44	<b>241-00212</b>	51	<b>240-00212</b>	44	<b>243-00212</b>	51	<b>242-00212</b>
	599-00213	1	25	<b>241-00213</b>	29	<b>240-00213</b>	25	<b>243-00213</b>	29	<b>242-00213</b>

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

NO/NC 1/2 to 1"			Non-Spring Return Actuator								
			NC	NO	NC						
			Floating 24 Vac	0-10 Vdc 24 Vac	0-10 Vdc 24 Vac						
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv									
			<b>NPT Connection</b>								
	599-00210	1.0	94	<b>244-00210</b>	125	<b>248-00210</b>	125	<b>245-00210</b>			
	599-00211	1/2	65	<b>244-00211</b>	75	<b>248-00211</b>	75	<b>245-00211</b>			
	599-00214		65	<b>244-00214</b>	75	<b>248-00214</b>	75	<b>245-00214</b>			
	599-00212	3/4	65	<b>244-00212</b>	75	<b>248-00212</b>	75	<b>245-00212</b>			
	599-00213	1	36	<b>244-00213</b>	50	<b>248-00213</b>	50	<b>245-00213</b>			

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

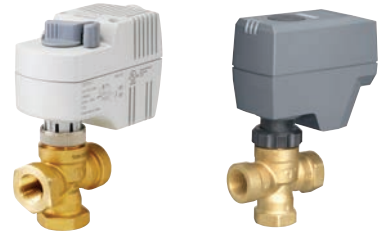
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Valves

# Three-Way **Zone** Valve Assemblies

Electronic Spring Return or Non-Spring Return Actuators





- Normally Open or Normally Closed
- Brass Trim
- NPT Connection
- Higher close-offs



<b>Diverting</b> 1/2 to 1"			Spring Return Actuator								
			AB→A NO		AB→A NC		AB→A NO		AB→A NC		
			2P 120 Vac				2P 24 Vac				
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SFP11U		 SFA11U		 SFP71U		 SFA71U		
NPT Connection											
	599-00230	1/2	1.0	80	241-00230	87	240-00230	80	243-00230	87	242-00230
	599-00231		2.5	44	241-00231	51	240-00231	44	243-00231	51	242-00231
	599-00234		4.0	44	241-00234	51	240-00234	44	243-00234	51	242-00234
	599-00232	3/4	4.1	44	241-00232	51	240-00232	44	243-00232	51	242-00232
	599-00233	1	7.0	25	241-00233	29	240-00233	25	243-00233	29	242-00233

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi. \*Flow rate is for AB→A. Values are for the NC upper port. For NO lower port values, refer to Engineering, Section G.

<b>Diverting</b> 1/2 to 1"			Non-Spring Return Actuator						
			AB→A NC		AB→A NO		AB→A NC		
			Floating 24 Vac		0-10 Vdc 24 Vac		0-10 Vdc 24 Vac		
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SSA81U		 SSF161.05U		 SSE161.05U		
NPT Connection									
	599-00230	1/2	1.0	94	244-00230	125	248-00230	125	245-00230
	599-00231		2.5	65	244-00231	75	248-00231	75	245-00231
	599-00234		4.0	65	244-00234	75	248-00234	75	245-00234
	599-00232	3/4	4.1	65	244-00232	75	248-00232	75	245-00232
	599-00233	1	7.0	36	244-00233	50	248-00233	50	245-00233

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi. \*Flow rate is for AB→A. Values are for the NC upper port. For NO lower port values, refer to Engineering, Section G.



## Two- & Three-Way **Globe** Valve Assemblies – MZ Series

ANSI Class 250

Electronic Non-Spring Return Actuators

- Normally Open or Normally Closed
- Brass Trim








NO/NC 1/2 to 1"				Non-Spring Return Actuator	
				Floating 3P	0-10 V
	Valve Size in.	Flow Rate Cv	Close Off psi	 SSB81U	 SSB161.05U
				Normally Open	
	1/2	0.4	60	<b>254-01115</b>	<b>255-01115</b>
		0.63	60	<b>254-01117</b>	<b>255-01117</b>
		1	60	<b>254-01119</b>	<b>255-01119</b>
		1.6	60	<b>254-01121</b>	<b>255-01121</b>
		2.5	35	<b>254-01123</b>	<b>255-01123</b>
		4	35	<b>254-01126</b>	<b>255-01126</b>
	3/4	6.3	30	<b>254-01129</b>	<b>255-01129</b>
	1	10	30	<b>254-01131</b>	<b>255-01131</b>
Normally Closed					
	1/2	0.4	70	<b>254-01100</b>	<b>255-01100</b>
		0.63	70	<b>254-01102</b>	<b>255-01102</b>
		1	70	<b>254-01104</b>	<b>255-01104</b>
		1.6	70	<b>254-01106</b>	<b>255-01106</b>
		2.5	40	<b>254-01108</b>	<b>255-01108</b>
		4	40	<b>254-01110</b>	<b>255-01110</b>
	3/4	6.3	30	<b>254-01112</b>	<b>255-01112</b>
	1	10	30	<b>254-01114</b>	<b>255-01114</b>

Table Notes:

Part numbers in red indicate complete assemblies.





Water Mixing 1/2 to 1"				Non-Spring Return Actuator	
				Floating 3P	0-10 V
	Valve Size in.	Flow Rate Cv	Close Off psi	 SSB81U	 SSB161.05U
				Normally Open	
	1/2	0.4	70	<b>254-01132</b>	<b>255-01132</b>
		0.63	70	<b>254-01133</b>	<b>255-01133</b>
		1	70	<b>254-01134</b>	<b>255-01134</b>
		1.6	70	<b>254-01135</b>	<b>255-01135</b>
		2.5	40	<b>254-01136</b>	<b>255-01136</b>
		4	40	<b>254-01137</b>	<b>255-01137</b>
	3/4	6.3	30	<b>254-01138</b>	<b>255-01138</b>
	1	10	30	<b>254-01139</b>	<b>255-01139</b>

Table Notes:

Part numbers in red indicate complete assemblies.

Values are for the NC upper port. For NO lower port values, refer to Engineering, Section G.


# Two-Way **Globe** Valve Assemblies – MT Series

ANSI Class 250

Pneumatic Spring Return Actuators



- Normally Open or Normally Closed
- Brass and Stainless Steel Trim

NO/NC 1/2 to 1"			Spring Return Actuator	
			3-8 psi (21-55 kPa)	
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 599-01088	
<b>Normally Open</b>				
			<b>Close-off psi – Brass Trim</b>	
599-02030	1/2	0.4	95	<b>257-02030</b>
599-02032		0.63	95	<b>257-02032</b>
599-02034		1	95	<b>257-02034</b>
599-02036		1.6	95	<b>257-02036</b>
599-02038		2.5	45	<b>257-02038</b>
599-02041		4	45	<b>257-02041</b>
599-02044	3/4	6.3	35	<b>257-02044</b>
599-02046	1	10	35	<b>257-02046</b>
			<b>Close-off psi – Stainless Steel Trim</b>	
599-02047	1/2	0.4	95	<b>257-02047</b>
599-02049		0.63	95	<b>257-02049</b>
599-02051		1	95	<b>257-02051</b>
599-02053		1.6	95	<b>257-02053</b>
599-02055		2.5	45	<b>257-02055</b>
599-02058		4	45	<b>257-02058</b>
599-02061	3/4	6.3	35	<b>257-02061</b>
599-02063	1	10	35	<b>257-02063</b>
<b>Normally Closed</b>				
			<b>Close-off psi – Brass Trim</b>	
599-02000	1/2	0.4	40	<b>257-02000B</b>
599-02002		0.63	40	<b>257-02002B</b>
599-02004		1	40	<b>257-02004B</b>
599-02006		1.6	40	<b>257-02006B</b>
599-02008		2.5	28	<b>257-02008B</b>
599-02010		4	28	<b>257-02010B</b>
599-02012	3/4	6.3	18	<b>257-02012B</b>
599-02014	1	10	18	<b>257-02014B</b>

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Normally Open Values in chart are for 20 psi supplied to the actuator.

Normally Closed Values in chart are for 0 psi supplied to the actuator.

8-13 psi range is not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

10-15 psi range is not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

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Valves

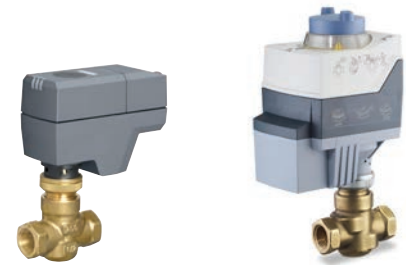











## Two-Way **Globe** Valve Assemblies – MT Series

ANSI Class 250

Electronic Spring Return Actuators

- Normally Open or Normally Closed
- Brass and Stainless Steel Trim



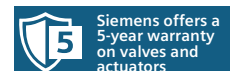
NO/NC 1/2 to 1" 			Spring Return Actuator							
			Floating				0-10 V			
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv								
			SSC131.39U	SAS81.33U	SSC161.35U	SAS61.33U				
<b>Normally Open</b>			<b>Close-off psi – Brass Trim</b>							
	1/2	0.4	120	<b>260-02030</b>	160	<b>366-02030</b>	120	<b>262-02030</b>	160	<b>365-02030</b>
		0.63	120	<b>260-02032</b>	160	<b>366-02032</b>	120	<b>262-02032</b>	160	<b>365-02032</b>
		1	120	<b>260-02034</b>	160	<b>366-02034</b>	120	<b>262-02034</b>	160	<b>365-02034</b>
		1.6	120	<b>260-02036</b>	160	<b>366-02036</b>	120	<b>262-02036</b>	160	<b>365-02036</b>
		2.5	65	<b>260-02038</b>	85	<b>366-02038</b>	65	<b>262-02038</b>	85	<b>365-02038</b>
		4	65	<b>260-02041</b>	85	<b>366-02041</b>	65	<b>262-02041</b>	85	<b>365-02041</b>
	3/4	6.3	55	<b>260-02044</b>	70	<b>366-02044</b>	55	<b>262-02044</b>	70	<b>365-02044</b>
1	10	55	<b>260-02046</b>	70	<b>366-02046</b>	55	<b>262-02046</b>	70	<b>365-02046</b>	
			<b>Close-off psi – Stainless Steel Trim</b>							
	1/2	0.4	120	<b>260-02047</b>	160	<b>366-02047</b>	120	<b>262-02047</b>	160	<b>365-02047</b>
		0.63	120	<b>260-02049</b>	160	<b>366-02049</b>	120	<b>262-02049</b>	160	<b>365-02049</b>
		1	120	<b>260-02051</b>	160	<b>366-02051</b>	120	<b>262-02051</b>	160	<b>365-02051</b>
		1.6	120	<b>260-02053</b>	160	<b>366-02053</b>	120	<b>262-02053</b>	160	<b>365-02053</b>
		2.5	65	<b>260-02055</b>	85	<b>366-02055</b>	65	<b>262-02055</b>	85	<b>365-02055</b>
		4	65	<b>260-02058</b>	85	<b>366-02058</b>	65	<b>262-02058</b>	85	<b>365-02058</b>
	3/4	6.3	55	<b>260-02061</b>	70	<b>366-02061</b>	55	<b>262-02061</b>	70	<b>365-02061</b>
1	10	55	<b>260-02063</b>	70	<b>366-02063</b>	55	<b>262-02063</b>	70	<b>365-02063</b>	
<b>Normally Closed</b>			<b>Close-off psi – Brass Trim</b>							
	1/2	0.4	95	<b>260-02000</b>	95	<b>366-02000</b>	95	<b>262-02000</b>	95	<b>365-02000</b>
		0.63	95	<b>260-02002</b>	95	<b>366-02002</b>	95	<b>262-02002</b>	95	<b>365-02002</b>
		1	95	<b>260-02004</b>	95	<b>366-02004</b>	95	<b>262-02004</b>	95	<b>365-02004</b>
		1.6	95	<b>260-02006</b>	95	<b>366-02006</b>	95	<b>262-02006</b>	95	<b>365-02006</b>
		2.5	50	<b>260-02008</b>	50	<b>366-02008</b>	50	<b>262-02008</b>	50	<b>365-02008</b>
		4	50	<b>260-02010</b>	50	<b>366-02010</b>	50	<b>262-02010</b>	50	<b>365-02010</b>
	3/4	6.3	40	<b>260-02012</b>	40	<b>366-02012</b>	40	<b>262-02012</b>	40	<b>365-02012</b>
1	10	40	<b>260-02014</b>	40	<b>366-02014</b>	40	<b>262-02014</b>	40	<b>365-02014</b>	
			<b>Close-off psi – Stainless Steel Trim</b>							
	1/2	0.4	95	<b>260-02015</b>	95	<b>366-02015</b>	95	<b>262-02015</b>	95	<b>365-02015</b>
		0.63	95	<b>260-02017</b>	95	<b>366-02017</b>	95	<b>262-02017</b>	95	<b>365-02017</b>
		1	95	<b>260-02019</b>	95	<b>366-02019</b>	95	<b>262-02019</b>	95	<b>365-02019</b>
		1.6	95	<b>260-02021</b>	95	<b>366-02021</b>	95	<b>262-02021</b>	95	<b>365-02021</b>
		2.5	50	<b>260-02023</b>	50	<b>366-02023</b>	50	<b>262-02023</b>	50	<b>365-02023</b>
		4	50	<b>260-02025</b>	50	<b>366-02025</b>	50	<b>262-02025</b>	50	<b>365-02025</b>
	3/4	6.3	40	<b>260-02027</b>	40	<b>366-02027</b>	40	<b>262-02027</b>	40	<b>365-02027</b>
1	10	40	<b>260-02029</b>	40	<b>366-02029</b>	40	<b>262-02029</b>	40	<b>365-02029</b>	

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

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Valves







# Two-Way **Globe** Valve Assemblies – MT Series

ANSI Class 250

Electronic Non-Spring Return Actuators

- Normally Open or Normally Closed
- Brass and Stainless Steel Trim



NO/NC 1/2 to 1"			Non-Spring Return Actuator							
			Floating				0-10 V			
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SSC81U	 SAS81.03U	 SSC161.05U	 SAS61.03U				
<b>Normally Open</b>										
<b>Close-off psi – Brass Trim</b>										
599-02030	1/2	0.4	120	<b>259-02030</b>	160	<b>363-02030</b>	120	<b>261-02030</b>	160	<b>364-02030</b>
599-02032		0.63	120	<b>259-02032</b>	160	<b>363-02032</b>	120	<b>261-02032</b>	160	<b>364-02032</b>
599-02034		1	120	<b>259-02034</b>	160	<b>363-02034</b>	120	<b>261-02034</b>	160	<b>364-02034</b>
599-02036		1.6	120	<b>259-02036</b>	160	<b>363-02036</b>	120	<b>261-02036</b>	160	<b>364-02036</b>
599-02038		2.5	65	<b>259-02038</b>	85	<b>363-02038</b>	65	<b>261-02038</b>	85	<b>364-02038</b>
599-02041		4	65	<b>259-02041</b>	85	<b>363-02041</b>	65	<b>261-02041</b>	85	<b>364-02041</b>
599-02044	3/4	6.3	55	<b>259-02044</b>	70	<b>363-02044</b>	55	<b>261-02044</b>	70	<b>364-02044</b>
599-02046	1	10	55	<b>259-02046</b>	70	<b>363-02046</b>	55	<b>261-02046</b>	70	<b>364-02046</b>
<b>Close-off psi – Stainless Steel Trim</b>										
599-02047	1/2	0.4	120	<b>259-02047</b>	160	<b>363-02047</b>	120	<b>261-02047</b>	160	<b>364-02047</b>
599-02049		0.63	120	<b>259-02049</b>	160	<b>363-02049</b>	120	<b>261-02049</b>	160	<b>364-02049</b>
599-02051		1	120	<b>259-02051</b>	160	<b>363-02051</b>	120	<b>261-02051</b>	160	<b>364-02051</b>
599-02053		1.6	120	<b>259-02053</b>	160	<b>363-02053</b>	120	<b>261-02053</b>	160	<b>364-02053</b>
599-02055		2.5	65	<b>259-02055</b>	85	<b>363-02055</b>	65	<b>261-02055</b>	85	<b>364-02055</b>
599-02058		4	65	<b>259-02058</b>	85	<b>363-02058</b>	65	<b>261-02058</b>	85	<b>364-02058</b>
599-02061	3/4	6.3	55	<b>259-02061</b>	70	<b>363-02061</b>	55	<b>261-02061</b>	70	<b>364-02061</b>
599-02063	1	10	55	<b>259-02063</b>	70	<b>363-02063</b>	55	<b>261-02063</b>	70	<b>364-02063</b>
<b>Normally Closed</b>										
<b>Close-off psi – Brass Trim</b>										
599-02000	1/2	0.4	95	<b>259-02000</b>	95	<b>363-02000</b>	95	<b>261-02000</b>	95	<b>364-02000</b>
599-02002		0.63	95	<b>259-02002</b>	95	<b>363-02002</b>	95	<b>261-02002</b>	95	<b>364-02002</b>
599-02004		1	95	<b>259-02004</b>	95	<b>363-02004</b>	95	<b>261-02004</b>	95	<b>364-02004</b>
599-02006		1.6	95	<b>259-02006</b>	95	<b>363-02006</b>	95	<b>261-02006</b>	95	<b>364-02006</b>
599-02008		2.5	50	<b>259-02008</b>	50	<b>363-02008</b>	50	<b>261-02008</b>	50	<b>364-02008</b>
599-02010		4	50	<b>259-02010</b>	50	<b>363-02010</b>	50	<b>261-02010</b>	50	<b>364-02010</b>
599-02012	3/4	6.3	40	<b>259-02012</b>	40	<b>363-02012</b>	40	<b>261-02012</b>	40	<b>364-02012</b>
599-02014	1	10	40	<b>259-02014</b>	40	<b>363-02014</b>	40	<b>261-02014</b>	40	<b>364-02014</b>
<b>Close-off psi – Stainless Steel Trim</b>										
599-02015	1/2	0.4	95	<b>259-02015</b>	95	<b>363-02015</b>	95	<b>261-02015</b>	95	<b>364-02015</b>
599-02017		0.63	95	<b>259-02017</b>	95	<b>363-02017</b>	95	<b>261-02017</b>	95	<b>364-02017</b>
599-02019		1	95	<b>259-02019</b>	95	<b>363-02019</b>	95	<b>261-02019</b>	95	<b>364-02019</b>
599-02021		1.6	95	<b>259-02021</b>	95	<b>363-02021</b>	95	<b>261-02021</b>	95	<b>364-02021</b>
599-02023		2.5	50	<b>259-02023</b>	50	<b>363-02023</b>	50	<b>261-02023</b>	50	<b>364-02023</b>
599-02025		4	50	<b>259-02025</b>	50	<b>363-02025</b>	50	<b>261-02025</b>	50	<b>364-02025</b>
599-02027	3/4	6.3	40	<b>259-02027</b>	40	<b>363-02027</b>	40	<b>261-02027</b>	40	<b>364-02027</b>
599-02029	1	10	40	<b>259-02029</b>	40	<b>363-02029</b>	40	<b>261-02029</b>	40	<b>364-02029</b>

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.






## Three-Way **Globe** Valve Assemblies – MT Series

ANSI Class 250

Pneumatic Spring Return Actuators



- Brass Trim

Mixing 1/2 to 1"				Spring Return Actuator	
				3-8 psi (21-55 kPa)	
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 599-01088		
<b>Close-off psi – Brass Trim</b>					
	599-02064	0.4	40	<b>257-02064B</b>	
	599-02065	0.63	40	<b>257-02065B</b>	
	599-02066	1	40	<b>257-02066B</b>	
	599-02067	1.6	40	<b>257-02067B</b>	
	599-02068	2.5	28	<b>257-02068B</b>	
	599-02069	1/2	4	<b>257-02069B</b>	
	599-02070	3/4	6.3	<b>257-02070B</b>	
	599-02071	1	10	<b>257-02071B</b>	

**Table Notes:**

**Part numbers in red** indicate complete assemblies. **Black numbers** indicate close-off psi.

Values in chart are for 0 psi supplied to the actuator.

Values are for the NC upper port. For NO lower port values, refer to Engineering, Section G.

8-13 psi range is not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.





10-15 psi range is not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

# Three-Way **Globe** Valve Assemblies – MT Series

ANSI Class 250  
Electronic Spring Return Actuators

- Brass and Stainless Steel Trim



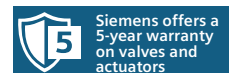
Mixing 1/2 to 1"				Spring Return Actuator			
				Floating		0-10 V	
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	 SSC131.39U	 SAS81.33U	 SSC161.35U	 SAS61.33U
				<b>Brass Trim</b>			
599-02064	1/2	0.4	95	<b>260-02064</b>	<b>366-02064</b>	<b>262-02064</b>	<b>365-02064</b>
599-02065		0.63	95	<b>260-02065</b>	<b>366-02065</b>	<b>262-02065</b>	<b>365-02065</b>
599-02066		1	95	<b>260-02066</b>	<b>366-02066</b>	<b>262-02066</b>	<b>365-02066</b>
599-02067		1.6	95	<b>260-02067</b>	<b>366-02067</b>	<b>262-02067</b>	<b>365-02067</b>
599-02068		2.5	50	<b>260-02068</b>	<b>366-02068</b>	<b>262-02068</b>	<b>365-02068</b>
599-02069		4	50	<b>260-02069</b>	<b>366-02069</b>	<b>262-02069</b>	<b>365-02069</b>
599-02070	3/4	6.3	40	<b>260-02070</b>	<b>366-02070</b>	<b>262-02070</b>	<b>365-02070</b>
599-02071	1	10	40	<b>260-02071</b>	<b>366-02071</b>	<b>262-02071</b>	<b>365-02071</b>
				<b>Stainless Steel Trim</b>			
599-02072	1/2	0.4	95	<b>260-02072</b>	<b>366-02072</b>	<b>262-02072</b>	<b>365-02072</b>
599-02073		0.63	95	<b>260-02073</b>	<b>366-02073</b>	<b>262-02073</b>	<b>365-02073</b>
599-02074		1	95	<b>260-02074</b>	<b>366-02074</b>	<b>262-02074</b>	<b>365-02074</b>
599-02075		1.6	95	<b>260-02075</b>	<b>366-02075</b>	<b>262-02075</b>	<b>365-02075</b>
599-02076		2.5	50	<b>260-02076</b>	<b>366-02076</b>	<b>262-02076</b>	<b>365-02076</b>
599-02077		4	50	<b>260-02077</b>	<b>366-02077</b>	<b>262-02077</b>	<b>365-02077</b>
599-02078	3/4	6.3	40	<b>260-02078</b>	<b>366-02078</b>	<b>262-02078</b>	<b>365-02078</b>
599-02079	1	10	40	<b>260-02079</b>	<b>366-02079</b>	<b>262-02079</b>	<b>365-02079</b>

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi. Values are for the NC upper port. For NO lower port values, refer to Engineering, Section G.

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Valves









## Three-Way **Globe** Valve Assemblies – MT Series

ANSI Class 250

Electronic Non-Spring Return Actuators

- Brass and Stainless Steel Trim



<b>Mixing</b> 1/2 to 1"				Non-Spring Return Actuator			
				Floating		0-10 V	
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	 SSC81U	 SAS81.03U	 SSC161.05U	 SAS61.03U
599-02064	1/2	0.4	95	259-02064	363-02064	261-02064	364-02064
599-02065		0.63	95	259-02065	363-02065	261-02065	364-02065
599-02066		1	95	259-02066	363-02066	261-02066	364-02066
599-02067		1.6	95	259-02067	363-02067	261-02067	364-02067
599-02068		2.5	50	259-02068	363-02068	261-02068	364-02068
599-02069		4	50	259-02069	363-02069	261-02069	364-02069
599-02070	3/4	6.3	40	259-02070	363-02070	261-02070	364-02070
599-02071	1	10	40	259-02071	363-02071	261-02071	364-02071
				<b>Stainless Steel Trim</b>			
599-02072	1/2	0.4	95	259-02072	363-02072	261-02072	364-02072
599-02073		0.63	95	259-02073	363-02073	261-02073	364-02073
599-02074		1	95	259-02074	363-02074	261-02074	364-02074
599-02075		1.6	95	259-02075	363-02075	261-02075	364-02075
599-02076		2.5	50	259-02076	363-02076	261-02076	364-02076
599-02077		4	50	259-02077	363-02077	261-02077	364-02077
599-02078	3/4	6.3	40	259-02078	363-02078	261-02078	364-02078
599-02079	1	10	40	259-02079	363-02079	261-02079	364-02079

**Table Notes:**




Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi. Values are for the NC upper port. For NO lower port values, refer to Engineering, Section G.

# Two-Way **Globe** Valve Assemblies

ANSI Class 250  
Pneumatic Spring Return Actuators

- Normally Open or Normally Closed
- Equal Percentage
- Brass and Stainless Steel Trim



NO/NC Equal Percentage 1/2 to 2"			Spring Return Actuator		
			NO 4" 3-8 psi NC 4" 10-15 psi	8"	8" with Positioner
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv			
			599-01081 – NO 599-01083 – NC	599-01050	599-01050 + 599-00426
<b>Normally Open</b>					
<b>Close-off psi – Brass Trim</b>					
599-03162	1/2	1	142	<b>268-03162</b>	—
599-03163		1.6	142	<b>268-03163</b>	—
599-03164		2.5	142	<b>268-03164</b>	—
599-03165		4	142	<b>268-03165</b>	—
599-03166	3/4	6.3	80	<b>268-03166</b>	231 <b>277-03166</b>
599-03167	1	10	52	<b>268-03167</b>	150 <b>277-03167</b>
599-03168	1-1/4	16	32	<b>268-03168</b>	93 <b>277-03168</b>
599-03169	1-1/2	25	20	<b>268-03169</b>	60 <b>277-03169</b>
599-03170	2	40	12	<b>268-03170</b>	37 <b>277-03170</b>
<b>Close-off psi – Stainless Steel Trim</b>					
599-03108	1/2	1	142	<b>268-03108</b>	—
599-03109		1.6	142	<b>268-03109</b>	—
599-03110		2.5	142	<b>268-03110</b>	—
599-03111		4	142	<b>268-03111</b>	—
599-03112	3/4	6.3	80	<b>268-03112</b>	231 <b>277-03112</b>
599-03113	1	10	52	<b>268-03113</b>	150 <b>277-03113</b>
599-03114	1-1/4	16	32	<b>268-03114</b>	93 <b>277-03114</b>
599-03115	1-1/2	25	20	<b>268-03115</b>	60 <b>277-03115</b>
599-03116	2	40	12	<b>268-03116</b>	37 <b>277-03116</b>
<b>Normally Closed</b>					
<b>Close-off psi – Brass Trim</b>					
599-03180	1/2	1	236	<b>270-03180</b>	—
599-03181		1.6	236	<b>270-03181</b>	—
599-03182		2.5	236	<b>270-03182</b>	—
599-03183		4	236	<b>270-03183</b>	—
599-03184	3/4	6.3	155	<b>270-03184</b>	250 <b>277-03184</b>
599-03185	1	10	91	<b>270-03185</b>	250 <b>277-03185</b>
599-03186	1-1/4	16	52	<b>270-03186</b>	148 <b>277-03186</b>
599-03187	1-1/2	25	32	<b>270-03187</b>	92 <b>277-03187</b>
599-03188	2	40	20	<b>270-03188</b>	55 <b>277-03188</b>
<b>Close-off psi – Stainless Steel Trim</b>					
599-03126	1/2	1	236	<b>270-03126</b>	—
599-03127		1.6	236	<b>270-03127</b>	—
599-03128		2.5	236	<b>270-03128</b>	—
599-03129		4	236	<b>270-03129</b>	—
599-03130	3/4	6.3	155	<b>270-03130</b>	250 <b>277-03130</b>
599-03131	1	10	91	<b>270-03131</b>	250 <b>277-03131</b>
599-03132	1-1/4	16	52	<b>270-03132</b>	148 <b>277-03132</b>
599-03133	1-1/2	25	32	<b>270-03133</b>	92 <b>277-03133</b>
599-03134	2	40	20	<b>270-03134</b>	55 <b>277-03134</b>

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Valves



**Table Notes:**

Part numbers in red indicate complete assemblies.

Black numbers indicate close-off psi.

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.

Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.









## Two-Way **Globe** Valve Assemblies

ANSI Class 250

Electronic and Electro-Hydraulic Spring Return Actuators

- Normally Open or Normally Closed
- Equal Percentage
- Brass and Stainless Steel Trim



NO/NC Equal Percentage 1/2 to 2"			Spring Return Actuator							
			Rack & Pinion 2P	Rack & Pinion 0-10 Vdc	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA				
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv								
			599-03611	599-03609	SKD62U	SKB62U				
<b>Normally Open</b>										
			<b>Close-off psi – Brass Trim</b>							
	1/2	1	250	<b>299-03162</b>	250	<b>298-03162</b>	250	<b>274-03162</b>	—	
		1.6	250	<b>299-03163</b>	250	<b>298-03163</b>	250	<b>274-03163</b>	—	
		2.5	250	<b>299-03164</b>	250	<b>298-03164</b>	250	<b>274-03164</b>	—	
		4	250	<b>299-03165</b>	250	<b>298-03165</b>	250	<b>274-03165</b>	—	
	3/4	6.3	231	<b>299-03166</b>	231	<b>298-03166</b>	250	<b>274-03166</b>	—	
	1	10	149	<b>299-03167</b>	149	<b>298-03167</b>	201	<b>274-03167</b>	—	
	1-1/4	16	92	<b>299-03168</b>	92	<b>298-03168</b>	124	<b>274-03168</b>	250	<b>291-03168</b>
	1-1/2	25	59	<b>299-03169</b>	59	<b>298-03169</b>	80	<b>274-03169</b>	250	<b>291-03169</b>
	2	40	36	<b>299-03170</b>	36	<b>298-03170</b>	49	<b>274-03170</b>	201	<b>291-03170</b>
			<b>Close-off psi – Stainless Steel Trim</b>							
	1/2	1	—	—	250	<b>298-03108</b>	250	<b>274-03108</b>	—	
		1.6	—	—	250	<b>298-03109</b>	250	<b>274-03109</b>	—	
		2.5	—	—	250	<b>298-03110</b>	250	<b>274-03110</b>	—	
		4	—	—	250	<b>298-03111</b>	250	<b>274-03111</b>	—	
	3/4	6.3	—	—	231	<b>298-03112</b>	250	<b>274-03112</b>	—	
	1	10	—	—	149	<b>298-03113</b>	201	<b>274-03113</b>	—	
	1-1/4	16	—	—	92	<b>298-03114</b>	124	<b>274-03114</b>	250	<b>291-03114</b>
	1-1/2	25	—	—	59	<b>298-03115</b>	80	<b>274-03115</b>	250	<b>291-03115</b>
	2	40	—	—	36	<b>298-03116</b>	49	<b>274-03116</b>	201	<b>291-03116</b>
<b>Normally Closed</b>										
			<b>Close-off psi – Brass Trim</b>							
	1/2	1	250	<b>299-03180</b>	250	<b>298-03180</b>	250	<b>274-03180</b>	—	
		1.6	250	<b>299-03181</b>	250	<b>298-03181</b>	250	<b>274-03181</b>	—	
		2.5	250	<b>299-03182</b>	250	<b>298-03182</b>	250	<b>274-03182</b>	—	
		4	250	<b>299-03183</b>	250	<b>298-03183</b>	250	<b>274-03183</b>	—	
	3/4	6.3	250	<b>299-03184</b>	250	<b>298-03184</b>	250	<b>274-03184</b>	—	
	1	10	173	<b>299-03185</b>	173	<b>298-03185</b>	203	<b>274-03185</b>	250	<b>291-03185</b>
	1-1/4	16	100	<b>299-03186</b>	100	<b>298-03186</b>	117	<b>274-03186</b>	250	<b>291-03186</b>
	1-1/2	25	61	<b>299-03187</b>	61	<b>298-03187</b>	73	<b>274-03187</b>	208	<b>291-03187</b>
	2	40	37	<b>299-03188</b>	37	<b>298-03188</b>	44	<b>274-03188</b>	126	<b>291-03188</b>
			<b>Close-off psi – Stainless Steel Trim</b>							
	1/2	1	—	—	250	<b>298-03126</b>	250	<b>274-03126</b>	—	
		1.6	—	—	250	<b>298-03127</b>	250	<b>274-03127</b>	—	
		2.5	—	—	250	<b>298-03128</b>	250	<b>274-03128</b>	—	
		4	—	—	250	<b>298-03129</b>	250	<b>274-03129</b>	—	
	3/4	6.3	—	—	250	<b>298-03130</b>	250	<b>274-03130</b>	—	
	1	10	—	—	173	<b>298-03131</b>	203	<b>274-03131</b>	250	<b>291-03131</b>
	1-1/4	16	—	—	100	<b>298-03132</b>	117	<b>274-03132</b>	250	<b>291-03132</b>
	1-1/2	25	—	—	61	<b>298-03133</b>	73	<b>274-03133</b>	208	<b>291-03133</b>
	2	40	—	—	37	<b>298-03134</b>	44	<b>274-03134</b>	126	<b>291-03134</b>

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Floating SK series assemblies are not available. Valve and actuator sold separately and will have to be assembled in the field



# Two-Way **Globe** Valve Assemblies

ANSI Class 250

Electronic and Electro-Hydraulic Non-Spring Return Actuators



- Normally Open or Normally Closed
- Equal Percentage
- Brass and Stainless Steel Trim

NO/NC Equal Percentage 1/2 to 2"			Non-Spring Return Actuator					
			Floating 3P		0-10 Vdc 4-20 mA		0-10 Vdc 4-20 mA	
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	SAX81.03U		SAX61.03U		SKD60U	
<b>Normally Open</b>								
<b>Close-off psi – Brass Trim</b>								
599-03162	1/2	1	250	373-03162	250	371-03162	250	267-03162
599-03163		1.6	250	373-03163	250	371-03163	250	267-03163
599-03164		2.5	250	373-03164	250	371-03164	250	267-03164
599-03165		4	250	373-03165	250	371-03165	250	267-03165
599-03166	3/4	6.3	211	373-03166	211	371-03166	250	267-03166
599-03167	1	10	137	373-03167	137	371-03167	201	267-03167
599-03168	1-1/4	16	85	373-03168	85	371-03168	124	267-03168
599-03169	1-1/2	25	55	373-03169	55	371-03169	80	267-03169
599-03170	2	40	34	373-03170	34	371-03170	49	267-03170
<b>Close-off psi – Stainless Steel Trim</b>								
599-03108	1/2	1	—	—	250	371-03108	250	267-03108
599-03109		1.6	—	—	250	371-03109	250	267-03109
599-03110		2.5	—	—	250	371-03110	250	267-03110
599-03111		4	—	—	250	371-03111	250	267-03111
599-03112	3/4	6.3	—	—	211	371-03112	250	267-03112
599-03113	1	10	—	—	137	371-03113	201	267-03113
599-03114	1-1/4	16	—	—	85	371-03114	124	267-03114
599-03115	1-1/2	25	—	—	55	371-03115	80	267-03115
599-03116	2	40	—	—	34	371-03116	49	267-03116
<b>Normally Closed</b>								
<b>Close-off psi – Brass Trim</b>								
599-03180	1/2	1	250	373-03180	250	371-03180	250	267-03180
599-03181		1.6	250	373-03181	250	371-03181	250	267-03181
599-03182		2.5	250	373-03182	250	371-03182	250	267-03182
599-03183		4	250	373-03183	250	371-03183	250	267-03183
599-03184	3/4	6.3	250	373-03184	250	371-03184	250	267-03184
599-03185	1	10	159	373-03185	159	371-03185	203	267-03185
599-03186	1-1/4	16	92	373-03186	92	371-03186	117	267-03186
599-03187	1-1/2	25	57	373-03187	57	371-03187	73	267-03187
599-03188	2	40	35	373-03188	35	371-03188	44	267-03188
<b>Close-off psi – Stainless Steel Trim</b>								
599-03126	1/2	1	—	—	250	371-03126	250	267-03126
599-03127		1.6	—	—	250	371-03127	250	267-03127
599-03128		2.5	—	—	250	371-03128	250	267-03128
599-03129		4	—	—	250	371-03129	250	267-03129
599-03130	3/4	6.3	—	—	250	371-03130	250	267-03130
599-03131	1	10	—	—	159	371-03131	203	267-03131
599-03132	1-1/4	16	—	—	92	371-03132	117	267-03132
599-03133	1-1/2	25	—	—	57	371-03133	73	267-03133
599-03134	2	40	—	—	35	371-03134	44	267-03134

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Floating SK series assemblies are not available. Valve and actuator sold separately and will have to be assembled in the field










## Two-Way **Globe** Valve Assemblies

ANSI Class 250  
Pneumatic Spring Return Actuators

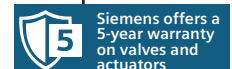
- Normally Open or Normally Closed
- Linear
- Stainless Steel Trim



NO/NC Linear 1/2 to 2"			Spring Return Actuator					
			NO 4" 3-8 psi NC 4" 10-15 psi	8"		8" with Positioner		
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 599-01081 – NO 599-01083 – NC	 599-01050	 599-01050 + 599-00426			
<b>Normally Open</b>								
<b>Close-off psi – Standard-temperature Range 20° F to 250° F (-7° C to 120° C)</b>								
	1/2	1	142	<b>268-03000</b>	—	—		
		1.6	142	<b>268-03001</b>	—	—		
		2.5	142	<b>268-03002</b>	—	—		
		4	142	<b>268-03003</b>	—	—		
	3/4	6.3	80	<b>268-03004</b>	231	<b>277-03004</b>	231	<b>283-03004</b>
	1	10	52	<b>268-03005</b>	150	<b>277-03005</b>	150	<b>283-03005</b>
	1-1/4	16	32	<b>268-03006</b>	93	<b>277-03006</b>	93	<b>283-03006</b>
	1-1/2	25	20	<b>268-03007</b>	60	<b>277-03007</b>	60	<b>283-03007</b>
2	40	12	<b>268-03008</b>	37	<b>277-03008</b>	37	<b>283-03008</b>	
<b>Close-off psi – High-temperature Range is 337° F max. (170° C)</b>								
	1/2	1	142	<b>268-03054</b>	—	—		
		1.6	142	<b>268-03055</b>	—	—		
		2.5	142	<b>268-03056</b>	—	—		
		4	142	<b>268-03057</b>	—	—		
	3/4	6.3	80	<b>268-03058</b>	231	<b>277-03058</b>	231	<b>283-03058</b>
	1	10	52	<b>268-03059</b>	150	<b>277-03059</b>	150	<b>283-03059</b>
	1-1/4	16	32	<b>268-03060</b>	93	<b>277-03060</b>	93	<b>283-03060</b>
	1-1/2	25	20	<b>268-03061</b>	60	<b>277-03061</b>	60	<b>283-03061</b>
2	40	12	<b>268-03062</b>	37	<b>277-03062</b>	37	<b>283-03062</b>	
<b>Normally Closed</b>								
<b>Close-off psi – Standard-temperature Range 20° F to 250° F (-7° C to 120° C)</b>								
	1/2	1	236	<b>270-03018</b>	—	—		
		1.6	236	<b>270-03019</b>	—	—		
		2.5	236	<b>270-03020</b>	—	—		
		4	236	<b>270-03021</b>	—	—		
	3/4	6.3	155	<b>270-03022</b>	250	<b>277-03022</b>	250	<b>283-03022</b>
	1	10	91	<b>270-03023</b>	250	<b>277-03023</b>	250	<b>283-03023</b>
	1-1/4	16	52	<b>270-03024</b>	148	<b>277-03024</b>	148	<b>283-03024</b>
	1-1/2	25	32	<b>270-03025</b>	92	<b>277-03025</b>	92	<b>283-03025</b>
2	40	20	<b>270-03026</b>	55	<b>277-03026</b>	55	<b>283-03026</b>	
<b>Close-off psi – High-temperature Range is 337° F max. (170° C)</b>								
	1/2	1	236	<b>270-03072</b>	—	—		
		1.6	236	<b>270-03073</b>	—	—		
		2.5	236	<b>270-03074</b>	—	—		
		4	236	<b>270-03075</b>	—	—		
	3/4	6.3	155	<b>270-03076</b>	250	<b>277-03076</b>	250	<b>283-03076</b>
	1	10	91	<b>270-03077</b>	250	<b>277-03077</b>	250	<b>283-03077</b>
	1-1/4	16	52	<b>270-03078</b>	148	<b>277-03078</b>	148	<b>283-03078</b>
	1-1/2	25	32	<b>270-03079</b>	92	<b>277-03079</b>	92	<b>283-03079</b>
2	40	20	<b>270-03080</b>	55	<b>277-03080</b>	55	<b>283-03080</b>	

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi. Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed. Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure. High Temp actuator assemblies are not available. Valve and actuator sold separately and will have to be assembled in the field



# Two-Way **Globe** Valve Assemblies

ANSI Class 250  
Electronic and Electro-Hydraulic Spring Return or  
Non-Spring Return Actuators

- Normally Open or Normally Closed
- Linear
- Stainless Steel Trim








NO/NC Linear 1/2 to 2"			Spring Return Actuator					Non-Spring Return Actuator				
			Rack & Pinion 0-10 Vdc	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA				
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv										
			599-03609	SKD62U	SKB62U	SAX61.03U	SKD60U					
<b>Normally Open</b>												
<b>Close-off psi – Standard-temperature Range 20° F to 250° F (-7° C to 120° C)</b>												
599-03000	1/2	1	250	298-03000	250	274-03000	—	250	371-03000	250	267-03000	
599-03001		1.6	250	298-03001	250	274-03001	—	250	371-03001	250	267-03001	
599-03002		2.5	250	298-03002	250	274-03002	—	250	371-03002	250	267-03002	
599-03003		4	250	298-03003	250	274-03003	—	250	371-03003	250	267-03003	
599-03004	3/4	6.3	231	298-03004	250	274-03004	—	211	371-03004	250	267-03004	
599-03005	1	10	149	298-03005	201	274-03005	—	137	371-03005	201	267-03005	
599-03006	1-1/4	16	92	298-03006	124	274-03006	250	291-03006	85	371-03006	124	267-03006
599-03007	1-1/2	25	59	298-03007	80	274-03007	250	291-03007	55	371-03007	80	267-03007
599-03008	2	40	36	298-03008	49	274-03008	201	291-03008	34	371-03008	49	267-03008
<b>Close-off psi – High-temperature Range is 337° F max. (170° C)</b>												
599-03054	1/2	1	—	—	250	274-03054	—	—	—	250	267-03054	
599-03055		1.6	—	—	250	274-03055	—	—	—	250	267-03055	
599-03056		2.5	—	—	250	274-03056	—	—	—	250	267-03056	
599-03057		4	—	—	250	274-03057	—	—	—	250	267-03057	
599-03058	3/4	6.3	—	—	250	274-03058	—	—	—	250	267-03058	
599-03059	1	10	—	—	201	274-03059	—	—	—	201	267-03059	
599-03060	1-1/4	16	—	—	124	274-03060	250	291-03060	—	124	267-03060	
599-03061	1-1/2	25	—	—	80	274-03061	250	291-03061	—	80	267-03061	
599-03062	2	40	—	—	49	274-03062	201	291-03062	—	49	267-03062	
<b>Normally Closed</b>												
<b>Close-off psi – Standard-temperature Range 20° F to 250° F (-7° C to 120° C)</b>												
599-03018	1/2	1	250	298-03018	250	274-03018	—	250	371-03018	250	267-03018	
599-03019		1.6	250	298-03019	250	274-03019	—	250	371-03019	250	267-03019	
599-03020		2.5	250	298-03020	250	274-03020	—	250	371-03020	250	267-03020	
599-03021		4	250	298-03021	250	274-03021	—	250	371-03021	250	267-03021	
599-03022	3/4	6.3	250	298-03022	250	274-03022	—	250	371-03022	250	267-03022	
599-03023	1	10	173	298-03023	203	274-03023	—	159	371-03023	203	267-03023	
599-03024	1-1/4	16	100	298-03024	117	274-03024	250	291-03024	92	371-03024	117	267-03024
599-03025	1-1/2	25	61	298-03025	73	274-03025	208	291-03025	57	371-03025	73	267-03025
599-03026	2	40	37	298-03026	44	274-03026	126	291-03026	35	371-03026	44	267-03026
<b>Close-off psi – High-temperature Range is 337° F max. (170° C)</b>												
599-03072	1/2	1	—	—	250	274-03072	—	—	—	250	267-03072	
599-03073		1.6	—	—	250	274-03073	—	—	—	250	267-03073	
599-03074		2.5	—	—	250	274-03074	—	—	—	250	267-03074	
599-03075		4	—	—	250	274-03075	—	—	—	250	267-03075	
599-03076	3/4	6.3	—	—	250	274-03076	—	—	—	250	267-03076	
599-03077	1	10	—	—	203	274-03077	—	—	—	203	267-03077	
599-03078	1-1/4	16	—	—	117	274-03078	250	291-03078	—	117	267-03078	
599-03079	1-1/2	25	—	—	73	274-03079	208	291-03079	—	73	267-03079	
599-03080	2	40	—	—	44	274-03080	126	291-03080	—	44	267-03080	

Table Notes:  
Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.








## Three-Way **Globe** Valve Assemblies

ANSI Class 250  
Pneumatic Spring Return Actuators



- Brass Trim

Mixing 1/2 to 2"			Spring Return Actuator			
			4" 3-8 psi	4" 10-15 psi	8"	8" with Positioner
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 599-01081	 599-01083	 599-01050	 599-01050 + 599-00426
			Close-off psi – Brass Trim			
	1/2	1	236 <b>268-03198</b>	236 <b>270-03198</b>	—	—
		1.6	236 <b>268-03199</b>	236 <b>270-03199</b>	—	—
		2.5	236 <b>268-03200</b>	236 <b>270-03200</b>	—	—
		4	236 <b>268-03201</b>	236 <b>270-03201</b>	—	—
	3/4	6.3	155 <b>268-03202</b>	155 <b>270-03202</b>	250 <b>277-03202</b>	250 <b>283-03202</b>
	1	10	91 <b>268-03203</b>	91 <b>270-03203</b>	250 <b>277-03203</b>	250 <b>283-03203</b>
	1-1/4	16	52 <b>268-03204</b>	52 <b>270-03204</b>	148 <b>277-03204</b>	148 <b>283-03204</b>
1-1/2	25	32 <b>268-03205</b>	32 <b>270-03205</b>	92 <b>277-03205</b>	92 <b>283-03205</b>	
2	40	20 <b>268-03206</b>	20 <b>270-03206</b>	55 <b>277-03206</b>	55 <b>283-03206</b>	

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Values in chart are for 0 psi supplied to the actuator.

Values are for the NC upper port. For NO lower port values, refer to Engineering, Section G.

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.

Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.

5-10 psi range is not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

# Three-Way **Globe** Valve Assemblies

ANSI Class 250





Electronic and Electro-Hydraulic Spring Return Actuators



- Brass and Stainless Steel Trim

A-36

Valves

Mixing 1/2 to 2"			Spring Return Actuator			
			Rack & Pinion 2P	Rack & Pinion 0-10 Vdc	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 599-03611	 599-03609	 SKD62U	 SKB62U
<b>Close-off psi – Brass Trim</b>						
599-03198	1/2	1	250 <b>299-03198</b>	50 <b>298-03198</b>	250 <b>274-03198</b>	—
599-03199		1.6	250 <b>299-03199</b>	250 <b>298-03199</b>	250 <b>274-03199</b>	—
599-03200		2.5	250 <b>299-03200</b>	250 <b>298-03200</b>	250 <b>274-03200</b>	—
599-03201		4	250 <b>299-03201</b>	250 <b>298-03201</b>	250 <b>274-03201</b>	—
599-03202	3/4	6.3	250 <b>299-03202</b>	250 <b>298-03202</b>	250 <b>274-03202</b>	—
599-03203	1	10	173 <b>299-03203</b>	173 <b>298-03203</b>	203 <b>274-03203</b>	—
599-03204	1-1/4	16	100 <b>299-03204</b>	100 <b>298-03204</b>	117 <b>274-03204</b>	250 <b>291-03204</b>
599-03205	1-1/2	25	61 <b>299-03205</b>	61 <b>298-03205</b>	73 <b>274-03205</b>	208 <b>291-03205</b>
599-03206	2	40	37 <b>299-03206</b>	37 <b>298-03206</b>	44 <b>274-03206</b>	126 <b>291-03206</b>
<b>Close-off psi – Stainless Steel Trim</b>						
599-03144	1/2	1	—	250 <b>298-03144</b>	250 <b>274-03144</b>	—
599-03145		1.6	—	250 <b>298-03145</b>	250 <b>274-03145</b>	—
599-03146		2.5	—	250 <b>298-03146</b>	250 <b>274-03146</b>	—
599-03147		4	—	250 <b>298-03147</b>	250 <b>274-03147</b>	—
599-03148	3/4	6.3	—	250 <b>298-03148</b>	250 <b>274-03148</b>	—
599-03149	1	10	—	173 <b>298-03149</b>	203 <b>274-03149</b>	—
599-03150	1-1/4	16	—	100 <b>298-03150</b>	117 <b>274-03150</b>	250 <b>291-03150</b>
599-03151	1-1/2	25	—	61 <b>298-03151</b>	73 <b>274-03151</b>	208 <b>291-03151</b>
599-03152	2	40	—	37 <b>298-03152</b>	44 <b>274-03152</b>	126 <b>291-03152</b>

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Values in chart are for 0 psi supplied to the actuator.

Values are for the NC upper port. For NO lower port values, refer to Engineering, Section G.

Floating SK series assemblies are not available. Valve and actuator sold separately and will have to be assembled in the field





## Three-Way **Globe** Valve Assemblies

ANSI Class 250

Electronic and Electro-Hydraulic Non-Spring Return Actuators

- Brass and Stainless Steel Trim



Mixing 1/2 to 2"			Non-Spring Return Actuator					
			Floating 3P		0-10 Vdc 4-20 mA		0-10 Vdc 4-20 mA	
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	SAX81.03U		SAX61.03U		SKD60U	
			<b>Close-off psi – Brass Trim</b>					
599-03198	1/2	1	250	373-03198	250	371-03198	250	267-03198
599-03199		1.6	250	373-03199	250	371-03199	250	267-03199
599-03200		2.5	250	373-03200	250	371-03200	250	267-03200
599-03201		4	250	373-03201	250	371-03201	250	267-03201
599-03202	3/4	6.3	250	373-03202	250	371-03202	250	267-03202
599-03203	1	10	159	373-03203	159	371-03203	203	267-03203
599-03204	1-1/4	16	92	373-03204	92	371-03204	117	267-03204
599-03205	1-1/2	25	57	373-03205	57	371-03205	73	267-03205
599-03206	2	40	35	373-03206	35	371-03206	44	267-03206
			<b>Close-off psi – Stainless Steel Trim</b>					
599-03144	1/2	1	—	—	250	371-03144	250	267-03144
599-03145		1.6	—	—	250	371-03145	250	267-03145
599-03146		2.5	—	—	250	371-03146	250	267-03146
599-03147		4	—	—	250	371-03147	250	267-03147
599-03148	3/4	6.3	—	—	250	371-03148	250	267-03148
599-03149	1	10	—	—	159	371-03149	203	267-03149
599-03150	1-1/4	16	—	—	92	371-03150	117	267-03150
599-03151	1-1/2	25	—	—	57	371-03151	73	267-03151
599-03152	2	40	—	—	35	371-03152	44	267-03152

**Table Notes:**

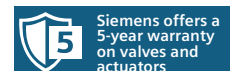
Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Values are for the NC upper port. For NO lower port values, refer to Engineering, Section G.

Floating SK series assemblies are not available. Valve and actuator sold separately and will have to be assembled in the field

A-37

Valves



Siemens offers a 5-year warranty on valves and actuators

# Two-Way Flanged **Globe** Valve Assemblies







ANSI Class 125  
Pneumatic Spring Return Actuators

- Normally Open or Normally Closed
- Equal Percentage
- Bronze and Stainless Steel Trim



A-38

Valves

NO/NC Equal Percentage Flanged 2-1/2 to 6"			Spring Return Actuator			
			8" 20 mm Stroke	12" 40 mm Stroke	8" w/ Positioner 20 mm Stroke	12" w/ Positioner 40 mm Stroke
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 599-01050	 599-01000	 599-01050 + 599-00426	 599-01000 + 599-00423
<b>Normally Open</b>			<b>Close-off psi – Bronze Trim</b>			
	599-05980	2-1/2 63	31 <b>277-05980</b>	—	31 <b>283-05980</b>	—
	599-05981	3 100	20 <b>277-05981</b>	—	20 <b>283-05981</b>	—
	599-05982	4 160	—	40 <b>281-05982</b>	—	40 <b>287-05982</b>
	599-05983	5 250	—	26 <b>281-05983</b>	—	26 <b>287-05983</b>
	599-05984	6 400	—	18 <b>281-05984</b>	—	18 <b>287-05984</b>
			<b>Close-off psi – Stainless Steel Trim</b>			
	599-05960	2-1/2 63	31 <b>277-05960</b>	—	31 <b>283-05960</b>	—
	599-05961	3 100	20 <b>277-05961</b>	—	20 <b>283-05961</b>	—
	599-05962	4 160	—	40 <b>281-05962</b>	—	40 <b>287-05962</b>
	599-05963	5 250	—	26 <b>281-05963</b>	—	26 <b>287-05963</b>
	599-05964	6 400	—	18 <b>281-05964</b>	—	18 <b>287-05964</b>
<b>Normally Closed</b>			<b>Close-off psi – Bronze Trim</b>			
	599-05990	2-1/2 63	36 <b>277-05990</b>	—	36 <b>283-05990</b>	—
	599-05991	3 100	23 <b>277-05991</b>	—	23 <b>283-05991</b>	—
	599-05992	4 160	—	46 <b>281-05992</b>	—	46 <b>287-05992</b>
	599-05993	5 250	—	29 <b>281-05993</b>	—	29 <b>287-05993</b>
	599-05994	6 400	—	20 <b>281-05994</b>	—	20 <b>287-05994</b>
			<b>Close-off psi – Stainless Steel Trim</b>			
	599-05970	2-1/2 63	36 <b>277-05970</b>	—	36 <b>283-05970</b>	—
	599-05971	3 100	23 <b>277-05971</b>	—	23 <b>283-05971</b>	—
	599-05972	4 160	—	46 <b>281-05972</b>	—	46 <b>287-05972</b>
	599-05973	5 250	—	29 <b>281-05973</b>	—	29 <b>287-05973</b>
	599-05974	6 400	—	20 <b>281-05974</b>	—	20 <b>287-05974</b>

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.  
 Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.  
 Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.  
 12" 20 mm stroke assemblies are not available. Valve, actuator and positioner sold separately and will have to be assembled in the field








## Two-Way Flanged **Globe** Valve Assemblies

ANSI Class 125  
Electro-Hydraulic Spring Return Actuators

- Normally Open or Normally Closed
- Equal Percentage
- Bronze and Stainless Steel Trim



NO/NC Equal Percentage Flanged 2-1/2 to 6"			Spring Return Actuator			
			0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SKD62U	 SKB62U	 SKC62U	
<b>Normally Open</b>						
<b>Close-off psi – Bronze Trim</b>						
	599-05980	2-1/2	63	38 <b>274-05980</b>	153 <b>291-05980</b>	—
	599-05981	3	100	25 <b>274-05981</b>	101 <b>291-05981</b>	—
	599-05982	4	160	—	—	65 <b>294-05982</b>
	599-05983	5	250	—	—	42 <b>294-05983</b>
	599-05984	6	400	—	—	29 <b>294-05984</b>
<b>Close-off psi – Stainless Steel Trim</b>						
	599-05960	2-1/2	63	38 <b>274-05960</b>	153 <b>291-05960</b>	—
	599-05961	3	100	25 <b>274-05961</b>	101 <b>291-05961</b>	—
	599-05962	4	160	—	—	65 <b>294-05962</b>
	599-05963	5	250	—	—	42 <b>294-05963</b>
	599-05964	6	400	—	—	29 <b>294-05964</b>
<b>Normally Closed</b>						
<b>Close-off psi – Bronze Trim</b>						
	599-05990	2-1/2	63	34 <b>274-05990</b>	97 <b>291-05990</b>	—
	599-05991	3	100	22 <b>274-05991</b>	63 <b>291-05991</b>	—
	599-05992	4	160	—	—	39 <b>294-05992</b>
	599-05993	5	250	—	—	25 <b>294-05993</b>
	599-05994	6	400	—	—	17 <b>294-05994</b>
<b>Close-off psi – Stainless Steel Trim</b>						
	599-05970	2-1/2	63	34 <b>274-05970</b>	97 <b>291-05970</b>	—
	599-05971	3	100	22 <b>274-05971</b>	63 <b>291-05971</b>	—
	599-05972	4	160	—	—	39 <b>294-05972</b>
	599-05973	5	250	—	—	25 <b>294-05973</b>
	599-05974	6	400	—	—	17 <b>294-05974</b>

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Floating SK series assemblies are not available. Valve and actuator sold separately and will have to be assembled in the field




# Two-Way Flanged **Globe** Valve Assemblies

ANSI Class 125

Electro-Hydraulic Non-Spring Return Actuators

- Normally Open or Normally Closed
- Equal Percentage
- Bronze and Stainless Steel Trim



NO/NC Equal Percentage Flanged 2-1/2 to 6"			0-10 Vdc 4-20 mA	
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SKD60U	
<b>Normally Open</b>				
			<b>Close-off psi – Bronze Trim</b>	
	599-05980	2-1/2	63	38 <b>267-05980</b>
	599-05981	3	100	25 <b>267-05981</b>
	599-05982	4	160	—
	599-05983	5	250	—
	599-05984	6	400	—
			<b>Close-off psi – Stainless Steel Trim</b>	
	599-05960	2-1/2	63	38 <b>267-05960</b>
	599-05961	3	100	25 <b>267-05961</b>
<b>Normally Closed</b>				
			<b>Close-off psi – Bronze Trim</b>	
	599-05990	2-1/2	63	34 <b>267-05990</b>
	599-05991	3	100	22 <b>267-05991</b>
	599-05992	4	160	—
	599-05993	5	250	—
	599-05994	6	400	—
			<b>Close-off psi – Stainless Steel Trim</b>	
	599-05970	2-1/2	63	34 <b>267-05970</b>
	599-05971	3	100	22 <b>267-05971</b>

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Floating SK series assemblies are not available. Valve and actuator sold separately and will have to be assembled in the field.

A-40

Valves









Siemens offers a 5-year warranty on valves and actuators

## Two-Way Flanged **Globe** Valve Assemblies

ANSI Class 125  
Pneumatic Spring Return Actuators

- Normally Open or Normally Closed
- Linear
- Stainless Steel Trim



NO/NC Linear Flanged 2-1/2 to 6"			Spring Return Actuator			
			8" 20 mm Stroke	12" 40 mm Stroke	8" w/ Positioner 20 mm Stroke	12" w/ Positioner 40 mm Stroke
<b>2-Way Valve Body Part No.</b>	<b>Valve Size in.</b>	<b>Flow Rate Cv</b>	 599-01050	 599-01000	 599-01050 + 599-00426	 599-01000 + 599-00423
<b>Normally Open</b>						
<b>Close-off psi – Standard-temperature Range 20° F to 250° F (-7° C to 120° C)</b>						
	599-06060	2-1/2 63	31 <b>277-06060</b>	—	31 <b>283-06060</b>	—
	599-06061	3 100	20 <b>277-06061</b>	—	20 <b>283-06061</b>	—
	599-06062	4 160	—	40 <b>281-06062</b>	—	40 <b>287-06062</b>
	599-06063	5 250	—	26 <b>281-06063</b>	—	26 <b>287-06063</b>
	599-06064	6 400	—	18 <b>281-06064</b>	—	18 <b>287-06064</b>
<b>Close-off psi – High-temperature Range is 337° F max. (170° C)</b>						
	599-06040	2-1/2 63	31 <b>277-06040</b>	—	31 <b>283-06040</b>	—
	599-06041	3 100	20 <b>277-06041</b>	—	20 <b>283-06041</b>	—
	599-06042	4 160	—	40 <b>281-06042</b>	—	40 <b>287-06042</b>
	599-06043	5 250	—	26 <b>281-06043</b>	—	26 <b>287-06043</b>
	599-06044	6 400	—	18 <b>281-06044</b>	—	18 <b>287-06044</b>
<b>Normally Closed</b>						
<b>Close-off psi – Standard-temperature Range 20° F to 250° F (-7° C to 120° C)</b>						
	599-06070	2-1/2 63	36 <b>277-06070</b>	—	36 <b>283-06070</b>	—
	599-06071	3 100	23 <b>277-06071</b>	—	23 <b>283-06071</b>	—
	599-06072	4 160	—	46 <b>281-06072</b>	—	46 <b>287-06072</b>
	599-06073	5 250	—	29 <b>281-06073</b>	—	29 <b>287-06073</b>
	599-06074	6 400	—	20 <b>281-06074</b>	—	20 <b>287-06074</b>
<b>Close-off psi – High-temperature Range is 337° F max. (170° C)</b>						
	599-06050	2-1/2 63	36 <b>277-06050</b>	—	36 <b>283-06050</b>	—
	599-06051	3 100	23 <b>277-06051</b>	—	23 <b>283-06051</b>	—
	599-06052	4 160	—	46 <b>281-06052</b>	—	46 <b>287-06052</b>
	599-06053	5 250	—	29 <b>281-06053</b>	—	29 <b>287-06053</b>
	599-06054	6 400	—	20 <b>281-06054</b>	—	20 <b>287-06054</b>

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.

Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.

High Temp actuator assemblies are not available. Valve and actuator sold separately and will have to be assembled in the field

12" 20 mm stroke assemblies are not available. Valve, actuator and positioner sold separately and will have to be assembled in the field

A-41

Valves

# Two-Way Flanged **Globe** Valve Assemblies

ANSI Class 125







Electro-Hydraulic Spring Return or Non-Spring Return Actuators

- Normally Open or Normally Closed
- Linear
- Stainless Steel Trim



A-42

Valves

NO/NC Linear Flanged 2-1/2 to 6"			Spring Return Actuator				Non-Spring Return Actuator			
			0-10 Vdc 4-20 mA		0-10 Vdc 4-20 mA		0-10 Vdc 4-20 mA			
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv								
			SKD62U	SKB62U	SKC62U	SKD60U				
<b>Normally Open</b>										
<b>Close-off psi – Standard-temperature Range 20° F to 250° F (-7° C to 120° C)</b>										
	599-06060	2-1/2	63	38	<b>274-06060</b>	153	<b>291-06060</b>	—	38	<b>267-06060</b>
	599-06061	3	100	25	<b>274-06061</b>	101	<b>291-06061</b>	—	25	<b>267-06061</b>
	599-06062	4	160	—	—	—	65	<b>294-06062</b>	—	—
	599-06063	5	250	—	—	—	42	<b>294-06063</b>	—	—
	599-06064	6	400	—	—	—	29	<b>294-06064</b>	—	—
<b>Close-off psi – High-temperature Range is 337° F max. (170° C)</b>										
	599-06040	2-1/2	63	38	<b>274-06040</b>	153	<b>291-06040</b>	—	38	<b>267-06040</b>
	599-06041	3	100	25	<b>274-06041</b>	101	<b>291-06041</b>	—	25	<b>267-06041</b>
	599-06042	4	160	—	—	—	65	<b>294-06042</b>	—	—
	599-06043	5	250	—	—	—	42	<b>294-06043</b>	—	—
	599-06044	6	400	—	—	—	29	<b>294-06044</b>	—	—
<b>Normally Closed</b>										
<b>Close-off psi – Standard-temperature Range 20° F to 250° F (-7° C to 120° C)</b>										
	599-06070	2-1/2	63	34	<b>274-06070</b>	97	<b>291-06070</b>	—	34	<b>267-06070</b>
	599-06071	3	100	22	<b>274-06071</b>	63	<b>291-06071</b>	—	22	<b>267-06071</b>
	599-06072	4	160	—	—	—	39	<b>294-06072</b>	—	—
	599-06073	5	250	—	—	—	25	<b>294-06073</b>	—	—
	599-06074	6	400	—	—	—	17	<b>294-06074</b>	—	—
<b>Close-off psi – High-temperature Range is 337° F max. (170° C)</b>										
	599-06050	2-1/2	63	34	<b>274-06050</b>	97	<b>291-06050</b>	—	34	<b>267-06050</b>
	599-06051	3	100	22	<b>274-06051</b>	63	<b>291-06051</b>	—	22	<b>267-06051</b>
	599-06052	4	160	—	—	—	39	<b>294-06052</b>	—	—
	599-06053	5	250	—	—	—	25	<b>294-06053</b>	—	—
	599-06054	6	400	—	—	—	17	<b>294-06054</b>	—	—

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.









## Three-Way Flanged **Globe** Valve Assemblies

ANSI Class 125

Pneumatic Spring Return Actuators

- Bronze and Stainless Steel Trim



Mixing Flanged 2-1/2 to 6" 			Spring Return Actuator				
			8" 20 mm Stroke	12" 40 mm Stroke	8" w/ Positioner 20 mm Stroke	12" w/ Positioner 40 mm Stroke	
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 599-01050	 599-01000	 599-01050 + 599-00426	 599-01000 + 599-00423	
			Close-off psi – Bronze				
	599-06160	2-1/2	63	36 <b>277-06160</b>	—	36 <b>283-06160</b>	—
	599-06161	3	100	23 <b>277-06161</b>	—	23 <b>283-06161</b>	—
	599-06162	4	160	—	46 <b>281-06162</b>	—	46 <b>287-06162</b>
	599-06163	5	250	—	29 <b>281-06163</b>	—	29 <b>287-06163</b>
	599-06164	6	400	—	20 <b>281-06164</b>	—	20 <b>287-06164</b>
	Close-off psi – Stainless Steel Trim						
	599-06165	2-1/2	63	36 <b>277-06165</b>	—	36 <b>283-06165</b>	—
	599-06166	3	100	23 <b>277-06166</b>	—	23 <b>283-06166</b>	—
	599-06167	4	160	—	46 <b>281-06167</b>	—	46 <b>287-06167</b>
	599-06168	5	250	—	29 <b>281-06168</b>	—	29 <b>287-06168</b>
599-06169	6	400	—	20 <b>281-06169</b>	—	20 <b>287-06169</b>	

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.

Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.

12" 20 mm stroke assemblies are not available. Valve, actuator and positioner sold separately and will have to be assembled in the field

# Three-Way Flanged **Globe** Valve Assemblies

ANSI Class 125





Electro-Hydraulic Spring Return or Non-Spring Return Actuators

- Mixing
- Bronze and Stainless Steel Trim



A-44

Valves

Mixing Flanged 2-1/2 to 6" 			0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SKD62U	 SKB62U	 SKC62U
<b>Close-off psi – Bronze Trim</b>					
599-06160	2-1/2	63	34 <b>274-06160</b>	97 <b>291-06160</b>	—
599-06161	3	100	22 <b>274-06161</b>	63 <b>291-06161</b>	—
599-06162	4	160	—	—	39 <b>294-06162</b>
599-06163	5	250	—	—	25 <b>294-06163</b>
599-06164	6	400	—	—	17 <b>294-06164</b>
<b>Close-off psi – Stainless Steel Trim</b>					
599-06165	2-1/2	63	34 <b>274-06165</b>	97 <b>291-06165</b>	—
599-06166	3	100	22 <b>274-06166</b>	63 <b>291-06166</b>	—
599-06167	4	160	—	—	39 <b>294-06167</b>
599-06168	5	250	—	—	25 <b>294-06168</b>
599-06169	6	400	—	—	17 <b>294-06169</b>



**Table Notes:**



Part numbers in red indicate complete assemblies.

Black numbers indicate close-off psi.

Values are for the NC upper port. For NO lower port values, refer to Engineering Section G.

Floating SK series assemblies are not available.

Valve and actuator sold separately and will have to be assembled in the field.

Mixing Flanged 2-1/2 to 6" 			0-10 Vdc 4-20 mA		
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SKD60U		
<b>Close-off psi – Bronze Trim</b>					
599-06160	2-1/2	63	34	<b>267-06160</b>	
599-06161	3	100	22	<b>267-06161</b>	
599-06162	4	160	—		
599-06163	5	250	—		
599-06164	6	400	—		
<b>Close-off psi – Stainless Steel Trim</b>					
599-06165	2-1/2	63	34	<b>267-06165</b>	
599-06166	3	100	22	<b>267-06166</b>	



**Table Notes:**

Part numbers in red indicate complete assemblies.

Black numbers indicate close-off psi.

Values are for the NC upper port. For NO lower port values, refer to Engineering, Section G.

Floating SK series assemblies are not available. Valve and actuator sold separately and will have to be assembled in the field.











## Two-Way Flanged **Globe** High Pressure Close-off Valve Assemblies

ANSI Class 125

Pneumatic and Electro-Hydraulic Spring Return Actuators

- Normally Open or Normally Closed
- Equal Percentage
- Stainless Steel Trim
- Pressure Balanced Plug
- 200 psi Close-off



NO/NC Equal Percentage Flanged 2-1/2 to 6"				Spring Return Actuator			
				8" w/ Positioner 20 mm Stroke	12" w/ Positioner 40 mm Stroke	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA
<b>2-Way Valve Body Part No.</b>	<b>Valve Size in.</b>	<b>Flow Rate Cv</b>	<b>Close Off psi</b>	 599-01050 + 599-00426	 599-01000 + 599-00423	 SKD62U	 SKC62U
<b>Normally Open</b>							
				<b>Stainless Steel Trim</b>			
	599-06610	2-1/2	63	200	283-06610	—	274-06610
	599-06611	3	100	200	283-06611	—	274-06611
	599-06612	4	160	200	—	287-06612	294-06612
	599-06613	5	250	200	—	287-06613	294-06613
	599-06614	6	400	200	—	287-06614	294-06614
<b>Normally Closed</b>							
				<b>Stainless Steel Trim</b>			
	599-06615	2-1/2	63	200	283-06615	—	274-06615
	599-06616	3	100	200	283-06616	—	274-06616
	599-06617	4	160	200	—	287-06617	294-06617
	599-06618	5	250	200	—	287-06618	294-06618
	599-06619	6	400	200	—	287-06619	294-06619

**Table Notes:**

Part numbers in red indicate complete assemblies.

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.

A-45

Valves

# Two-Way Flanged **Globe** High Pressure Close-off Valve Assemblies

ANSI Class 250







Pneumatic and Electro-Hydraulic Spring Return Actuators

- Normally Open or Normally Closed
- Equal Percentage
- Stainless Steel Trim
- Pressure Balanced Plug
- 200 psi Close-off



A-46

Valves

NO/NC Equal Percentage Flanged 2-1/2 to 6"				Spring Return Actuator				
				8" w/ Positioner 20 mm Stroke	12" w/ Positioner 40 mm Stroke	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	 599-01050 + 599-00426	 599-01000 + 599-00423	 SKD62U	 SKC62U	
<b>Normally Open</b>				<b>Stainless Steel Trim</b>				
	599-06620	2-1/2	63	200	<b>283-06620</b>	—	<b>274-06620</b>	—
	599-06621	3	100	200	<b>283-06621</b>	—	<b>274-06621</b>	—
	599-06622	4	160	200	—	<b>287-06622</b>	—	<b>294-06622</b>
	599-06623	5	250	200	—	<b>287-06623</b>	—	<b>294-06623</b>
	599-06624	6	400	200	—	<b>287-06624</b>	—	<b>294-06624</b>
<b>Normally Closed</b>				<b>Stainless Steel Trim</b>				
	599-06625	2-1/2	63	200	<b>283-06625</b>	—	<b>274-06625</b>	—
	599-06626	3	100	200	<b>283-06626</b>	—	<b>274-06626</b>	—
	599-06627	4	160	200	—	<b>287-06627</b>	—	<b>294-06627</b>
	599-06628	5	250	200	—	<b>287-06628</b>	—	<b>294-06628</b>
	599-06629	6	400	200	—	<b>287-06629</b>	—	<b>294-06629</b>

**Table Notes:**

Part numbers in red indicate complete assemblies.

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.









## Two-Way Flanged **Globe** Valve Assemblies

ANSI Class 250

Pneumatic Spring Return Actuators

- Normally Open or Normally Closed
- Equal Percentage
- Bronze and Stainless Steel Trim



NO/NC Equal Percentage Flanged 2-1/2 to 6"			Spring Return Actuator			
			8" 20 mm Stroke	12" 40 mm Stroke	8" w/ Positioner 20 mm Stroke	12" w/ Positioner 40 mm Stroke
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 599-01050	 599-01000	 599-01050 + 599-00426	 599-01000 + 599-00423
<b>Normally Open</b>						
			<b>Close-off psi – Bronze Trim</b>			
	599-05940	2-1/2 63	31 <b>277-05940</b>	—	31 <b>283-05940</b>	—
	599-05941	3 100	20 <b>277-05941</b>	—	20 <b>283-05941</b>	—
	599-05942	4 160	—	40 <b>281-05942</b>	—	40 <b>287-05942</b>
	599-05943	5 250	—	26 <b>281-05943</b>	—	26 <b>287-05943</b>
	599-05944	6 400	—	18 <b>281-05944</b>	—	18 <b>287-05944</b>
			<b>Close-off psi – Stainless Steel Trim</b>			
	599-05920	2-1/2 63	31 <b>277-05920</b>	—	31 <b>283-05920</b>	—
	599-05921	3 100	20 <b>277-05921</b>	—	20 <b>283-05921</b>	—
	599-05922	4 160	—	40 <b>281-05922</b>	—	40 <b>287-05922</b>
	599-05923	5 250	—	26 <b>281-05923</b>	—	26 <b>287-05923</b>
	599-05924	6 400	—	18 <b>281-05924</b>	—	18 <b>287-05924</b>
<b>Normally Closed</b>						
			<b>Close-off psi – Bronze Trim</b>			
	599-05950	2-1/2 63	36 <b>277-05950</b>	—	36 <b>283-05950</b>	—
	599-05951	3 100	23 <b>277-05951</b>	—	23 <b>283-05951</b>	—
	599-05952	4 160	—	46 <b>281-05952</b>	—	46 <b>287-05952</b>
	599-05953	5 250	—	29 <b>281-05953</b>	—	29 <b>287-05953</b>
	599-05954	6 400	—	20 <b>281-05954</b>	—	20 <b>287-05954</b>
			<b>Close-off psi – Stainless Steel Trim</b>			
	599-05930	2-1/2 63	36 <b>277-05930</b>	—	36 <b>283-05930</b>	—
	599-05931	3 100	23 <b>277-05931</b>	—	23 <b>283-05931</b>	—
	599-05932	4 160	—	46 <b>281-05932</b>	—	46 <b>287-05932</b>
	599-05933	5 250	—	29 <b>281-05933</b>	—	29 <b>287-05933</b>
	599-05934	6 400	—	20 <b>281-05934</b>	—	20 <b>287-05934</b>

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.

Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.

12" 20 mm stroke assemblies are not available. Valve, actuator and positioner sold separately and will have to be assembled in the field







# Two-Way Flanged **Globe** Valve Assemblies

ANSI Class 250

Electro-Hydraulic Spring Return or Non-Spring Return Actuators

- Normally Open or Normally Closed
- Equal Percentage
- Bronze and Stainless Steel Trim



NO/NC Equal Percentage Flanged 2-1/2 to 6"			Spring Return Actuator				Non-Spring Return Actuator			
			0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA				
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv								
			SKD62U	SKB62U	SKC62U	SKD60U				
<b>Normally Open</b>										
			<b>Close-off psi – Bronze Trim</b>							
	599-05940	2-1/2	63	38	<b>274-05940</b>	153	<b>291-05940</b>	—	38	<b>267-05940</b>
	599-05941	3	100	25	<b>274-05941</b>	101	<b>291-05941</b>	—	25	<b>267-05941</b>
	599-05942	4	160	—	—	—	65	<b>294-05942</b>	—	—
	599-05943	5	250	—	—	—	42	<b>294-05943</b>	—	—
	599-05944	6	400	—	—	—	29	<b>294-05944</b>	—	—
			<b>Close-off psi – Stainless Steel Trim</b>							
	599-05920	2-1/2	63	38	<b>274-05920</b>	153	<b>291-05920</b>	—	—	—
	599-05921	3	100	25	<b>274-05921</b>	101	<b>291-05921</b>	—	—	—
	599-05922	4	160	—	—	—	65	<b>294-05922</b>	—	—
	599-05923	5	250	—	—	—	42	<b>294-05923</b>	—	—
	599-05924	6	400	—	—	—	29	<b>294-05924</b>	—	—
<b>Normally Closed</b>										
			<b>Close-off psi – Bronze Trim</b>							
	599-05950	2-1/2	63	34	<b>274-05950</b>	97	<b>291-05950</b>	—	34	<b>267-05950</b>
	599-05951	3	100	22	<b>274-05951</b>	63	<b>291-05951</b>	—	22	<b>267-05951</b>
	599-05952	4	160	—	—	—	39	<b>294-05952</b>	—	—
	599-05953	5	250	—	—	—	25	<b>294-05953</b>	—	—
	599-05954	6	400	—	—	—	17	<b>294-05954</b>	—	—
			<b>Close-off psi – Stainless Steel Trim</b>							
	599-05930	2-1/2	63	34	<b>274-05930</b>	97	<b>291-05930</b>	—	—	—
	599-05931	3	100	22	<b>274-05931</b>	63	<b>291-05931</b>	—	—	—
	599-05932	4	160	—	—	—	39	<b>294-05932</b>	—	—
	599-05933	5	250	—	—	—	25	<b>294-05933</b>	—	—
	599-05934	6	400	—	—	—	17	<b>294-05934</b>	—	—

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

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Valves



Siemens offers a 5-year warranty on valves and actuators







## Two-Way Flanged **Globe** Valve Assemblies

ANSI Class 250

Pneumatic Spring Return Actuators

- Normally Open or Normally Closed
- Linear
- Stainless Steel Trim



NO/NC Linear Flanged 2-1/2 to 6"			Spring Return Actuator					
			8" 20 mm Stroke	12" 40 mm Stroke	8" w/ Positioner 20 mm Stroke	12" w/ Positioner 40 mm Stroke		
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 599-01050	 599-01000	 599-01050 + 599-00426	 599-01000 + 599-00423		
<b>Normally Open</b>			<b>Close-off psi – Standard-temperature Range 20° F to 250° F (-7° C to 120° C)</b>					
	599-06140	2-1/2	63	31 <b>277-06140</b>	—	31 <b>283-06140</b>	—	
	599-06141	3	100	20 <b>277-06141</b>	—	20 <b>283-06141</b>	—	
	599-06142	4	160	—	40 <b>281-06142</b>	—	40 <b>287-06142</b>	
	599-06143	5	250	—	26 <b>281-06143</b>	—	26 <b>287-06143</b>	
	599-06144	6	400	—	18 <b>281-06144</b>	—	18 <b>287-06144</b>	
					<b>Close-off psi – High-temperature Range is 337° F max. (170° C)</b>			
	599-06120	2-1/2	63	31 <b>277-06120</b>	—	31 <b>283-06120</b>	—	
	599-06121	3	100	20 <b>277-06121</b>	—	20 <b>283-06121</b>	—	
	599-06122	4	160	—	40 <b>281-06122</b>	—	40 <b>287-06122</b>	
	599-06123	5	250	—	26 <b>281-06123</b>	—	26 <b>287-06123</b>	
599-06124	6	400	—	18 <b>281-06124</b>	—	18 <b>287-06124</b>		
<b>Normally Closed</b>			<b>Close-off psi – Standard-temperature Range 20° F to 250° F (-7° C to 120° C)</b>					
	599-06150	2-1/2	63	36 <b>277-06150</b>	—	36 <b>283-06150</b>	—	
	599-06151	3	100	23 <b>277-06151</b>	—	23 <b>283-06151</b>	—	
	599-06152	4	160	—	46 <b>281-06152</b>	—	46 <b>287-06152</b>	
	599-06153	5	250	—	29 <b>281-06153</b>	—	29 <b>287-06153</b>	
	599-06154	6	400	—	20 <b>281-06154</b>	—	20 <b>287-06154</b>	
					<b>Close-off psi – High-temperature Range is 337° F max. (170° C)</b>			
	599-06130	2-1/2	63	36 <b>277-06130</b>	—	36 <b>283-06130</b>	—	
	599-06131	3	100	23 <b>277-06131</b>	—	23 <b>283-06131</b>	—	
	599-06132	4	160	—	46 <b>281-06132</b>	—	46 <b>287-06132</b>	
	599-06133	5	250	—	29 <b>281-06133</b>	—	29 <b>287-06133</b>	
599-06134	6	400	—	20 <b>281-06134</b>	—	20 <b>287-06134</b>		

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.

Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.

High Temp actuator assemblies are not available. Valve and actuator sold separately and will have to be assembled in the field

12" 20 mm stroke assemblies are not available. Valve, actuator and positioner sold separately and will have to be assembled in the field



# Two-Way Flanged **Globe** Valve Assemblies

ANSI Class 250






Electro-Hydraulic Spring Return Actuators

- Normally Open or Normally Closed
- Linear
- Stainless Steel Trim



A-50

Valves

NO/NC Linear Flanged 2-1/2 to 6"			Spring Return Actuator					
			0-10 Vdc 4-20 mA		0-10 Vdc 4-20 mA		0-10 Vdc 4-20 mA	
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SKD62U	 SKB62U	 SKC62U			
<b>Normally Open</b>			<b>Close-off psi – Standard-temperature Range 20° F to 250° F (-7° C to 120° C)</b>					
	599-06140	2-1/2 63	38	274-06140	153	291-06140	—	
	599-06141	3 100	25	274-06141	101	291-06141	—	
	599-06142	4 160	—	—	—	65	294-06142	
	599-06143	5 250	—	—	—	42	294-06143	
	599-06144	6 400	—	—	—	29	294-06144	
			<b>Close-off psi – High-temperature Range is 337° F max. (170° C)</b>					
	599-06120	2-1/2 63	38	274-06120	153	291-06120	—	
	599-06121	3 100	25	274-06121	101	291-06121	—	
	599-06122	4 160	—	—	—	65	294-06122	
	599-06123	5 250	—	—	—	42	294-06123	
	599-06124	6 400	—	—	—	29	294-06124	
<b>Normally Closed</b>			<b>Close-off psi – Standard-temperature Range 20° F to 250° F (-7° C to 120° C)</b>					
	599-06150	2-1/2 63	34	274-06150	97	291-06150	—	
	599-06151	3 100	22	274-06151	63	291-06151	—	
	599-06152	4 160	—	—	—	39	294-06152	
	599-06153	5 250	—	—	—	25	294-06153	
	599-06154	6 400	—	—	—	17	294-06154	
			<b>Close-off psi – High-temperature Range is 337° F max. (170° C)</b>					
	599-06130	2-1/2 63	34	274-06130	97	291-06130	—	
	599-06131	3 100	22	274-06131	63	291-06131	—	
	599-06132	4 160	—	—	—	39	294-06132	
	599-06133	5 250	—	—	—	25	294-06133	
	599-06134	6 400	—	—	—	17	294-06134	

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.



Siemens offers a 5-year warranty on valves and actuators






## Three-Way Flanged **Globe** Valve Assemblies

ANSI Class 250

Pneumatic Spring Return Actuators

- Mixing
- Bronze and Stainless Steel Trim



Mixing Flanged 2-1/2 to 6" 			Spring Return Actuator			
			8" 20 mm Stroke	12" 40 mm Stroke	8" w/ Positioner 20 mm Stroke	12" w/ Positioner 40 mm Stroke
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 599-01050	 599-01000	 599-01050 + 599-00426	 599-01000 + 599-00423
<b>Close-off psi – Bronze Trim</b>						
599-06170	2-1/2	63	36 <b>277-06170</b>	—	36 <b>283-06170</b>	—
599-06171	3	100	23 <b>277-06171</b>	—	23 <b>283-06171</b>	—
599-06172	4	160	—	46 <b>281-06172</b>	—	46 <b>287-06172</b>
599-06173	5	250	—	29 <b>281-06173</b>	—	29 <b>287-06173</b>
599-06174	6	400	—	20 <b>281-06174</b>	—	20 <b>287-06174</b>
<b>Close-off psi – Stainless Steel Trim</b>						
599-06175	2-1/2	63	36 <b>277-06175</b>	—	36 <b>283-06175</b>	—
599-06176	3	100	23 <b>277-06176</b>	—	23 <b>283-06176</b>	—
599-06177	4	160	—	46 <b>281-06177</b>	—	46 <b>287-06177</b>
599-06178	5	250	—	29 <b>281-06178</b>	—	29 <b>287-06178</b>
599-06179	6	400	—	20 <b>281-06179</b>	—	20 <b>287-06179</b>

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Close-off valves are for 15 psi signal to NO and 0 psi NC.

Close-off valves for NO valves with positioner may be substantially higher based on line supply pressure.

Values are for the NC upper port. For NO lower port values, refer to Engineering, Section G.

12" 20 mm stroke assemblies are not available. Valve, actuator and positioner sold separately and will have to be assembled in the field.






# Three-Way Flanged **Globe** Valve Assemblies

ANSI Class 250

Electro-Hydraulic Spring Return or Non-Spring Return Actuators

- Mixing
- Bronze and Stainless Steel Trim



Mixing Flanged 2-1/2 to 6" 			Spring Return Actuator			Non-Spring Return Actuator		
			0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA		
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv						
			SKD62U	SKB62U	SKC62U	SKD60U		
<b>Close-off psi – Bronze Trim</b>								
599-06170	2-1/2	63	34 <b>274-06170</b>	97 <b>291-06170</b>	—	34	<b>267-06170</b>	
599-06171	3	100	22 <b>274-06171</b>	63 <b>291-06171</b>	—	22	<b>267-06171</b>	
599-06172	4	160	—	—	39 <b>294-06172</b>	—	—	
599-06173	5	250	—	—	25 <b>294-06173</b>	—	—	
599-06174	6	400	—	—	17 <b>294-06174</b>	—	—	
<b>Close-off psi – Stainless Steel Trim</b>								
599-06175	2-1/2	63	34 <b>274-06175</b>	97 <b>291-06175</b>	—	—	—	
599-06176	3	100	22 <b>274-06176</b>	63 <b>291-06176</b>	—	—	—	
599-06177	4	160	—	—	39 <b>294-06177</b>	—	—	
599-06178	5	250	—	—	25 <b>294-06178</b>	—	—	
599-06179	6	400	—	—	17 <b>294-06179</b>	—	—	

**Table Notes:**

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi.

Values are for the NC upper port. For NO lower port values, refer to Engineering, Section G.

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Valves

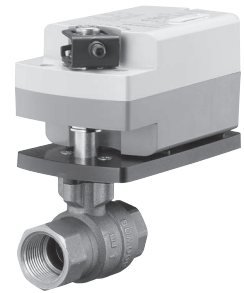




## Two-Way Ball Valve Assemblies

### Electronic Spring Return Actuators

- Normally Open
- GQD Damper Actuator Series
- Low profile bracket
- Part Nos. with \* denote a full-port valve with no flow optimizer insert
- Chrome-plated brass ball and brass stem or stainless steel ball and stem



<b>NO</b> 1/2 to 3/4"				Spring Return Actuator				
				Normally Open				
				2P	2P w/ Dual Aux. Switches	2P, 120 V	Floating	2-10 Vdc
				GQD121.1P	GQD126.1P	GQD221.1U	GQD131.1P	GQD151.1P
				Chrome-Plated Brass Ball and Brass Stem				
				599-10300				
				599-10301				
				599-10302				
				599-10303				
				599-10304				
				599-10305				
				599-10306				
				599-10307*				
				599-10308				
				599-10309				
				599-10310				
				599-10311*				
				Stainless Steel Ball and Stem				
				599-10300S				
				599-10301S				
				599-10302S				
				599-10303S				
				599-10304S				
				599-10305S				
				599-10306S				
				599-10307S*				
				599-10308S				
				599-10309S				
				599-10310S				
				599-10311S*				

**Table Notes:**

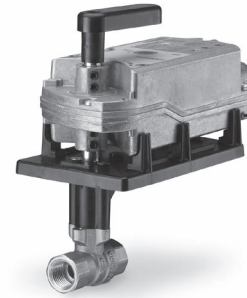
Part numbers in red indicate complete assemblies.





\*Denotes a full-port valve with no flow optimizer insert.

# Two-Way Ball Valve Assemblies

## Electronic Spring Return Actuators

- Normally Open
- GMA Damper Actuator Series
- Part Nos. with \* denote a full-port valve with no flow optimizer insert
- Chrome-plated brass ball and brass stem or stainless steel ball and stem



NO 1 to 2"				Spring Return Actuator			
				Normally Open			
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	2P	2P w/ Dual Aux. Switches	2P, 120 V	0-10 Vdc
							
				<b>Chrome-Plated Brass Ball and Brass Stem</b>			
599-10312	1	10	200	171E-10312	—	—	171G-10312
599-10313		16	200	171E-10313	—	—	171G-10313
599-10314		25	200	171E-10314	—	—	171G-10314
599-10315		40	200	171E-10315	—	—	171G-10315
599-10316*		63	200	171E-10316*	—	171M-10316*	171G-10316*
599-10317	1-1/4	16	200	171E-10317	—	—	171G-10317
599-10318		25	200	171E-10318	—	—	171G-10318
599-10319		40	200	171E-10319	—	—	171G-10319
599-10320		63	200	171E-10320	—	—	171G-10320
599-10321*		100	200	171E-10321*	—	171M-10321*	171G-10321*
599-10322	1-1/2	25	200	171E-10322	—	—	171G-10322
599-10323		40	200	171E-10323	—	—	171G-10323
599-10324		63	200	171E-10324	—	—	171G-10324
599-10325		100	200	171E-10325	—	—	171G-10325
599-10326*		160	200	171E-10326*	—	171M-10326*	171G-10326*
599-10327	2	40	200	171E-10327	—	—	171G-10327
599-10328		63	200	171E-10328	—	—	171G-10328
599-10329*		100	200	171E-10329*	—	—	171G-10329*
599-10330*		160	200	171E-10330*	—	171M-10330*	171G-10330*
				<b>Stainless Steel Ball and Stem</b>			
599-10312S	1	10	200	171E-10312S	—	—	171G-10312S
599-10313S		16	200	171E-10313S	—	—	171G-10313S
599-10314S		25	200	171E-10314S	—	—	171G-10314S
599-10315S		40	200	171E-10315S	—	—	171G-10315S
599-10316S*		63	200	171E-10316S*	171P-10316S*	171M-10316S*	171G-10316S*
599-10317S	1-1/4	16	200	171E-10317S	—	—	171G-10317S
599-10318S		25	200	171E-10318S	—	—	171G-10318S
599-10319S		40	200	171E-10319S	—	—	171G-10319S
599-10320S		63	200	171E-10320S	—	—	171G-10320S
599-10321S*		100	200	171E-10321S*	171P-10321S*	171M-10321S*	171G-10321S*
599-10322S	1-1/2	25	200	171E-10322S	—	—	171G-10322S
599-10323S		40	200	171E-10323S	—	—	171G-10323S
599-10324S*		63	200	171E-10324S*	—	—	171G-10324S*
599-10325S		100	200	171E-10325S	—	—	171G-10325S
599-10326S*		160	200	171E-10326S*	171P-10326S*	171M-10326S*	171G-10326S*
599-10327S	2	40	200	171E-10327S	—	—	171G-10327S
599-10328S		63	200	171E-10328S	—	—	171G-10328S
599-10329S*		100	200	171E-10329S*	—	—	171G-10329S*
599-10330S*		160	200	171E-10330S*	171P-10330S*	171M-10330S*	171G-10330S*

**Table Notes:**

Part numbers in red indicate complete assemblies.

\*Denotes a full-port valve with no flow optimizer insert.



## Two-Way Ball Valve Assemblies

### Electronic Spring Return Actuators

- Normally Closed
- GQD Damper Actuator Series
- Low profile bracket
- Part Nos. with \* denote a full-port valve with no flow optimizer insert
- Chrome-plated brass ball and brass stem or stainless steel ball and stem



NC 1/2 to 3/4"				Spring Return Actuator				
				Normally Closed				
				2P	2P w/ Dual Aux. Switches	2P, 120 V	Floating	2-10 Vdc
				GQD121.1P	GQD126.1P	GQD221.1U	GQD131.1P	GQD151.1P
				<b>Chrome-Plated Brass Ball and Brass Stem</b>				
				<b>2-Way Valve Body Part No.</b>				
				<b>Valve Size in.</b>				
				<b>Flow Rate Cv</b>				
				<b>Close Off psi</b>				
				<b>1/2</b>				
				<b>3/4</b>				
				<b>Stainless Steel Ball and Stem</b>				
				<b>1/2</b>				
				<b>3/4</b>				

**Table Notes:**

Part numbers in red indicate complete assemblies.  
 \*Denotes a full-port valve with no flow optimizer insert.

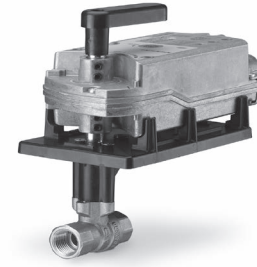
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Valves

# Two-Way Ball Valve Assemblies

## Electronic Spring Return Actuators

- Normally Closed
- GMA Damper Actuator Series
- Part Nos. with \* denote a full-port valve with no flow optimizer insert
- Chrome-plated brass ball and brass stem or stainless steel ball and stem



NC 1 to 2"				Spring Return Actuator			
				Normally Closed			
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	2P	2P w/ Dual Aux. Switches	2P, 120 V	0-10 Vdc
							
<b>Chrome-Plated Brass Ball and Brass Stem</b>							
599-10312	1	10	200	172E-10312	—	—	172G-10312
599-10313		16	200	172E-10313	—	—	172G-10313
599-10314		25	200	172E-10314	—	—	172G-10314
599-10315		40	200	172E-10315	—	—	172G-10315
599-10316*		63	200	172E-10316*	—	172M-10316*	172G-10316*
599-10317	1-1/4	16	200	172E-10317	—	—	172G-10317
599-10318		25	200	172E-10318	—	—	172G-10318
599-10319		40	200	172E-10319	—	—	172G-10319
599-10320		63	200	172E-10320	—	—	172G-10320
599-10321*		100	200	172E-10321*	—	172M-10321*	172G-10321*
599-10322	1-1/2	25	200	172E-10322	—	—	172G-10322
599-10323		40	200	172E-10323	—	—	172G-10323
599-10324		63	200	172E-10324	—	—	172G-10324
599-10325		100	200	172E-10325	—	—	172G-10325
599-10326*		160	200	172E-10326*	—	172M-10326*	172G-10326*
599-10327	2	40	200	172E-10327	—	—	172G-10327
599-10328		63	200	172E-10328	—	—	172G-10328
599-10329*		100	200	172E-10329*	—	—	172G-10329*
599-10330*		160	200	172E-10330*	—	172M-10330*	172G-10330*
<b>Stainless Steel Ball and Stem</b>							
599-10312S	1	10	200	172E-10312S	—	—	172G-10312S
599-10313S		16	200	172E-10313S	—	—	172G-10313S
599-10314S		25	200	172E-10314S	—	—	172G-10314S
599-10315S		40	200	172E-10315S	—	—	172G-10315S
599-10316S*		63	200	172E-10316S*	172P-10316S*	172M-10316S*	172G-10316S*
599-10317S	1-1/4	16	200	172E-10317S	—	—	172G-10317S
599-10318S		25	200	172E-10318S	—	—	172G-10318S
599-10319S		40	200	172E-10319S	—	—	172G-10319S
599-10320S		63	200	172E-10320S	—	—	172G-10320S
599-10321S*		100	200	172E-10321S*	172P-10321S*	172M-10321S*	172G-10321S*
599-10322S	1-1/2	25	200	172E-10322S	—	—	172G-10322S
599-10323S		40	200	172E-10323S	—	—	172G-10323S
599-10324S		63	200	172E-10324S	—	—	172G-10324S
599-10325S		100	200	172E-10325S	—	—	172G-10325S
599-10326S*		160	200	172E-10326S*	172P-10326S*	172M-10326S*	172G-10326S*
599-10327S	2	40	200	172E-10327S	—	—	172G-10327S
599-10328S		63	200	172E-10328S	—	—	172G-10328S
599-10329S*		100	200	172E-10329S*	—	—	172G-10329S*
599-10330S*		160	200	172E-10330S*	172P-10330S*	172M-10330S*	172G-10330S*

**Table Notes:**

Part numbers in red indicate complete assemblies.

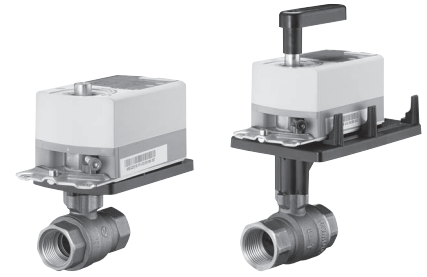
\*Denotes a full-port valve with no flow optimizer insert.







## Two-Way Ball Valve Assemblies

### Electronic Non-Spring Return Actuators

- Normally Open
- GDE Damper Actuator Series
- 1/2" and 3/4" valves feature low profile bracket
- Part Nos. with \* denote a full-port valve with no flow optimizer insert
- Chrome-plated ball and brass stem



NO 1/2 to 1-1/4"				Non-Spring Return Actuator			
				Normally Open			
				Floating	0-10 Vdc		
							
				GDE131.1P 3-foot (.9m) Wires	GDE161.1P 3-foot (.9m) Wires		
				Chrome-Plated Brass Ball and Brass Stem			
	1/2	599-10300	0.4	200	171A-10300	171C-10300	
		599-10301	0.63	200	171A-10301	171C-10301	
		599-10302	1.0	200	171A-10302	171C-10302	
		599-10303	1.6	200	171A-10303	171C-10303	
		599-10304	2.5	200	171A-10304	171C-10304	
		599-10305	4.0	200	171A-10305	171C-10305	
		599-10306	6.3	200	171A-10306	171C-10306	
		599-10307*	10	200	171A-10307*	171C-10307*	
		599-10308	3/4	6.3	200	171A-10308	171C-10308
		599-10309		10	200	171A-10309	171C-10309
599-10310	16	200		171A-10310	171C-10310		
599-10311*		25	200	171A-10311*	171C-10311*		
	1	599-10312	10	200	171A-10312	171C-10312	
		599-10313	16	200	171A-10313	171C-10313	
		599-10314	25	200	171A-10314	171C-10314	
		599-10315	40	200	171A-10315	171C-10315	
		599-10316*	63	200	171A-10316*	171C-10316*	
	1-1/4	599-10317	16	200	171A-10317	171C-10317	
		599-10318	25	200	171A-10318	171C-10318	
		599-10319	40	200	171A-10319	171C-10319	
		599-10320	63	200	171A-10320	171C-10320	
		599-10321*	100	200	171A-10321*	171C-10321*	

**Table Notes:**

Part numbers in red indicate complete assemblies.

\*Denotes a full-port valve with no flow optimizer insert.

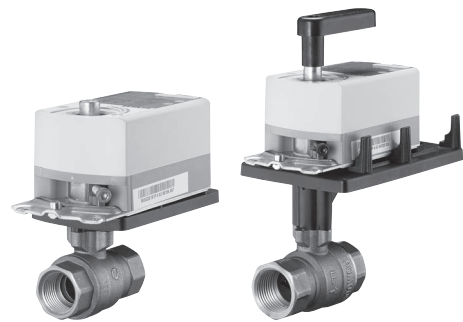
A-57

Valves

# Two-Way Ball Valve Assemblies





## Electronic Non-Spring Return Actuators

- Normally Open
- GDE Damper Actuator Series
- 1/2" and 3/4" valves feature low profile bracket
- Part Nos. with \* denote a full-port valve with no flow optimizer insert
- Stainless steel ball and stem



A-58

Valves

<b>NO</b> 1/2 to 1-1/4"				Non-Spring Return Actuator		
				Normally Open		
				Floating	0-10 Vdc	
				 GDE131.1P Conduit Adapter & 3-foot (.9m) Wires	 GDE161.1P Conduit Adapter & 3-foot (.9m) Wires	
<b>Stainless Steel Ball and Stem</b>						
	1/2	599-10300S	0.4	200	<b>171A-10300S</b>	<b>171C-10300S</b>
		599-10301S	0.63	200	<b>171A-10301S</b>	<b>171C-10301S</b>
		599-10302S	1.0	200	<b>171A-10302S</b>	<b>171C-10302S</b>
		599-10303S	1.6	200	<b>171A-10303S</b>	<b>171C-10303S</b>
		599-10304S	2.5	200	<b>171A-10304S</b>	<b>171C-10304S</b>
		599-10305S	4.0	200	<b>171A-10305S</b>	<b>171C-10305S</b>
		599-10306S	6.3	200	<b>171A-10306S</b>	<b>171C-10306S</b>
		599-10307S*	10	200	<b>171A-10307S*</b>	<b>171C-10307S*</b>
		599-10308S	6.3	200	<b>171A-10308S</b>	<b>171C-10308S</b>
		599-10309S	10	200	<b>171A-10309S</b>	<b>171C-10309S</b>
	3/4	599-10310S	16	200	<b>171A-10310S</b>	<b>171C-10310S</b>
		599-10311S*	25	200	<b>171A-10311S*</b>	<b>171C-10311S*</b>
		599-10312S	10	200	<b>171A-10312S</b>	<b>171C-10312S</b>
		599-10313S	16	200	<b>171A-10313S</b>	<b>171C-10313S</b>
		599-10314S	25	200	<b>171A-10314S</b>	<b>171C-10314S</b>
		599-10315S	40	200	<b>171A-10315S</b>	<b>171C-10315S</b>
		599-10316S*	63	200	<b>171A-10316S*</b>	<b>171C-10316S*</b>
		599-10317S	16	200	<b>171A-10317S</b>	<b>171C-10317S</b>
		599-10318S	25	200	<b>171A-10318S</b>	<b>171C-10318S</b>
		599-10319S	40	200	<b>171A-10319S</b>	<b>171C-10319S</b>
1-1/4	599-10320S	63	200	<b>171A-10320S</b>	<b>171C-10320S</b>	
	599-10321S*	100	200	<b>171A-10321S*</b>	<b>171C-10321S*</b>	

**Table Notes:**

Part numbers in red indicate complete assemblies.

\*Denotes a full-port valve with no flow optimizer insert.





## Two-Way Ball Valve Assemblies

### Electronic Non-Spring Return Actuators

- GLB Damper Actuator Series
- Part Nos. with \* denote a full-port valve with no flow optimizer insert
- Chrome-plated brass ball and brass stem or stainless steel ball and stem



<b>NO</b> 1-1/2 to 2"				Non-Spring Return Actuator	
				Normally Open	
				Floating	0-10 Vdc
				 GLB131.1P 3-foot (.9m) Wires	 GLB161.1P 3-foot (.9m) Wires
			<b>Chrome-Plated Brass Ball and Brass Stem</b>		
	1-1/2	25	200	171B-10322	171D-10322
		40	200	171B-10323	171D-10323
		63	200	171B-10324	171D-10324
		100	200	171B-10325	171D-10325
		160	200	171B-10326*	171D-10326*
	2	40	200	171B-10327	171D-10327
		63	200	171B-10328	171D-10328
		100	200	171B-10329*	171D-10329*
		160	200	171B-10330*	171D-10330*
				<b>Stainless Steel Ball and Stem</b>	
	1-1/2	25	200	171B-10322S	171D-10322S
		40	200	171B-10323S	171D-10323S
		63	200	171B-10324S	171D-10324S
		100	200	171B-10325S	171D-10325S
		160	200	171B-10326S*	171D-10326S*
	2	40	200	171B-10327S	171D-10327S
		63	200	171B-10328S	171D-10328S
		100	200	171B-10329S*	171D-10329S*
		160	200	171B-10330S*	171D-10330S*

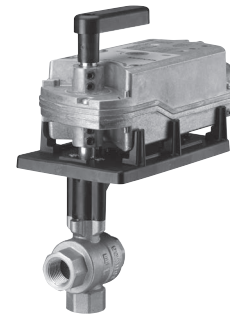
**Table Notes:**

Part numbers in red indicate complete assemblies.  
 \*Denotes a full-port valve with no flow optimizer insert.

# Three-Way Ball Valve Assemblies



## Electronic Spring Return Actuators

- GMA Damper Actuator Series
- A → AB Normally Open
- Part Nos. with \* denote a full-port valve with no flow optimizer insert
- Chrome-plated brass ball and brass stem



A-60

Valves

Mixing/Diverting 1/2 to 2"				Spring Return Actuator	
				GMA Series	
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	2P	0-10 Vdc
				 GMA121.1P	 GMA161.1P
<b>Chrome-Plated Brass Ball and Brass Stem</b>					
599-10350	1/2	0.4	200	171E-10350	171G-10350
599-10351		0.63	200	171E-10351	171G-10351
599-10352		1.0	200	171E-10352	171G-10352
599-10353		1.6	200	171E-10353	171G-10353
599-10354		2.5	200	171E-10354	171G-10354
599-10355		4	200	171E-10355	171G-10355
599-10356		6.3	200	171E-10356	171G-10356
599-10357*	10	200	171E-10357*	171G-10357*	
599-10358	3/4	6.3	200	171E-10358	171G-10358
599-10359		10	200	171E-10359	171G-10359
599-10360*		16	200	171E-10360*	171G-10360*
599-10361	1	10	200	171E-10361	171G-10361
599-10362		16	200	171E-10362	171G-10362
599-10363*		25	200	171E-10363*	171G-10363*
599-10364	1-1/4	16	200	171E-10364	171G-10364
599-10365		25	200	171E-10365	171G-10365
599-10366*		40	200	171E-10366*	171G-10366*
599-10367	1-1/2	25	200	171E-10367	171G-10367
599-10368		40	200	171E-10368	171G-10368
599-10369*		63	200	171E-10369*	171G-10369*
599-10370	2	40	200	171E-10370	171G-10370
599-10371		63	200	171E-10371	171G-10371
599-10372*		100	200	171E-10372*	171G-10372*

**Table Notes:**  
 Part numbers in red indicate complete assemblies.  
 \*Denotes a full-port valve with no flow optimizer insert.  
 NOTE: Maximum operating differential pressure = 60 psi for 1/2" to 1-1/2", 50 psi for 2"



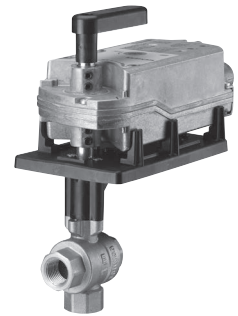





# Three-Way Ball Valve Assemblies

## Electronic Spring Return Actuators

# Ball Selection Tables

- GMA Damper Actuator Series
- A → AB Normally Open
- Part Nos. with \* denote a full-port valve with no flow optimizer insert
- Stainless steel ball and stem



Mixing/Diverting 1/2 to 2"				Spring Return Actuator		
				GMA Series		
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	2P	Floating	0-10 Vdc
				 GMA121.1P	 GMA131.1P	 GMA161.1P
<b>Stainless Steel Ball and Stem</b>						
599-10350S	1/2	0.4	200	171E-10350S	171F-10350S	171G-10350S
599-10351S		0.63	200	171E-10351S	171F-10351S	171G-10351S
599-10352S		1.0	200	171E-10352S	171F-10352S	171G-10352S
599-10353S		1.6	200	171E-10353S	171F-10353S	171G-10353S
599-10354S		2.5	200	171E-10354S	171F-10354S	171G-10354S
599-10355S		4	200	171E-10355S	171F-10355S	171G-10355S
599-10356S		6.3	200	171E-10356S	171F-10356S	171G-10356S
599-10357S*		10	200	171E-10357S*	171F-10357S*	171G-10357S*
599-10358S		3/4	6.3	200	171E-10358S	171F-10358S
599-10359S	10		200	171E-10359S	171F-10359S	171G-10359S
599-10360S*	16		200	171E-10360S*	171F-10360S*	171G-10360S*
599-10361S	1	10	200	171E-10361S	171F-10361S	171G-10361S
599-10362S		16	200	171E-10362S	171F-10362S	171G-10362S
599-10363S*		25	200	171E-10363S*	171F-10363S*	171G-10363S*
599-10364S	1-1/4	16	200	171E-10364S	171F-10364S	171G-10364S
599-10365S		25	200	171E-10365S	171F-10365S	171G-10365S
599-10366S*		40	200	171E-10366S*	171F-10366S*	171G-10366S*
599-10367S	1-1/2	25	200	171E-10367S	171F-10367S	171G-10367S
599-10368S		40	200	171E-10368S	171F-10368S	171G-10368S
599-10369S*		63	200	171E-10369S*	171F-10369S*	171G-10369S*
599-10370S	2	40	200	171E-10370S	171F-10370S	171G-10370S
599-10371S		63	200	171E-10371S	171F-10371S	171G-10371S
599-10372S*		100	200	171E-10372S*	171F-10372S*	171G-10372S*

**Table Notes:**

Part numbers in red indicate complete assemblies.

\*Denotes a full-port valve with no flow optimizer insert.

NOTE: Maximum operating differential pressure = 60 psi for 1/2" to 1-1/2", 50 psi for 2"

A-61

Valves

# Three-Way Ball Valve Assemblies



## Electronic Non-Spring Return Actuators

- GDE/GLB Damper Actuator Series
- A → AB Normally Open
- Part Nos. with \* denote a full-port valve with no flow optimizer insert
- Chrome-plated brass ball and brass stem



A-62

Valves

Mixing/Diverting 1/2 to 2"				Non-Spring Return Actuator GDE and GLB Series	
				Floating	0-10 Vdc
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	 GDE131.1P (171A) and GLB131.1P (171B) Conduit Adapter & 3-foot (.9m) Wires	 GDE161.1P (171C) and GLB161.1P (171D) Conduit Adapter & 3-foot (.9m) Wires
				<b>Chrome-Plated Brass Ball and Brass Stem</b>	
599-10350	1/2	0.4	200	<b>171A-10350</b>	<b>171C-10350</b>
599-10351		0.63	200	<b>171A-10351</b>	<b>171C-10351</b>
599-10352		1.0	200	<b>171A-10352</b>	<b>171C-10352</b>
599-10353		1.6	200	<b>171A-10353</b>	<b>171C-10353</b>
599-10354		2.5	200	<b>171A-10354</b>	<b>171C-10354</b>
599-10355		4	200	<b>171A-10355</b>	<b>171C-10355</b>
599-10356		6.3	200	<b>171A-10356</b>	<b>171C-10356</b>
599-10357*	10	200	<b>171A-10357*</b>	<b>171C-10357*</b>	
599-10358	3/4	6.3	200	<b>171A-10358</b>	<b>171C-10358</b>
599-10359		10	200	<b>171A-10359</b>	<b>171C-10359</b>
599-10360*		16	200	<b>171A-10360*</b>	<b>171C-10360*</b>
599-10361	1	10	200	<b>171A-10361</b>	<b>171C-10361</b>
599-10362		16	200	<b>171A-10362</b>	<b>171C-10362</b>
599-10363*		25	200	<b>171A-10363*</b>	<b>171C-10363*</b>
599-10364	1-1/4	16	200	<b>171A-10364</b>	<b>171C-10364</b>
599-10365		25	200	<b>171A-10365</b>	<b>171C-10365</b>
599-10366*		40	200	<b>171A-10366*</b>	<b>171C-10366*</b>
599-10367	1-1/2	25	200	<b>171B-10367</b>	<b>171D-10367</b>
599-10368		40	200	<b>171B-10368</b>	<b>171D-10368</b>
599-10369*		63	200	<b>171B-10369*</b>	<b>171D-10369*</b>
599-10370	2	40	200	<b>171B-10370</b>	<b>171D-10370</b>
599-10371		63	200	<b>171B-10371</b>	<b>171D-10371</b>
599-10372*		100	200	<b>171B-10372*</b>	<b>171D-10372*</b>

**Table Notes:**

Part numbers in red indicate complete assemblies.

\*Denotes a full-port valve with no flow optimizer insert.

NOTE: Maximum operating differential pressure = 60 psi for 1/2" to 1-1/2", 50 psi for 2"





## Three-Way Ball Valve Assemblies

### Electronic Non-Spring Return Actuators

- GDE/GLB Damper Actuator Series
- A → AB Normally Open
- Part Nos. with \* denote a full-port valve with no flow optimizer insert
- Stainless steel ball and stem



Mixing/Diverting 1/2 to 2"				Non-Spring Return Actuator GDE and GLB Series	
				Floating	0-10 Vdc
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi		
				GDE131.1P (171A) and GLB131.1P (171B) Conduit Adapter & 3-foot (.9m) Wires	GDE161.1P (171C) and GLB161.1P (171D) Conduit Adapter & 3-foot (.9m) Wires
<b>Chrome-Plated Brass Ball and Brass Stem</b>					
599-10350	1/2	0.4	200	171A-10350	171C-10350
599-10351		0.63	200	171A-10351	171C-10351
599-10352		1.0	200	171A-10352	171C-10352
599-10353		1.6	200	171A-10353	171C-10353
599-10354		2.5	200	171A-10354	171C-10354
599-10355		4	200	171A-10355	171C-10355
599-10356		6.3	200	171A-10356	171C-10356
599-10357*		10	200	171A-10357*	171C-10357*
599-10358	3/4	6.3	200	171A-10358	171C-10358
599-10359		10	200	171A-10359	171C-10359
599-10360*		16	200	171A-10360*	171C-10360*
599-10361	1	10	200	171A-10361	171C-10361
599-10362		16	200	171A-10362	171C-10362
599-10363*		25	200	171A-10363*	171C-10363*
599-10364	1-1/4	16	200	171A-10364	171C-10364
599-10365		25	200	171A-10365	171C-10365
599-10366*		40	200	171A-10366*	171C-10366*
599-10367	1-1/2	25	200	171B-10367	171D-10367
599-10368		40	200	171B-10368	171D-10368
599-10369*		63	200	171B-10369*	171D-10369*
599-10370	2	40	200	171B-10370	171D-10370
599-10371		63	200	171B-10371	171D-10371
599-10372*		100	200	171B-10372*	171D-10372*

**Table Notes:**

Part numbers in red indicate complete assemblies.

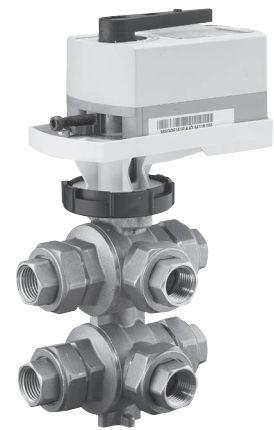
\*Denotes a full-port valve with no flow optimizer insert.


NOTE: Maximum operating differential pressure = 60 psi for 1/2" to 1-1/2", 50 psi for 2"

# Six-Way Ball Valve Assemblies

Electronic Non-Spring Return Actuators

- GDE Damper Actuator Series
- 1/2-Inch Pipe Connections
- Chrome-plated brass balls and stainless steel stem



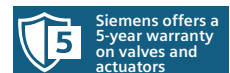
Changeover 1/2"		Non-Spring Return Actuator		
		GDE Series		
		0-10 Vdc		
		 GDE161.1P Conduit Adapter & 3-foot (.9m) Wires		
6-Way Valve Body Part No.	Valve Size in.	Source A Cv Value	Source B Cv Value	
<b>Chrome-Plated Brass Balls and Stainless Steel Stem</b>				
599-10600-0.3-0.3	1/2	0.3	0.3	171C-10600-0.3-0.3
599-10600-0.3-0.5		0.3	0.5	171C-10600-0.3-0.5
599-10600-0.3-0.8		0.3	0.8	171C-10600-0.3-0.8
599-10600-0.3-1.2		0.3	1.2	171C-10600-0.3-1.2
599-10600-0.3-1.5		0.3	1.5	171C-10600-0.3-1.5
599-10600-0.3-1.9		0.3	1.9	171C-10600-0.3-1.9
599-10600-0.5-0.3		0.5	0.3	171C-10600-0.5-0.3
599-10600-0.5-0.5		0.5	0.5	171C-10600-0.5-0.5
599-10600-0.5-0.8		0.5	0.8	171C-10600-0.5-0.8
599-10600-0.5-1.2		0.5	1.2	171C-10600-0.5-1.2
599-10600-0.5-1.5		0.5	1.5	171C-10600-0.5-1.5
599-10600-0.5-1.9		0.5	1.9	171C-10600-0.5-1.9
599-10600-0.8-0.3		0.8	0.3	171C-10600-0.8-0.3
599-10600-0.8-0.5		0.8	0.5	171C-10600-0.8-0.5
599-10600-0.8-0.8		0.8	0.8	171C-10600-0.8-0.8
599-10600-0.8-1.2		0.8	1.2	171C-10600-0.8-1.2
599-10600-0.8-1.5		0.8	1.5	171C-10600-0.8-1.5
599-10600-0.8-1.9		0.8	1.9	171C-10600-0.8-1.9
599-10600-1.2-0.3		1.2	0.3	171C-10600-1.2-0.3
599-10600-1.2-0.5		1.2	0.5	171C-10600-1.2-0.5
599-10600-1.2-0.8		1.2	0.8	171C-10600-1.2-0.8
599-10600-1.2-1.2		1.2	1.2	171C-10600-1.2-1.2
599-10600-1.2-1.5		1.2	1.5	171C-10600-1.2-1.5
599-10600-1.2-1.9		1.2	1.9	171C-10600-1.2-1.9
599-10600-1.5-0.3		1.5	0.3	171C-10600-1.5-0.3
599-10600-1.5-0.5		1.5	0.5	171C-10600-1.5-0.5
599-10600-1.5-0.8		1.5	0.8	171C-10600-1.5-0.8
599-10600-1.5-1.2		1.5	1.2	171C-10600-1.5-1.2
599-10600-1.5-1.5		1.5	1.5	171C-10600-1.5-1.5
599-10600-1.5-1.9		1.5	1.9	171C-10600-1.5-1.9
599-10600-1.9-0.3	1.9	0.3	171C-10600-1.9-0.3	
599-10600-1.9-0.5	1.9	0.5	171C-10600-1.9-0.5	
599-10600-1.9-0.8	1.9	0.8	171C-10600-1.9-0.8	
599-10600-1.9-1.2	1.9	1.2	171C-10600-1.9-1.2	
599-10600-1.9-1.5	1.9	1.5	171C-10600-1.9-1.5	
599-10600-1.9-1.9	1.9	1.9	171C-10600-1.9-1.9	

**Table Notes:**

Part numbers in red indicate complete assemblies.

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Valves

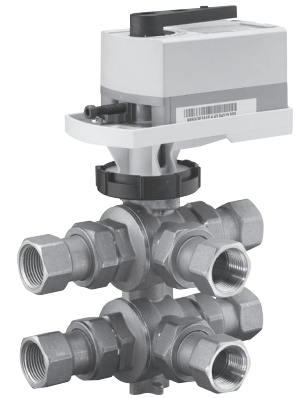


Siemens offers a 5-year warranty on valves and actuators

## Six-Way Ball Valve Assemblies

Electronic Non-Spring Return Actuators

- GDE Damper Actuator Series
- 3/4-Inch Pipe Connections
- Chrome-plated brass balls and stainless steel stem



Changeover 3/4"				Non-Spring Return Actuator
				GDE Series
				0-10 Vdc
6-Way Valve Body Part No.	Valve Size in.	Source A Cv Value	Source B Cv Value	
				Chrome-Plated Brass Balls and Stainless Steel Stem
599-10601-0.8-0.8	3/4	0.8	0.8	171C-10601-0.8-0.8
599-10601-0.8-1.2		0.8	1.2	171C-10601-0.8-1.2
599-10601-0.8-1.5		0.8	1.5	171C-10601-0.8-1.5
599-10601-0.8-1.9		0.8	1.9	171C-10601-0.8-1.9
599-10601-0.8-2.9		0.8	2.9	171C-10601-0.8-2.9
599-10601-0.8-4.0		0.8	4.0	171C-10601-0.8-4.0
599-10601-0.8-4.7		0.8	4.7	171C-10601-0.8-4.7
599-10601-1.2-0.8		1.2	0.8	171C-10601-1.2-0.8
599-10601-1.2-1.2		1.2	1.2	171C-10601-1.2-1.2
599-10601-1.2-1.5		1.2	1.5	171C-10601-1.2-1.5
599-10601-1.2-1.9		1.2	1.9	171C-10601-1.2-1.9
599-10601-1.2-2.9		1.2	2.9	171C-10601-1.2-2.9
599-10601-1.2-4.0		1.2	4.0	171C-10601-1.2-4.0
599-10601-1.2-4.7		1.2	4.7	171C-10601-1.2-4.7
599-10601-1.5-0.8		1.5	0.8	171C-10601-1.5-0.8
599-10601-1.5-1.2		1.5	1.2	171C-10601-1.5-1.2
599-10601-1.5-1.5		1.5	1.5	171C-10601-1.5-1.5
599-10601-1.5-1.9		1.5	1.9	171C-10601-1.5-1.9
599-10601-1.5-2.9		1.5	2.9	171C-10601-1.5-2.9
599-10601-1.5-4.0		1.5	4.0	171C-10601-1.5-4.0
599-10601-1.5-4.7		1.5	4.7	171C-10601-1.5-4.7
599-10601-1.9-0.8		1.9	0.8	171C-10601-1.9-0.8
599-10601-1.9-1.2		1.9	1.2	171C-10601-1.9-1.2
599-10601-1.9-1.5		1.9	1.5	171C-10601-1.9-1.5
599-10601-1.9-1.9		1.9	1.9	171C-10601-1.9-1.9
599-10601-1.9-2.9		1.9	2.9	171C-10601-1.9-2.9
599-10601-1.9-4.0		1.9	4.0	171C-10601-1.9-4.0
599-10601-1.9-4.7		1.9	4.7	171C-10601-1.9-4.7
599-10601-2.9-0.8		2.9	0.8	171C-10601-2.9-0.8
599-10601-2.9-1.2		2.9	1.2	171C-10601-2.9-1.2
599-10601-2.9-1.5		2.9	1.5	171C-10601-2.9-1.5
599-10601-2.9-1.9		2.9	1.9	171C-10601-2.9-1.9
599-10601-2.9-2.9	2.9	2.9	171C-10601-2.9-2.9	
599-10601-2.9-4.0	2.9	4.0	171C-10601-2.9-4.0	
599-10601-2.9-4.7	2.9	4.7	171C-10601-2.9-4.7	

**Table Notes:**

Part numbers in red indicate complete assemblies.

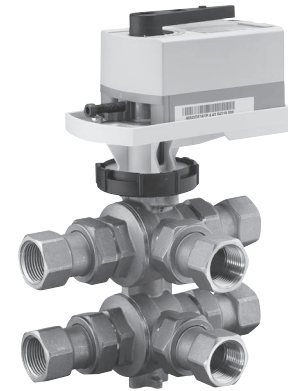
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Valves

# Six-Way Ball Valve Assemblies

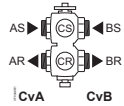

Electronic Non-Spring Return Actuators

- GDE Damper Actuator Series
- 3/4-Inch Pipe Connections
- Chrome-plated brass balls and stainless steel stem



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Valves

Changeover 3/4"				Non-Spring Return Actuator
				GDE Series
				0-10 Vdc
6-Way Valve Body Part No.	Valve Size in.	Source A Cv Value	Source B Cv Value	 GDE161.1P Conduit Adapter & 3-foot (.9m) Wires
				Chrome-Plated Brass Balls and Stainless Steel Stem
599-10601-4.0-0.8	3/4	4.0	0.8	171C-10601-4.0-0.8
599-10601-4.0-1.2		4.0	1.2	171C-10601-4.0-1.2
599-10601-4.0-1.5		4.0	1.5	171C-10601-4.0-1.5
599-10601-4.0-1.9		4.0	1.9	171C-10601-4.0-1.9
599-10601-4.0-2.9		4.0	2.9	171C-10601-4.0-2.9
599-10601-4.0-4.0		4.0	4.0	171C-10601-4.0-4.0
599-10601-4.0-4.7		4.0	4.7	171C-10601-4.0-4.7
599-10601-4.7-0.8		4.7	0.8	171C-10601-4.7-0.8
599-10601-4.7-1.2		4.7	1.2	171C-10601-4.7-1.2
599-10601-4.7-1.5		4.7	1.5	171C-10601-4.7-1.5
599-10601-4.7-1.9		4.7	1.9	171C-10601-4.7-1.9
599-10601-4.7-2.9		4.7	2.9	171C-10601-4.7-2.9
599-10601-4.7-4.0		4.7	4.0	171C-10601-4.7-4.0
599-10601-4.7-4.7		4.7	4.7	171C-10601-4.7-4.7

**Table Notes:**

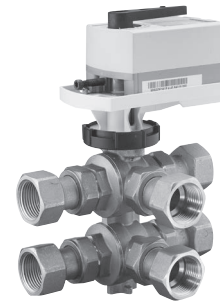
Part numbers in red indicate complete assemblies.



## Six-Way Ball Valve Assemblies

Electronic Non-Spring Return Actuators

- GDE Damper Actuator Series
- 1-Inch Pipe Connections
- Chrome-plated brass balls and stainless steel stem



Changeover 1"				Non-Spring Return Actuator GDE Series
				0-10 Vdc
6-Way Valve Body Part No.	Valve Size in.	Source A Cv Value	Source B Cv Value	 GDE161.1P Conduit Adapter & 3-foot (.9m) Wires
				<b>Chrome-Plated Brass Balls and Stainless Steel Stem</b>
599-10602-1.9-1.9	1	1.9	1.9	<b>171C-10602-1.9-1.9</b>
599-10602-1.9-2.9		1.9	2.9	<b>171C-10602-1.9-2.9</b>
599-10602-1.9-4.0		1.9	4.0	<b>171C-10602-1.9-4.0</b>
599-10602-1.9-4.7		1.9	4.7	<b>171C-10602-1.9-4.7</b>
599-10602-2.9-1.9		2.9	1.9	<b>171C-10602-2.9-1.9</b>
599-10602-2.9-2.9		2.9	2.9	<b>171C-10602-2.9-2.9</b>
599-10602-2.9-4.0		2.9	4.0	<b>171C-10602-2.9-4.0</b>
599-10602-2.9-4.7		2.9	4.7	<b>171C-10602-2.9-4.7</b>
599-10602-4.0-1.9		4.0	1.9	<b>171C-10602-4.0-1.9</b>
599-10602-4.0-2.9		4.0	2.9	<b>171C-10602-4.0-2.9</b>
599-10602-4.0-4.0		4.0	4.0	<b>171C-10602-4.0-4.0</b>
599-10602-4.0-4.7		4.0	4.7	<b>171C-10602-4.0-4.7</b>
599-10602-4.7-1.9		4.7	1.9	<b>171C-10602-4.7-1.9</b>
599-10602-4.7-2.9		4.7	2.9	<b>171C-10602-4.7-2.9</b>
599-10602-4.7-4.0		4.7	4.0	<b>171C-10602-4.7-4.0</b>
599-10602-4.7-4.7		4.7	4.7	<b>171C-10602-4.7-4.7</b>

**Table Notes:**

Part numbers in red indicate complete assemblies.

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Valves

# Two- & Three-Way **Magnetic** Valve Assemblies



## MX... Control Valves for Hot and Chilled Water – 2-Way (with blanking disc/flange) or 3-Way



Valve Size (in.)	Cv	Close-off psi	Part No.
<b>NPT Unions</b>			
1/2	0.7	44	MXG461.15-0.6U
1/2	1.7	44	MXG461.15-1.5U
1/2	3.5	44	MXG461.15-3.0U
3/4	5.9	44	MXG461.20-5.0U
1	9.4	44	MXG461.25-8.0U
1-1/4	14.0	44	MXG461.32-12U
1-1/2	23.4	44	MXG461.40-20U
2	35.1	44	MXG461.50-30U
<b>Flange</b>			
2-1/2	58.2	44	MXF461.65-50U*

**Table Notes:**

\*No blanking flange.



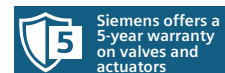
## M3P... FY Control Valves for Hot and Chilled Water with ZM Module – 2-Way or 3-Way



Description	Cv	Close-off psi	Part No.
3" 3-Way	93	44	M3P80FY
4" 3-Way	152	29	M3P100FY

**Overall Ordering Note:**

The valve body and magnetic actuator assemblies cannot be separated.



Siemens offers a 5-year warranty on valves and actuators

**SIEMENS**



# Two- & Three-Way **Magnetic** Valve Assemblies

# Magnetic Selection Tables



## MVF461H Modulating Control Valves for Hot Water and Steam – 2-Way

Valve Size (in.)	Cv	Close-off psi	Part No.
1/2	0.7	145	MVF461H15-0.6
1/2	1.7	145	MVF461H15-1.5
1/2	3.5	145	MVF461H15-3
3/4	5.9	145	MVF461H20-5
1	9.4	145	MVF461H25-8
1-1/4	14.0	145	MVF461H32-12
1-1/2	23.3	145	MVF461H40-20
2	35.0	145	MVF461H50-30

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Valves

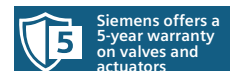


## MXG461B Modulating Control Valves for Domestic Water – 3-Way

Valve Size (in.)	Cv	Close-off psi	Part No.
1/2	0.7	145	MXG461B15-0.6
1/2	1.8	145	MXG461B15-1.5
1/2	3.5	145	MXG461B15-3
3/4	5.8	116	MXG461B20-5
1	9.3	102	MXG461B25-8
1-1/4	14	87	MXG461B32-12
1-1/2	23	87	MXG461B40-20
2	35	87	MXG461B50-30

### Overall Ordering Note:

The valve body and magnetic actuator assemblies cannot be separated.



# Two-Way Refrigerant Valve Assemblies



## MVL661... Modulating Refrigerant Valves for CO<sub>2</sub> and all Commonly Used Safety Refrigerants – with Magnetic Actuators



Valve Size in.	Cv	Δpmax psi	Part No.
1/2	0.46	363	MVL661.15-0.4
1/2	1.2	363	MVL661.15-1.0
3/4	2.9	363	MVL661.20-2.5
1	7.3	363	MVL661.25-6.3
1-1/4	13.9	29	MVL661.32-12

### Table Notes:

\* MVL661.32-12.0 is only approved for suction throttle applications

Cv Nominal flow rate, in gpm, of refrigerant through the fully open valve (H100) at a differential pressure of 1 psi.

Δpmax Maximum permissible differential pressure across the control path of the valve, valid for the entire actuating range of the motorized valve.

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Valves



## MVS661...N Modulating Refrigerant Valves for Ammonia, CO<sub>2</sub> and all Commonly Used Safety Refrigerants – with Magnetic Actuators



Valve Size in.	Cv	Δpmax psi	Part No.
1	0.18	363	MVS661.25-016N
1	0.46	363	MVS661.25-0.4N
1	1.16	363	MVS661.25-1.0N
1	2.89	363	MVS661.25-2.5N
1	7.28	363	MVS661.25-6.3N

### Table Notes:

Cv Nominal flow rate, in gpm, of refrigerant through the fully open valve (H100) at a differential pressure of 1 psi.

Δpmax Maximum permissible differential pressure across the control path of the valve, valid for the entire actuating range of the motorized valve.



## Two- & Three-Way Refrigerant Valve Assemblies



### M3FB... LX Modulating Control Valve for Hot Gas Control – with Magnetic Actuators



Line Size in.	Cv 1 → 3	ΔPmax 1 → 3 psi	Part No.
1/2	0.7	319	M3FB15LX06/A
1/2	1.8	319	M3FB15LX15/A
1/2	3.5	319	M3FB15LX/A
3/4	5.9	261	M3FB20LX/A
1	9.4	174	M3FB25LX/A
1-1/4	14.0	116	M3FB32LX

**Table Notes:**

Cv Flow rate tolerance +/-10%.

Δpmax Maximum permissible differential pressure across the control path of the valve, valid for the entire actuating range of the motorized valve.

Also requires ZM terminal housing.

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Valves



### M2FP03GX Modulating Pilot Valve – with Magnetic Actuator



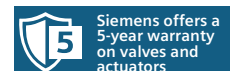
For Line Sizes in.	Cv gpm	ΔPmax psi	Part No.
2 – 5	1.3	261	MF2FP03GX

**Table Notes:**

Cv Nominal flow rate, in gpm, of cold water through the fully open valve ( $H_{100}$ ) at a differential pressure of 1 psi.

Δpmax Maximum permissible differential pressure across the control path of the valve, valid for the entire actuating range of the motorized valve.

Also requires ZM terminal housing.



# Two- & Three-Way 656 Series **Service** Valves



## 2-Way Valves



Valve Size	Cv	Close-off	Spring Range	Part No.
<b>Normally Open</b>				
1/2" (15 mm)	0.9	95 psi (655 kPa)	3 to 8 psi (21 to 55 kPa)	<b>656-0004</b>
1/2" (15 mm)	2.1	95 psi (655 kPa)	3 to 8 psi (21 to 55 kPa)	<b>656-0002</b>
<b>Normally Closed</b>				
1/2" (15 mm)	2.1	140 psi (965 kPa)	10 to 15 psi (69 to 103 kPa)	<b>656-0012</b>

**Table Notes:**

End connections are S.A.E. flared.



## 2-Way Angle Union Valves



Valve Size	Cv	Close-off	Spring Range	Part No.
<b>Normally Open</b>				
1/2" (15 mm)	2.1	95 psi (655 kPa)	3 to 8 psi (21 to 55 kPa)	<b>656-0017</b>
1/2" (15 mm)	2.1	95 psi (655 kPa)	5 to 10 psi (34 to 69 kPa)	<b>656-0019</b>
3/4" (20 mm)	4.6	95 psi (655 kPa)	3 to 8 psi (21 to 55 kPa)	<b>656-0018</b>
3/4" (20 mm)	4.6	95 psi (655 kPa)	5 to 10 psi (34 to 69 kPa)	<b>656-0021</b>

**Table Notes:**

End connections are AFxUM.



## 3-Way Mixing Valves



Valve Size	Cv	Close-off	Spring Range	Part No.
1/2" (15 mm)	2.5	95 psi (655 kPa)	10 to 15 lb. (69 to 103 kPa)	<b>656-0009</b>
1/2" (15 mm)	2.5	95 psi (655 kPa)	3 to 8 lb. (21 to 55 kPa)	<b>656-0010</b>
1/2" (15 mm)	1.5	95 psi (655 kPa)	3 to 8 lb. (21 to 55 kPa)	<b>656-0011</b>

**Table Notes:**

End connections are S.A.E. flared.



**SIEMENS**

## Two- & Three-Way 658 Series **Service** Valves



### 2-Way Angle Union Valves

Valve Size	Cv	Close-off	Spring Range	Part No.
<b>Normally Open</b>				
1" (25 mm)	10	100 psi (689 kPa)	2 to 6 psi (14 to 41 kPa)	<b>658-0012</b>
1-1/4" (32 mm)	16	60 psi (413 kPa)	2 to 6 psi (14 to 41 kPa)	<b>658-0014</b>

**Table Notes:**  
End connections are AFxUM.



### 3-Way Sequence and Changeover Valves

Valve Size	Cv	Close-off	Part No.
<b>Sequence</b>			
1/2" (15 mm)	1.5	50 psi (344 kPa)	<b>658-0050</b>
1/2" (15 mm)	2.5	50 psi (344 kPa)	<b>658-0051</b>
<b>Changeover</b>			
1/2" (15 mm)	2.5	10 psi (68 kPa)	<b>658-0052</b>

**Table Notes:**  
End connections are S.A.E. flared.

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Valves



Siemens offers a 5-year warranty on valves and actuators.



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# A more durable butterfly valve design that lasts even longer

At Siemens, we continuously challenge ourselves to improve butterfly valves to exceed hydronic system demands with improved performance, efficiency, and value. So, we set our sights on designing the best version of the most widely used butterfly valve type to be more durable and last even longer — delivering better value and improved comfort.

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Quality  
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even longer



100%  
Factory tested



Up to 5 Million  
Repositions  
for longer life



Up to 100 Thousand  
Full strokes



## Two-Way Butterfly Valves

24V Commercial Actuator Assemblies

### Two-Way Full Cut Valves with 24V Commercial Damper Actuators Assemblies

2-Way, Full Cut		Actuator Part Number	Normally Open	Normally Closed
Valve Size (in.)	Valve Part No.		Assembly Part No.	Assembly Part No.
<b>2-Position, SR with Switches</b>				
2	B202F	GCA126.3U	B202FO-GCA126.3U	B202FC-GCA126.3U
2-1/2	B225F		B225FO-GCA126.3U	B225FC-GCA126.3U
3	B203F	GCA126.3U(-D)	B203FO-GCA126.3U	B203FC-GCA126.3U
<b>0 to 10Vdc, NSR Without Switches</b>				
2	B202F	GIB161.3U	B202FO-GIB161.3U	B202FC-GIB161.3U
2-1/2	B225F		B225FO-GIB161.3U	B225FC-GIB161.3U
3	B203F	GIB161.3U(-D)	B203FO-GIB161.3U	B203FC-GIB161.3U
4	B204F		B204FO-GIB161.3U	B204FC-GIB161.3U
5	B205F		B205FO-GIB161.3U	B205FC-GIB161.3U
6	B206F		B206FO-GIB161.3U	B206FC-GIB161.3U
<b>Floating, NSR Without Switches</b>				
2	B202F	GIB131.3U	B202FO-GIB131.3U	B202FC-GIB131.3U
2-1/2	B225F		B225FO-GIB131.3U	B225FC-GIB131.3U
3	B203F	GIB131.3U(-D)	B203FO-GIB131.3U	B203FC-GIB131.3U
4	B204F		B204FO-GIB131.3U	B204FC-GIB131.3U
5	B205F		B205FO-GIB131.3U	B205FC-GIB131.3U
6	B206F		B206FO-GIB131.3U	B206FC-GIB131.3U
<b>0 to 10 Vdc SR Without Switches</b>				
2	B202F	GCA161.3U	B202FO-GCA161.3U	B202FC-GCA161.3U
2-1/2	B225F	GCA126.3U(-D)	B225FO-GCA161.3U	B225FC-GCA161.3U
3	B203F		B203FO-GCA161.3U	B203FC-GCA161.3U
<b>2-Position, SR Without Switches</b>				
2	B202F	GCA121.3U	B202FO-GCA121.3U	B202FC-GCA121.3U
2-1/2	B225F		B225FO-GCA121.3U	B225FC-GCA121.3U
3	B203F		B203FOSGCA121.3U	B203FC-GCA121.3U

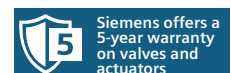
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Valves

### Two-Way Under Cut Valves with 24V Commercial Damper Actuators Assemblies

2-Way, Under Cut		Actuator Part Number	Normally Open	Normally Closed
Valve Size (in.)	Valve Part No.		Assembly Part No.	Assembly Part No.
<b>2-Position, SR with Switches</b>				
4	B204U	GCA126.3U(-D)	B204UO-GCA126.3U	B204UC-GCA126.3U
<b>0 to 10Vdc, NSR Without Switches</b>				
4	B204U	GIB161.3U	B204UO-GIB161.3U	B204UC-GIB161.3U
5	B205U		B205UO-GIB161.3U	B205UC-GIB161.3U
6	B206U	GIB161.3U(-D)	B206UO-GIB161.3U	B206UC-GIB161.3U
8	B208U		B208UO-GIB161.3U	B208UC-GIB161.3U
<b>Floating, NSR Without Switches</b>				
4	B204U	GIB161.3U	B204UO-GIB131.3U	B204UC-GIB131.3U
5	B205U		B205UO-GIB131.3U	B205UC-GIB131.3U
6	B206U	GIB161.3U(-D)	B206UO-GIB131.3U	B206UC-GIB131.3U
8	B208U		B208UO-GIB131.3U	B208UC-GIB131.3U
<b>0 to 10 Vdc SR Without Switches</b>				
4	B204U	GCA161.3U(-D)	B204UO-GCA161.3U	B204UC-GCA161.3U
<b>2-Position, SR Without Switches</b>				
4	B204U	GCA121.3U(-D)	B204UO-GCA121.3U	B204UC-GCA121.3U

(-D) denotes dual actuators



# Three-Way Butterfly Valves

## 24V Commercial Actuator Assemblies

### Three-Way Full Cut Valves with 24V Commercial Damper Actuators Assemblies

3-Way, Full Cut Valve Size (in.)	Actuator Part Number	Assembly Part Number
<b>2-Position, SR with Switches</b>		
2	GCA126.3U	B302Fx-GCA126.3U
2-1/2	GCA126.3U(-D)	B325Fx-GCA126.3U
3		B303Fx-GCA126.3U
<b>0 to 10Vdc, NSR Without Switches</b>		
2	GIB161.3U	B302Fx-GIB161.3U
2-1/2		B325Fx-GIB161.3U
3		B303Fx-GIB161.3U
4	GIB161.3U(-D)	B304Fx-GIB161.3U
5		B305Fx-GIB161.3U
<b>Floating, NSR Without Switches</b>		
2	GIB131.3U(-D)	B302Fx-GIB131.3U
2-1/2		B325Fx-GIB131.3U
3		B303Fx-GIB131.3U
4	GIB131.3U(-D)	B304Fx-GIB131.3U
5		B305Fx-GIB131.3U
<b>0 to 10 Vdc SR Without Switches</b>		
2	GCA161.3U	B302Fx-GCA161.3U
2-1/2	GCA161.3U(-D)	B325Fx-GCA161.3U
3		B303Fx-GCA161.3U

(-D) denotes dual actuators  
 x= A, B, C or D (See Figure 1.)

### Three-Way Under Cut Valves with 24V Commercial Damper Actuators Assemblies

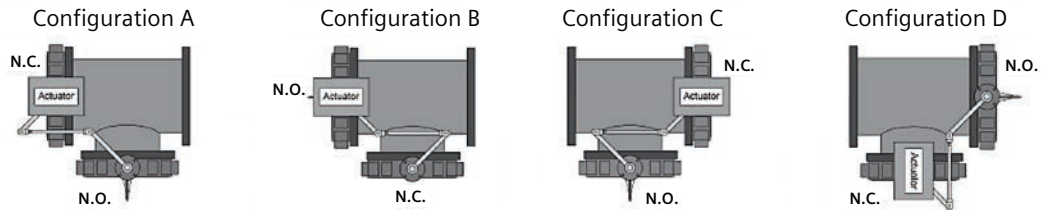
3-Way, Under Cut Valve Size (in.)	Actuator Part Number	Assembly Part Number
<b>2-Position, SR with Switches</b>		
4	GCA126.3U	B304Ux-GCA126.3U
<b>0 to 10Vdc, NSR Without Switches</b>		
4	GIB161.3U	B304Ux-GIB161.3U
5	GIB161.3U-D	B305Ux-GIB161.3U
6		B306Ux-GIB161.3U
<b>Floating, NSR Without Switches</b>		
4	GIB131.3U	B304Ux-GIB131.3U
5	GIB131.3U-D	B305Ux-GIB131.3U
6		B306Ux-GIB131.3U
<b>0 to 10 Vdc SR Without Switches</b>		
4	GCA161.3U	B304Ux-GCA161.3U
<b>2-Position, SR Without Switches</b>		
4	GCA121.3U(-D)	B304Ux-GCA121.3U

(-D) denotes dual actuators

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Valves

### Three-Way Assembly Configurations



Siemens offers a 5-year warranty on valves and actuators



## Two-Way Butterfly Valves

### 24V Industrial Actuator Assemblies

#### Two-Way, Full Cut, 24V with Industrial Actuators Assemblies

2-Way, Full Cut		Actuator Part Number	High Temp	Standard Temp
Valve Size (in.)	Valve Part No.		Assembly Part No.	
<b>0 to 10V/4 to 20 mA</b>				
2	B202F	A166.600	B202Fx-HA166.600	B202Fx-SA166.600
2-1/2	B225F		B225Fx-HA166.600	B225Fx-SA166.600
3	B203F		B203Fx-HA166.600	B203Fx-SA166.600
4	B204F		B204Fx-HA166.600	B204Fx-SA166.600
5	B205F	A166.600	—	B205Fx-SA166.600
		A166.2K	B205Fx-HA166.2K	—
6	B206F	A166.2K	B206Fx-HA166.2K	—
		A166.600	—	B206Fx-SA166.600
8	B208F	A166.2K	B208Fx-HA166.2K	B208Fx-SA166.2K
10	B210F	A166.5K	B210Fx-HA166.5K	B210Fx-SA166.5K
<b>Two-Position</b>				
2	B202F	A126.600	B202Fx-HA126.600	B202Fx-SA126.600
2-1/2	B225F		B225Fx-HA126.600	B225Fx-SA126.600
3	B203F		B203Fx-HA126.600	B203Fx-SA126.600
4	B204F		B204Fx-HA126.600	B204Fx-SA126.600
5	B205F	A126.600	—	B205Fx-SA126.600
		A126.2K	B205Fx-HA126.2K	—
6	B206F	A126.2K	B206Fx-HA126.2K	—
		A126.600	—	B206Fx-SA126.600
8	B208F	A126.2K	B208Fx-HA126.2K	B208Fx-SA126.2K
10	B210F	A126.5K	B210Fx-HA126.5K	B210Fx-SA126.5K

x = O (Normally Open) or C (Normally Closed)

#### Two-Way, Under Cut, 24V with Industrial Actuators Assemblies

2-Way, Under Cut		Actuator Part Number	High Temp	Standard Temp
Valve Size (in.)	Valve Part No.		Assembly Part No.	
<b>0 to 10V/4 to 20 mA</b>				
4	B204U	A166.600	B204Ux-HA166.600	B204Ux-SA166.600
5	B205U		B205Ux-HA166.600	B205Ux-SA166.600
6	B206U		B206Ux-HA166.600	B206Ux-SA166.600
8	B208U		B208Ux-HA166.2K	B208Ux-SA166.2K
10	B210U	A166.2K	B210Ux-HA166.2K	B210Ux-SA166.2K
12	B212U	A166.5K	B212Ux-HA166.5K	B212Ux-SA166.5K
14	B214U		B214Ux-HA166.5K	B214Ux-SA166.5K
<b>Two-Position</b>				
4	B204U	A126.600	B204Ux-HA126.600	B204Ux-SA126.600
5	B205U		B205Ux-HA126.600	B205Ux-SA126.600
6	B206U		B206Ux-HA126.600	B206Ux-SA126.600
8	B208U		B208Ux-HA126.2K	B208Ux-SA126.2K
10	B210U	A126.2K	B210Ux-HA126.2K	B210Ux-SA126.2K
12	B212U	A126.5K	B212Ux-HA126.5K	B212Ux-SA126.5K
14	B214U		B214Ux-HA126.5K	B214Ux-SA126.5K

x = O (Normally Open) or C (Normally Closed)

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Valves



Siemens offers a 5-year warranty on valves and actuators

# Three-Way Butterfly Valves

## 24V Industrial Actuator Assemblies

### Three-Way, Full Cut Valves with 24V Industrial Actuators Assemblies

3-Way, Full Cut		Actuator Part Number	High Temp	Standard Temp
Valve Size (in.)	Valve Part No.		Assembly Part No.	
<b>0 to 10V/4 to 20 mA</b>				
2	B302F	A166.600	B302Fx-HA166.600	B302Fx-SA166.600
2-1/2	B325F		B325Fx-HA166.600	B325Fx-SA166.600
3	B303F		B303Fx-HA166.600	B303Fx-SA166.600
4	B304F		B304Fx-HA166.600	B304Fx-SA166.600
5	B305F		B305Fx-HA166.600	B305Fx-SA166.600
6	B306F		B306Fx-HA166.600	B306Fx-SA166.600
8	B308F	A166.2K	B308Fx-HA166.2K	B308Fx-SA166.2K
10	B310F	A166.5K	B310Fx-HA166.5K	B310Fx-SA166.5K
<b>Two-Position</b>				
2	B302F	A126.600	B302Fx-HA126.600	B302Fx-SA126.600
2-1/2	B325F		B325Fx-HA126.600	B325Fx-SA126.600
3	B303F		B303Fx-HA126.600	B303Fx-SA126.600
4	B304F		B304Fx-HA126.600	B304Fx-SA126.600
5	B305F		B305Fx-HA126.600	B305Fx-SA126.600
6	B306F		B306Fx-HA126.600	B306Fx-SA126.600
8	B308F	A126.2K	B308Fx-HA126.2K	B308Fx-SA126.2K
10	B310F	A126.5K	B310Fx-HA126.5K	B310Fx-SA126.5K

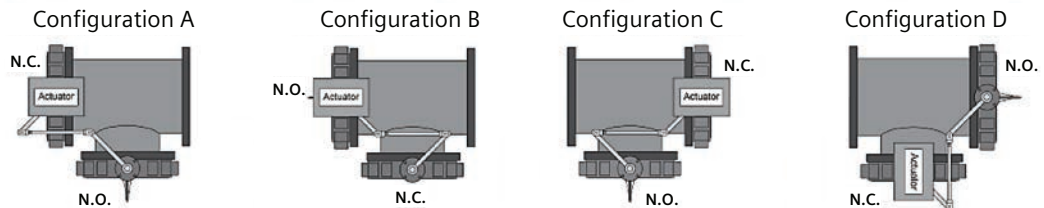
x= A, B, C or D

### Three-Way Under Cut Valves with 24V Industrial Actuators Assemblies

3-Way, Under Cut		Actuator Part Number	High Temp	Standard Temp
Valve Size (in.)	Valve Part No.		Assembly Part No.	
<b>0 to 10V/4 to 20 mA</b>				
4	B304U	A166.600	B304Ux-HA166.600	B304Ux-SA166.600
5	B305U		B305Ux-HA166.600	B305Ux-SA166.600
6	B306U	A166.2K	B306Ux-HA166.2K	B306Ux-SA166.2K
8	B308U		B308Ux-HA166.2K	B308Ux-SA166.2K
10	B310U	A166.5K	B310Ux-HA166.2K	B310Ux-SA166.2K
12	B312U		B312Ux-HA166.5K	B312Ux-SA166.5K
14	B314U		B314Ux-HA166.5K	B314Ux-SA166.5K
<b>Two-Position</b>				
4	B304U	A126.600	B304Ux-HA126.600	B304Ux-SA126.600
5	B305U		B305Ux-HA126.600	B305Ux-SA126.600
6	B306U	A126.2K	B306Ux-HA126.2K	B306Ux-SA126.2K
8	B308U		B308Ux-HA126.2K	B308Ux-SA126.2K
10	B310U	A126.5K	B310Ux-HA126.2K	B310Ux-SA126.2K
12	B312U		B312Ux-HA126.5K	B312Ux-SA126.5K
14	B314U		B314Ux-HA126.5K	B314Ux-SA126.5K

x= A, B, C or D

### Three-Way Assembly Configurations



Siemens offers a 5-year warranty on valves and actuators

## Two-Way Butterfly Valves

120V Industrial Actuator Assemblies

### Two-Way Full Cut Valves with 120V Industrial Actuators Assemblies

2-Way, Full Cut		Actuator Part No.	High Temp	Standard Temp	Actuator Part No.	High Temp	Standard Temp
Valve Size (in)	Actuator Part No.		Assembly Part No.			Assembly Part No.	
			0 to 10V/4 to 20 mA			Two-Position	
2	B202F	A266.600	B202Fx-HA266.600	B202Fx-SA266.600	A226.600	B202Fx-HA226.600	B202Fx-SA226.600
2-1/2	B225F		B225Fx-HA266.600	B225Fx-SA266.600		B225Fx-HA226.600	B225Fx-SA226.600
3	B203F		B203Fx-HA266.600	B203Fx-SA266.600		B203Fx-HA226.600	B203Fx-SA226.600
4	B204F		B204Fx-HA266.600	B204Fx-SA266.600		B204Fx-HA226.600	B204Fx-SA226.600
5	B205F	A266.600	—	B205Fx-SA266.600	A226.600	—	B205Fx-SA226.600
	B205F	A266.1K	B205Fx-HA266.1K	—	A226.1K	B205Fx-HA226.1K	—
6	B206F	A266.1K	B206Fx-HA266.1K	—	A226.600	—	B206Fx-SA226.600
	B206F	A266.600	—	B206Fx-SA266.600	A226.1K	B206Fx-HA226.1K	—
8	B208F	A266.2K	B208Fx-HA—266.2K	B208Fx-SA266.2K	A226.2K	B208Fx-HA226.2K	B208Fx-SA226.2K
10	B210F	A266.3K	—	B210Fx-SA266.3K	A226.3K	—	B210Fx-SA226.3K
	B210F	A266.5K	B210Fx-HA266.5K	—	A226.5K	B210Fx-HA226.5K	—
12	B212F	A266.5K	—	B212Fx-SA266.5K	A226.5K	—	B212Fx-SA226.5K
		A266.6K	B212Fx-HA266.6K	—	A226.6K	B212Fx-HA226.6K	—
14	B214F	A266.6K	—	B214Fx-SA266.6K	A226.6K	—	B214Fx-SA226.6K
		A266.13K	B214Fx-HA266.13K	—	A226.13K	B214Fx-HA226.13K	—
16	B216F	A266.13K	B216Fx-HA266.13K	B216Fx-SA266.13K	A226.13K	B216Fx-HA226.13K	B216Fx-SA226.13K
18	B218F	A266.13K	—	B218Fx-SA266.13K	A226.13K	—	B218Fx-SA226.13K
		A266.18K	B218Fx-HA266.18K	—	A226.18K	B218Fx-HA226.18K	—
20	B220F	A266.18K	—	B220Fx-SA266.18K	A226.18K	—	B220Fx-SA226.18K
		A266.21K	B220Fx-HA266.21K	—	A226.21K	B220Fx-HA226.21K	—
24	B224F	A266.21K	—	B224Fx-SA266.21K	A226.21K	—	B224Fx-SA226.21K
		A266.41K	B224Fx-HA266.41K	—	A226.41K	B224Fx-HA226.41K	—

x = O (Normally Open) or C (Normally Closed)

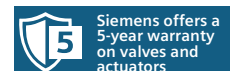
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Valves

### Two-Way Under Cut Valves with 120V Industrial Actuators Assemblies.

2-Way, Under Cut		Actuator Part No.	High Temp	Standard Temp	Actuator Part No.	High Temp	Standard Temp
Valve Size (in)	Actuator Part No.		Assembly Part No.			Assembly Part No.	
			0 to 10V/4 to 20 mA			Two-Position	
4	B204U	A266.600	B204Ux-HA266.600	B204Ux-SA266.600	A226.600	B204Ux-HA226.600	B204Ux-SA226.600
5	B205U		B205Ux-HA266.600	B205Ux-SA266.600		B205Ux-HA226.600	B205Ux-SA226.600
6	B206U		B206Ux-HA266.600	B206Ux-SA266.600		B206Ux-HA226.600	B206Ux-SA226.600
8	B208U	A266.1K	B208Ux-HA266.1K	B208Ux-SA266.1K	A226.1K	B208Ux-HA226.1K	B208Ux-SA226.1K
10	B210U	A266.2K	B210Ux-HA266.2K	B210Ux-SA266.2K	A226.2K	B210Ux-HA226.2K	B210Ux-SA226.2K
12	B212U	A266.3K	B212Ux-HA266.3K	B212Ux-SA266.3K	A226.3K	B212Ux-HA226.3K	B212Ux-SA226.3K
14	B214U	A266.5K	B214Ux-HA266.5K	B214Ux-SA266.5K	A226.5K	B214Ux-HA226.5K	B214Ux-SA226.5K
16	B216U	A266.6K	—	B216Ux-SA266.6K	A226.6K	—	B216Ux-SA226.6K
		A266.13K	B216Ux-HA266.13K	—	A226.13K	B216Ux-HA226.13K	—
18	B218U	A266.6K	—	B218Ux-SA266.6K	A226.6K	—	B218Ux-SA226.6K
		A266.13K	B218Ux-HA266.13K	—	A226.13K	B218Ux-HA226.13K	—
20	B220U	A266.13K	B220Ux-HA266.13K	B220Ux-SA266.13K	A226.13K	B220Ux-HA226.13K	B220Ux-SA226.13K
24	B224U	A266.18K	B224Ux-HA266.18K	B224Ux-SA266.18K	A226.18K	B224Ux-HA226.18K	B224Ux-SA226.18K

x = O (Normally Open) or C (Normally Closed)



# Three-Way Butterfly Valves

## 120V Industrial Actuator Assemblies

### Three-Way Full Cut Valves with 120V Industrial Actuators Assemblies

3-Way, Full Cut	Valve Size (in)	Actuator Part No.	High Temp	Standard Temp	Actuator Part No.	High Temp	Standard Temp
			Assembly Part No.			Assembly Part No.	
			0 to 10V/4 to 20 mA			Two-Position	
2	A266.600	B302Fx-HA266.600	B302Fx-SA266.600	A226.600	B302Fx-HA226.600	B302Fx-SA226.600	
2-1/2		B325Fx-HA266.600	B325Fx-SA266.600		B325Fx-HA226.600	B325Fx-SA226.600	
3		B303Fx-HA266.600	B303Fx-SA266.600		B303Fx-HA226.600	B303Fx-SA226.600	
4		B304Fx-HA266.600	B304Fx-SA266.600		B304Fx-HA226.600	B304Fx-SA226.600	
5	A266.600	—	B305Fx-SA266.600	A226.600	—	B305Fx-SA226.600	
6	A266.1K	B305Hx-HA266.1K	—	A226.1K	B305Fx-HA226.1K	—	
	A266.2K	B306Fx-HA266.2K	B306Fx-SA266.2K	A226.1K	—	B306Fx-SA226.600	
8	A266.2K	B308Fx-HA266.2K	B308Fx-SA266.2K	A226.2K	B308Fx-HA226.2K	B308Fx-SA226.2K	
10	A266.5K	B310Fx-HA266.5K	B310Fx-SA266.5K	A226.5K	B310Fx-HA226.2K	B310Fx-SA226.3K	
12	A266.6K	—	B312Fx-SA266.6K	A226.6K	—	B312Fx-SA226.5K	
	A266.13K	B312Fx-HA266.13K	—	A226.13K	B312Fx-HA226.6K	—	
14	A266.13K	B314Fx-HA266.13K	B314Fx-SA266.13K	A226.13K	B314Fx-HA226.13K	B314Fx-SA226.6K	
16	A266.13K	B316Fx-HA266.13K	B316Fx-SA266.13K	A226.13K	B316Fx-HA226.13K	B316Fx-SA226.13K	
18	A266.18K	B318Fx-HA266.18K	B318Fx-SA266.18K	A226.18K	B318Fx-HA226.18K	B318Fx-SA226.13K	
20	A266.41K	B320Fx-HA266.41K	B320Fx-SA266.41K	A226.21K	—	B320Fx-SA226.18K	
	A266.41K	B324Fx-HA266.41K	B324Fx-SA266.41K	A226.41K	B320Fx-HA226.21K	—	
24	A266.41K	B324Fx-HA266.41K	B324Fx-SA266.41K	A226.41K	B324Fx-HA226.41K	B324Fx-SA226.41K	

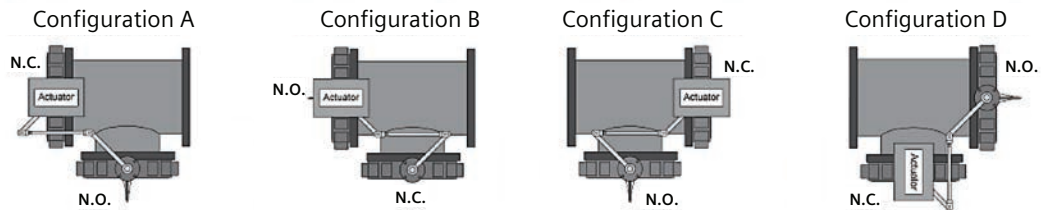
x= A, B, C or D (See Figure 1.)

### Three-Way Under Cut Valves with 120V Industrial Actuators Assemblies

3-Way, Under Cut	Valve Size (in)	Actuator Part No.	High Temp	Standard Temp	Actuator Part No.	High Temp	Standard Temp
			Assembly Part No.			Assembly Part No.	
			0 to 10V/4 to 20 mA			Two-Position	
4	A266.600	B304Ux-HA266.600	B304Ux-SA266.600	A226.600	B304Ux-HA226.600	B304Ux-SA226.600	
5		B305Ux-HA266.600	B305Ux-SA266.600		B305Ux-HA226.600	B305Ux-SA226.600	
6	A266.1K	B306Ux-HA266.600	B306Ux-SA266.600	A226.1K	B306Ux-HA226.1K	B306Ux-SA226.1K	
8	A266.1K	B308Ux-HA266.1K	B308Ux-SA266.1K	A226.1K	B308Ux-HA226.1K	B308Ux-SA226.1K	
10	A266.2K	B310Ux-HA266.2K	B310Ux-SA266.2K	A226.2K	B310Ux-HA226.2K	B310Ux-SA226.2K	
12	A266.5K	B312Ux-HA266.3K	B312Ux-SA266.3K	A226.3K	—	B312Ux-SA226.3K	
	A266.5K	—	—	A226.5K	B312Ux-HA226.5K	—	
14	A266.5K	B314Ux-HA266.5K	B314Ux-SA266.5K	A226.5K	B314Ux-HA226.5K	B314Ux-SA226.5K	
16	A266.13K	B316Ux-HA266.13K	B316Ux-SA266.13K	A226.13K	B316Ux-HA226.13K	B316Ux-SA226.13K	
18		B318Ux-HA266.13K	B318Ux-SA266.13K		B318Ux-HA226.13K	B318Ux-SA226.13K	
20		B320Ux-HA266.13K	B320Ux-SA266.13K		B320Ux-HA226.13K	B320Ux-SA226.13K	
24	A266.18K	B324Ux-HA266.18K	B324Ux-SA266.18K	A226.18K	B324Ux-HA226.18K	B324Ux-SA226.18K	

x= A, B, C or D (See Figure 1.)

### Three-Way Assembly Configurations



Siemens offers a 5-year warranty on valves and actuators

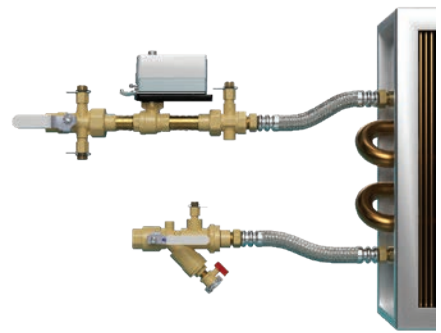
# Piping Packages

PICV, Ball and Globe packages

1/2" to 2" sizes available

12" to 24" hoses

Different connection sizes included  
to match field requirements



Assembly Number	Control Valve PN	Actuator PN	Control Valve Size	Connection Line Size	Hose Yes/No	Hose Length
<b>PICV Piping Package Part Numbers*</b>						
230043200.5-A2AAX	230-04320-0.5	SSD81U	0.5"	0.5"	No	NA
232043200.5-A2AAX	232-04320-0.5	SSD81.5U	0.5"	0.5"	No	NA
231043200.5-A2AAX	231-04320-0.5	SSD61U	0.5"	0.5"	No	NA
233043200.5-A2AAX	233-04320-0.5	SSD61.5U	0.5"	0.5"	No	NA
230043200.5-A2BMX	230-04320-0.5	SSD81U	0.5"	0.75"	No	NA
232043200.5-A2BMX	232-04320-0.5	SSD81.5U	0.5"	0.75"	No	NA
231043200.5-A2BMX	231-04320-0.5	SSD61U	0.5"	0.75"	No	NA
233043200.5-A2BMX	233-04320-0.5	SSD61.5U	0.5"	0.75"	No	NA
230043000.5-A2BMX	230-04300-0.5	SSD81U	0.5"	0.75"	No	NA
230043200.5-A2AAA	230-04320-0.5	SSD81U	0.5"	0.5"	Yes	12"
232043200.5-A2AAA	232-04320-0.5	SSD81.5U	0.5"	0.5"	Yes	12"
231043200.5-A2AAA	231-04320-0.5	SSD61U	0.5"	0.5"	Yes	12"
233043200.5-A2AAA	233-04320-0.5	SSD61.5U	0.5"	0.5"	Yes	12"
230043000.5-A2AAA	230-04300-0.5	SSD81U	0.5"	0.5"	Yes	12"
230043200.5-A2AAB	230-04320-0.5	SSD81U	0.5"	0.5"	Yes	18"
232043200.5-A2AAB	232-04320-0.5	SSD81.5U	0.5"	0.5"	Yes	18"
231043200.5-A2AAB	231-04320-0.5	SSD61U	0.5"	0.5"	Yes	18"
233043200.5-A2AAB	233-04320-0.5	SSD61.5U	0.5"	0.5"	Yes	18"
230043200.5-A2BMC	230-04320-0.5	SSD81U	0.5"	0.75"	Yes	12"
232043200.5-A2BD	232-04320-0.5	SSD81.5U	0.5"	0.75"	Yes	18"
<b>Ball Piping Package Part Numbers*</b>						
171H10300-A2AAABX	171H-10300	GQD121.1P	0.5"	0.5"	No	NA
172H10300-A2AAABX	172H-10300	GQD121.1P	0.5"	0.5"	No	NA
171J10303-A2AAABX	171J-10303	GQD131.1P	0.5"	0.5"	No	NA
171K10303-A2AAABX	171K-10303	GQD151.1P	0.5"	0.5"	No	NA
171H10300S-A2AAABX	171H-10300S	GQD121.1P	0.5"	0.5"	No	NA
172H10300S-A2AAABX	172H-10300S	GQD121.1P	0.5"	0.5"	No	NA
171J10303S-A2AAABX	171J-10303S	GQD131.1P	0.5"	0.5"	No	NA
171K10303S-A2AAABX	171K-10303S	GQD151.1P	0.5"	0.5"	No	NA
171H10300-A2BMBBX	171H-10300	GQD121.1P	0.5"	0.75"	No	NA
172H10300-A2BMBBX	172H-10300	GQD121.1P	0.5"	0.75"	No	NA
171H10300S-A2BMBBX	171H-10300S	GQD121.1P	0.5"	0.75"	No	NA
172H10300S-A2BMBBX	172H-10300S	GQD121.1P	0.5"	0.75"	No	NA
171H10300-A2AAABA	171H-10300	GQD121.1P	0.5"	0.5"	Yes	12"
172H10300-A2AAABA	172H-10300	GQD121.1P	0.5"	0.5"	Yes	12"
171H10300-A2AAABB	171H-10300	GQD121.1P	0.5"	0.5"	Yes	18"
172H10300-A2AAABB	172H-10300	GQD121.1P	0.5"	0.5"	Yes	18"
171H10300-A2BMBBC	171H-10300	GQD121.1P	0.5"	0.75"	Yes	12"
172H10300-A2BMBBC	172H-10300	GQD121.1P	0.5"	0.75"	Yes	12"
171A10300-A2BMBBD	171A-10300	GDE131.1P	0.5"	0.75"	Yes	18"
171C10300-A2BMBBD	171C-10300	GDE161.1P	0.5"	0.75"	Yes	18"
<b>Globe Piping Package Part Numbers*</b>						
25902000-A2AAABX	259-02000	SSC81U	0.5"	0.5"	No	NA
26102000-A2AAABX	261-02000	SSC161.05U	0.5"	0.5"	No	NA
26002000-A2AAABX	260-02000	SSC131.39U	0.5"	0.5"	No	NA
26202000-A2AAABX	262-02000	SSC161.35U	0.5"	0.5"	No	NA
25902015-A2AAABX	259-02015	SSC81U	0.5"	0.5"	No	NA
26102015-A2AAABX	261-02015	SSC161.05U	0.5"	0.5"	No	NA
25902000-A2BMBBX	259-02000	SSC81U	0.5"	0.75"	No	NA
26102000-A2BMBBX	261-02000	SSC161.05U	0.5"	0.75"	No	NA
25902015-A2BMBBX	259-02015	SSC81U	0.5"	0.75"	No	NA
26102015-A2BMBBX	261-02015	SSC161.05U	0.5"	0.75"	No	NA
25902000-A2CVCA	259-02000	SSC81U	0.5"	1"	No	NA
26102000-A2CVCA	261-02000	SSC161.05U	0.5"	1"	No	NA
26102015-A2CVCA	261-02015	SSC161.05U	0.5"	1"	No	NA
25902000-A2AAABA	259-02000	SSC81U	0.5"	0.5"	Yes	12"
25902015-A2AAABA	259-02015	SSC81U	0.5"	0.5"	Yes	18"
36602000-A2BMBBC	366-02000	SAS81.33U	0.5"	0.75"	Yes	12"
26002015-A2BMBBD	260-02015	SSC131.39U	0.5"	0.75"	Yes	18"
25902000-A2CVCAE	259-02000	SSC81U	0.5"	1"	Yes	12"
36302015-A2CVCAE	363-02015	SAS81.03U	0.5"	1"	Yes	12"
36402000-A2CVCAF	364-02000	SAS61.03U	0.5"	1"	Yes	18"

\*These are only a small subset of example part numbers. Please use HIT to configure your piping package part numbers



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# We're **happy** to assist you

Our customer support team is ready to assist you with general inquiries, ordering, fulfillment, shipping questions, and more.

Call your dedicated support specialist at 800-516-9964 from 6:30 am–5:30 pm Central time Monday–Friday.

Additionally, product information and order support is available online for your convenience at [usa.siemens.com/iMall](https://usa.siemens.com/iMall).

**SIEMENS**

## Pressure Independent Control Valves



A-83

Valves

### Three functions in one streamlined device

2-Way Pressure Independent Control Valves are uniquely designed with three functions integrated into one single device: control valve, adjustable flow limiter, and automatic pressure regulator. This 3-in-1 device improves accuracy and reliability – regardless of pressure fluctuations. Install them for an excellent solution when trying to achieve hydronic balancing in room, zone and many other HVAC applications.

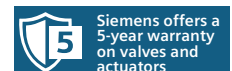
The combination of control valve and differential pressure regulator in one valve simplifies installation and makes commissioning fast and easy. Count on them to help prolong maintenance and preserve the life of HVAC equipment, enhance room comfort and optimize energy efficiency. Pair them with SSD, SAY, SAX, SAV and SQV Series spring return and non-spring return valve actuators and you have the ideal solution for renovations, expansions, and new construction projects.

### Control Valve Features

- A comprehensive portfolio of 1/2 to 6 inch PICVs
- Threaded valves are ANSI Class 250
- Flanged valves available in ANSI Class 125 and 250
- Low ANSI Class IV leakage
- Brass trim with stainless steel stem
- Automatically adjusts to pressure fluctuations in the system, maintaining consistent flow at any given control setting while providing better comfort and lower energy consumption
- No mutual hydronic interaction between branches with different operational situations, preventing over or undersupply
- Fast commissioning with extremely simplified hydronic balancing

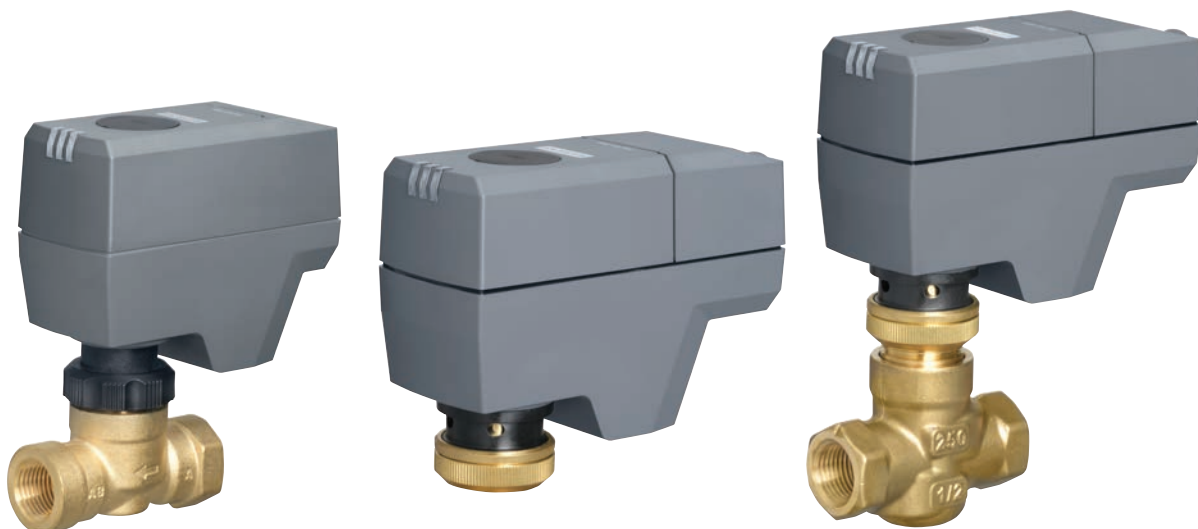
### Field Adjustable Flow Limiter Features

- Full stroke always maintained regardless of maximum flow setting enabling higher control accuracy
- Easily adjust maximum flow at any time when usage patterns change
- Presetting prevents oversupply to the coil





Siemens offers a 5-year warranty on valves and actuators.



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# More functions. More applications. **More opportunities.**

Designed with you in mind, the new line of SS series modulating room actuators used with Zone and Powermite Globe Valve assemblies have enhanced performance features to improve building operations.

The self-calibrating actuators with three LED indicators for position and actuator motion provide status and actuator information for easier troubleshooting and improved

productivity. More application opportunities await with actuators that have a low noise level, are pre-configured out of the box, and boast a modern and compact design.

Discover the difference with Siemens innovations for efficient flow control to optimize comfort.

Visit [usa.siemens.com/valves](http://usa.siemens.com/valves) to learn more.

**SIEMENS**



## Two-Way PICV

*Control Valve, Adjustable Flow Limiter, and Automatic Pressure Regulator*

*1/2 to 2" Brass Body*

*ANSI Class 250*

*Normally Open or Normally Closed*



1/2 to 1-1/4" Two-Way NO  
Pressure Independent Control Valve.



1/2 to 1-1/4" Two-Way NC  
Pressure Independent Control Valve.



1-1/2 to 2" Two-Way NO  
Pressure Independent Control Valve.

### Description

Siemens Pressure Independent Control Valves integrate three functions into a single device: control valve, adjustable flow limiter, and automatic pressure regulator. The 1/2-inch Normally Open valves have a 2.5 mm stroke, and a threaded valve bonnet for use with SSD Electronic Valve Actuators. The 3/4- to 1-1/4-inch Normally Open and 1/2 to 1-1/4 inch Normally Closed Valves have a 5 or 5.5 mm stroke, and a threaded valve bonnet for use with SSD Electronic Valve Actuators. The 1-1/2 and 2-inch Normally Open Valves have a 15 mm stroke and use the SAY Electronic Valve Actuators.

### Features

- Control valve with integrated pressure regulator and adjustable flow limiter
- Direct-coupled, universal bonnet
- ANSI Class 250 valve body
- ANSI Class IV (0.01%) leakage
  - @ 200 psi for 1/2 to 1-1/4 inch normally open valves
  - @ 100 psi for 1-1/2 and 2 inch valves
  - @ 45 psi for 1/2 to 1-1/4 inch normally closed valves
- Linear Flow Characteristic
- Brass trim with stainless steel stem
- 1-1/2 and 2-Inch valves include P/T ports
- SAY actuators can be wired for normally closed operation; 0-10 V actuators require AZX61.1 Function Module, see technical instructions

### Applications

For use in HVAC applications with the Pressure Independent Control SSD or SAY Electronic Actuator, to control hot or chilled water or 50% water-glycol solution in closed loop systems.

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Valves

# Specifications

## Valve Specifications

<b>Body Material</b>	
1/2 to 1-1/4-inch	Brass
1-1/2 and 2-inch	Ductile Iron
<b>Stem</b>	Stainless Steel
<b>Line Size</b>	1/2-inch to 2-inch (15 mm to 50 mm)
<b>Action</b>	2-Way
<b>Valve Body Rating</b>	ANSI 250
<b>Close-off Pressure/Leakage Rate</b>	
1/2 to 1-1/4-inch, NO	200 psi/ANSI Class IV (0.01%)
1/2 to 1-1/4-inch, NC	45 psi/ANSI Class IV (0.01%)
1-1/2 and 2-inch	100 psi/ANSI Class IV (0.01%)
<b>Medium Temperature Range</b>	34° to 248°F (1° to 120°C)
<b>Flow Characteristic</b>	Linear
<b>Connection</b>	NPT threaded

## Actuator Specifications

<b>Operating Voltage</b>	
SSD81U/SSD81.5U/SSD61.5U	24 Vac
SSD61U/SAY/Rack and Pinion	24 Vac/dc
<b>Frequency</b>	60 Hz

## Power Consumption (Normal Operation)

SSD81U	0.8 VA
SSD81.5U	2 VA
SSD61U	2.5 VA
SSD61.5U	2 VA
SAY61.03U	8 VA
599-03617NO/ 599-03617NC	3.5VA

## Signal

SSD81U, SSD81.5U, SAY81.03U	Floating
SSD61U, SSD61.5U	0 to 10 Vdc
SAY61.03U	0 to 10 Vdc or 4 to 20 mA
599-03617NO/ 599-03617NC	0(2) to 10 Vdc

## Run Time (in seconds)

	2.5 mm Stroke	5/5.5 mm Stroke	15 mm Stroke
SSD81U	75 seconds	150 seconds	—
SSD81.5U	70 seconds	125 seconds	—
SSD61U	45 seconds	90 seconds	—
SSD61.5U	15 seconds	30 seconds	—
SAY	—	—	30 seconds
599-03617NO/ NC	—	—	60 seconds

## Force

SSD (NSR)	>56 lbs. (250 N)
SSD (SR)	>67 lbs. (300 N)
SAY	>44 lbs. (200 N)




## Agency Certification

UL	Meets UL 873
cUL	Certified to Canadian Standard C22.2 No. 24.93
Mounting Location	NEMA 1 (Interior only)

## Flow Range

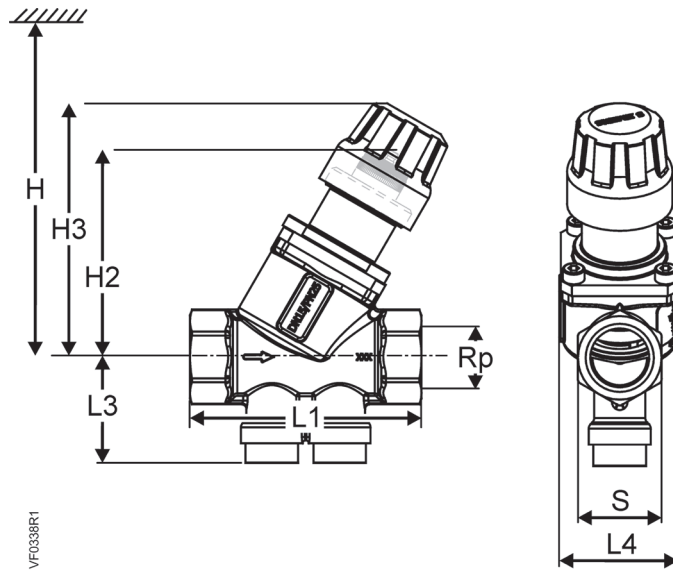
Size in.	Δp max (psi)	GPM Flow Range	NO	NC
			Valve Body	
1/2	58	0.3 to 1.6	599-04320	—
		0.3 to 2.7	—	599-04300
		1 to 5.8	599-04321	—
		1 to 7.5	—	599-04301
3/4		0.5 to 4.5	—	599-04302
		1.3 to 8	599-04322	—
		1 to 8.9	—	599-04303
1		1 to 8.9	—	599-04304
	2.6 to 16	599-04323	—	
1-1/4	2.5 to 13.2	—	599-04305	
	3 to 18	599-04314	—	
1-1/2	10 to 40	599-04315	—	
2	10 to 50	599-04316	—	

## Product Ordering

Description		Part No.	Actuator Prefix Code	
	Electro-Mechanical	Floating, Spring Return	SSD81.5U	232
		0-10 Vdc, Spring Return	SSD61.5U	233
		Floating, Non-Spring Return	SSD81U	230
		0-10 Vdc, Non-Spring Return	SSD61U	231
	Electro-Mechanical	0 to 10 V or 4 to 20 mA, Non-Spring Return	SAY61.03U	335
	Rack and Pinion	0(2) to 10V, Spring Return	599-03617NO	337NO
		0(2) to 10V, Spring Return	599-03617NC	337NC

# Dimensions

## NO – 1/2 to 2 inch Valves



VF038R1

Dimensions shown in inches (mm).

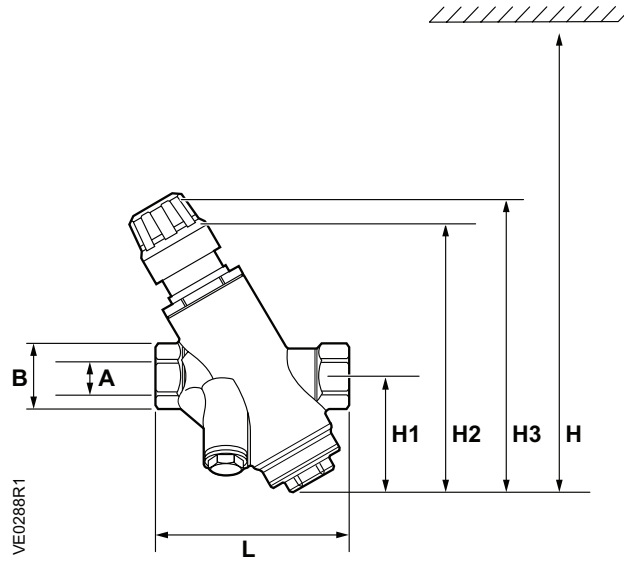
A-87

Valves

Valve Size Inches Rp	Dimensions										Weight	
	S	L1	L3	L4	H2	H3	H	lb.	(kg)			
1/2	1.1 (27)	3.0 (75)	1.6 (41)	1.5 (38)	2.6 (67.3)	3.2 (82.4)	14.6 (371)	1.1	(0.50)			
3/4	1.25 (32)	3.1 (79)	1.6 (41)	1.5 (38)	2.7 (67.5)	3.3 (82.5)	14.7 (374)	1.2	(0.53)			
1	1.5 (40)	4.0 (100)	1.7 (44)	1.5 (38)	2.8 (71)	3.3 (82.5)	14.7 (374)	2.5	(1.14)			
1-1/4	1.8 (46)	4.1 (104)	2.1 (53)	2.5 (65)	3.4 (86)	4.0 (100)	15.4 (391)	2.8	(1.27)			
1-1/2	2.3 (58)	5.4 (138)	2.7 (68)	3.7 (94)	5.9 (149)	–	20 (508)	7.2	(3.28)			
2	2.8 (72)	5.4 (138)	2.9 (74)	3.7 (94)	5.9 (149)	–	20 (508)	8.2	(3.71)			

# Dimensions

## NC – 1/2 to 1-1/4 Inch Valves



Dimensions shown in inches (mm).

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Valves

Valve Size in.	Dimensions							Weight	
	A	B	L	H1	H2	H3	H	lb.	(kg)
1/2	.50 (15)	1.1 (27)	3.5 (88)	2.1 (53)	4.8 (123)	5.3 (135)	16.3 (414)	2.0	(0.9)
	.50 (15)	1.1 (27)	3.5 (88)	2.1 (53)	4.8 (123)	5.3 (135)	16.3 (414)	2.0	(0.9)
3/4	.75 (20)	1.3 (32)	3.5 (88)	2.1 (53)	4.8 (123)	5.3 (135)	16.3 (414)	2.0	(0.9)
	.75 (20)	1.3 (32)	3.5 (88)	2.1 (53)	4.8 (123)	5.3 (135)	16.3 (414)	2.0	(0.9)
1	1.0 (25)	1.5 (40)	3.6 (92)	2.1 (53)	4.8 (123)	5.3 (135)	16.3 (414)	2.0	(0.9)
1-1/4	1.25 (32)	1.8 (46)	5.0 (125)	2.7 (69)	5.7 (145)	6.2 (158)	19.9 (505)	3.3	(1.5)

## SSD Series Electronic Valve Actuators

24 Vac, Floating or 0 to 10 Vdc Control  
Spring Return and Non-Spring Return



SSD Series Spring Return Electronic Valve Actuator.



SSD Series Non-Spring Return Electronic Valve Actuator.

### Description

Pressure Independent Control Series SSD Electronic Valve Actuators require a 24 Vac power supply and receive a floating control signal (SSD81...) or a proportional 0 to 10 Vdc signal (SSD61...) to control a valve. The 0 to 10V SSD61U actuator also accepts a 24 Vdc power supply.

These actuators are designed to work with 1/2- to 1-1/4-inch Pressure Independent Control Series Valves with a 1/10-inch (2.5 mm), 1/5-inch (5 mm), or 7/32-inch (5.5 mm) stroke and a threaded valve bonnet that fits the actuator.

### Features

- Nominal force >56 lbs (250 N)
- Floating or 0 to 10 Vdc control
- Spring return and non-spring return variants
- Automatic stroke calibration on the SSD61...
- Reduced power consumption in holding position
- Direct coupled installation; actuators mount on valves without tools or any adjustments required
- Manual override
- Visual position indication
- UL listed for plenum installation
- Maintenance-free, electromotoric actuator
- Plenum cable or 3/8" flex conduit connections

### Applications

For use in heating and cooling HVAC applications with Pressure Independent Control valves. They can be used in chilled/hot water applications or in water-glycol solutions up to 50% in closed loop systems. The Spring Return SSDx1.5U Series actuators accept plenum cable or 3/8-inch flex conduit connections.

# Specifications

**Operating Voltage**  
 Vac ..... 24 Vac ±20%  
 Vdc (SSD61U only) ..... 24 Vdc ±25%

**Frequency** ..... 50/60 Hz

**Power Consumption (Normal Operation)**  
 SSD81U ..... 0.8 VA max.  
 SSD61U ..... 2.5 VA max.  
 SSDx1.5U ..... 2 VA

**Control Signal**  
 SSD81xxx ..... Floating  
 SSD61xxx ..... 0 to 10 Vdc

**Run Time** ..... **2.5 mm Stroke** ..... **5 mm Stroke**  
 SSD81U ..... 75 Seconds ..... 150 Seconds  
 SSD61U ..... 45 Seconds ..... 90 Seconds  
 SSD81.5U ..... 70 Seconds ..... 125 Seconds  
 SSD61.5U ..... 15 Seconds ..... 30 Seconds

**Spring Return** ..... **2.5 mm Stroke** ..... **5 mm Stroke**  
 SSD81.5U ..... 15 Seconds ..... 30 Seconds  
 SSD61.5U ..... 15 Seconds ..... 30 Seconds

**Nominal Stroke** ..... 5 mm

**Nominal Force**  
 SSD81U, SSD61U ..... >56 lbs. (250N)  
 SSDx1.5U ..... >67 lbs. (300N)

**Agency Approvals**  
 UL ..... UL873  
 cUL ..... Certified to Canadian Standard C22.2 No. 24-93

**Ambient Temperature**  
 Operation ..... 41° to 122°F (5° to 50°C)  
 Transport/Storage ..... -13° to 158°F (-25° to 70°C)

**Humidity (Non-condensing)**  
 Operation ..... 5 to 85% rh  
 Transport ..... <95% rh  
 Storage ..... 5% to 95% rh

A-90

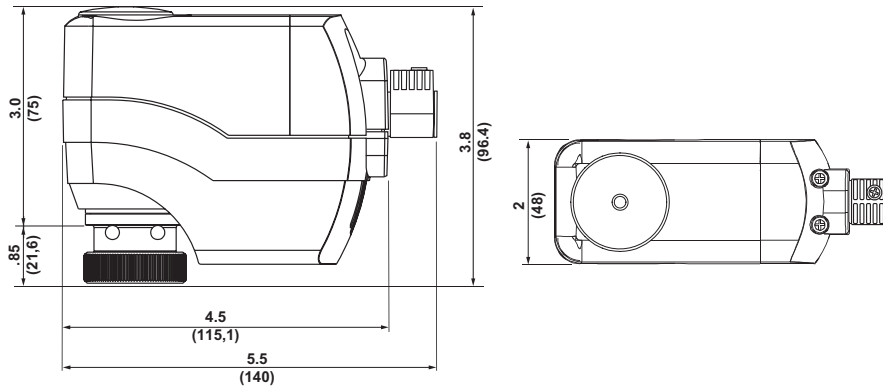
Valves

## Product Ordering

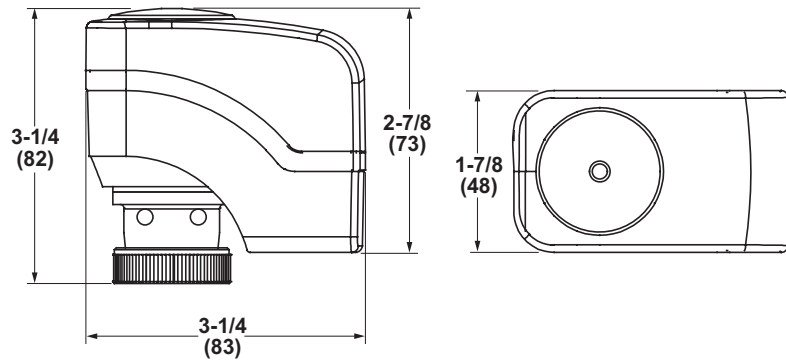
Description	Part No.	Actuator Prefix Code
<b>Spring Return</b>		
Floating	<b>SSD81.5U</b>	232
0 to 10 Vdc	<b>SSD61.5U</b>	233
<b>Non-Spring Return</b>		
Floating	<b>SSD81U</b>	230
0 to 10 Vdc	<b>SSD61U</b>	231

# Dimensions

## SSD Series Spring Return Actuator



## SSD Series Non-Spring Return Actuator



Dimensions shown in inches (mm).



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# Hydronic Flow Optimization turns your design goals into reality

The right devices in a hydronic system can lead to greater energy efficiency and significant savings in first costs and lifecycle costs. Discover total system performance solutions to optimize delta-T through precise control. Make your building operations more efficient and bring balance to your bottom line with the right valves, variable frequency drives, and differential pressure sensors for optimal hydronic system balancing.

Visit [usa.siemens.com/hfo](https://usa.siemens.com/hfo) to learn more.



**Energy Savings**

Up to 30%



**Maximize Comfort**

Hydronic flow optimization leads to higher comfort

**SIEMENS**



## Rack & Pinion Actuators

0-10V modulating

Pressure Independent Control



Rack & Pinion Actuator

### Description

The Pressure Independent Control Series Rack & Pinion Actuator couples an OpenAir® GPC Actuator to a 1-1/2- or 2-inch Pressure Independent Control Series two-way valve using a linkage. The linkage transforms the actuator rotary movement into the linear motion required to position the valve.

### Features

- Bi-directional fail-safe spring return
- Orderable as direct (Normally Open) or reverse (Normally Closed) acting
- Brushless DC motor technology with stall protection
- Pre-cabled
- Plenum-rated
- 60-second run time
- Integrated 1/2-inch NPT conduit connection
- Modulating control signal selectable 0 to 10V or 2 to 10V
- Modulating actuator has 0(2) to 10 Vdc feedback

### Applications

The Pressure Independent Control Series valves are used to control water and glycol solutions to 50 percent in small to large air handling units and central plant applications.

A-93

Valves



# Specifications

**Operating Voltage** ..... 24 Vac  $\pm$ 20%, 24 Vdc  $\pm$ 20%

**Frequency** ..... 50/60 Hz

**Power Consumption**  
 599-03617 assembly  
 (with GPC161.1P actuator) ..... 3.5 VA running, 2.8 VA holding

**Equipment rating** ..... 24 Vac/Vdc

**Control Signal**  
 Control Input (Y)  
 Voltage input ..... 0 (2) to 10 Vdc (max. 35 Vdc)  
 Input resistance ..... 100K ohms  
 Position output feedback signal ..... 0 (2) to 10 Vdc,  $\pm$ 1 mA maximum

**Run Time for 90°**  
 Operating with motor ..... 60 seconds  
 On power loss with spring return ..... 15 seconds, typical

**Ambient conditions**  
 Ambient temperature  
 Operation ..... 25°F to 130°F (-32°C to 55°C)  
 Storage and transport ..... -40°F to 158°F (-40°C to 70°C)  
 Ambient humidity (non-condensing) ..... 95% rh




**Mounting**  
 Nominal angle of rotation ..... 90°  
 Maximum angular rotation ..... 95°  
 Enclosure ..... NEMA 1

**Linkage**  
 Frame ..... Aluminum alloy frame  
 Construction ..... Steel rack, pinion and stem shaft pre-lubricated, bronze bushings

**Agency Approvals** ..... UL-listed per UL 60730  
 cUL to CSA 60730

**Physical characteristics**  
 Actuator enclosure ..... IP54  
 Pre-connected cable ..... 18 AWG, 3 ft (0.9 m)  
 Dimensions ..... See next page  
 Weight ..... 1.32 lb (0.60 kg)

## Product Ordering

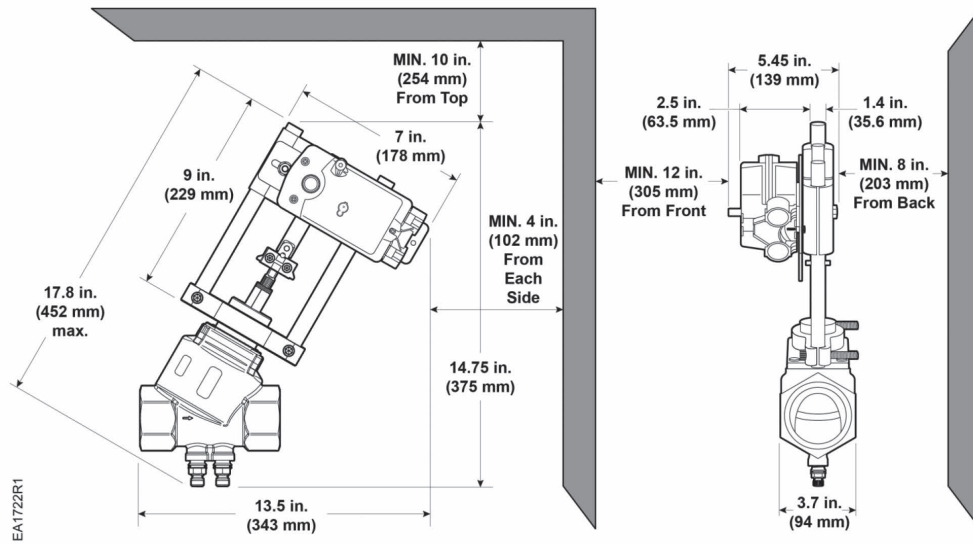
	Description	Part No.
	Assembly consisting of: OpenAir Electronic Actuator, linkage, and 1-1/2- inch or 2-inch Pressure Independent Control Series two-way valve body.  Product Number 337NO/NC-xxxx-xx includes: OpenAir GPC161.1P Electronic Actuator for 0 to 10 Vdc modulating control with a 24 Vac or 24 Vdc supply voltage.  The xxxx of the product number specifies a particular Pressure Independent Control Series valve body.	<b>337NO-xxxx-xx</b> <b>337NC-xxxx-xx</b>
	Assembly consisting of: OpenAir GPC161.1P Electronic Actuator and linkage.  The assembly is ready for field installation on a 1-1/2- or 2-inch Pressure Independent Control Series valve.	<b>599-03617NO</b> <b>599-03617NC</b>
	Linkage only.  For replacement or mounting of an alternate OpenAir GPC electronic actuator on the linkage and installation of that linkage/ actuator assembly on a 1-1/2-inch or 2-inch Pressure Independent Control Valve Series valve.	<b>599-03615</b>

A-94

Valves

# Dimensions

## Pressure Independent Control Series Rack & Pinion Actuator



EA172R1

Dimensions shown in inches (mm).

A-95

Valves



Siemens offers a 5-year warranty on valves and actuators.



A-96

# An easier delta-T solution featuring one device with three integrated functions

Siemens PICVs have the unique advantage of always maintaining their full stroke, regardless of the maximum adjustable flow setting, to provide better control. This significantly reduces or eliminates hunting for the right actuator setting, resulting in better control and increased comfort. With Siemens PICVs, there are less components, less installation effort, and fewer leak points which leads to fewer callbacks.

Visit [usa.siemens.com/valves](http://usa.siemens.com/valves) to learn more.

**SIEMENS**

## SAY Series Electronic Valve Actuator

24 V, 0 to 10 Vdc Control

Non-Spring Return



SAY Series Electronic Valve Actuator.

### Description

Pressure Independent Control Series SAY Non-Spring Return (NSR) Electronic Valve Actuators require a 0 to 10 Vdc or a 4 to 20 mA control signal to proportionally control a valve (SAY61.03U).

SAY actuators are designed to work with 1-1/2- or 2-inch normally open (NO) Siemens Pressure Independent Control Valves with a 5/8-inch (15 mm) stroke.

### Features

- 24 Vac/dc operating voltage
- Proportional control
- Direct-coupled installation requires no special tools or adjustments
- Manual override
- Overload and stall protection
- Visual stroke indication
- Non-spring return (fail-in-place)
- 45 lb (200N) nominal force
- Automatic stroke calibration
- LED status
- Electronic stroke indication
- Maintenance-free
- Optional functions with auxiliary switches, function module, and stem heater
- Can be wired for normally closed operations; proportional actuators require AZX61.1 function module. See Installation or Technical Instructions.

### Applications

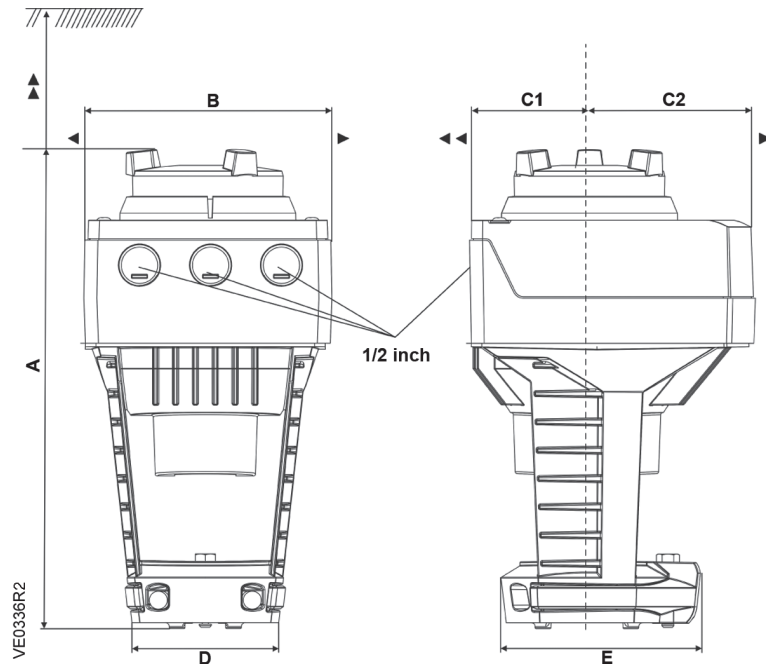
Typical applications include control of hot or chilled water or water-glycol solutions up to 50% in closed loop systems. They are ideal for installations requiring quick response and excellent resolution.

A-97

Valves



# Dimensions



Dimensions shown in inches (mm).

A-99

Valves

	Dimensions									Weight lb. (kg)
	A	B	C	C1	C2	D	E	▶	▶▶	
<b>SAY</b>	9.53 (242)	4.88 (124)	5.91 (150)	2.68 (68)	3.23 (82)	3.15 (80)	3.94 (100)	3.94 (100)	7.87 (200)	4.1 (1.85)
<b>With ASK39.1</b>	10.51 (267)	6.06 (154)	11.81 (300)	7.87 (200)	3.94 (100)	—	—	—	—	4.6 (2.08)

**Table Notes:**

**Service envelope** Minimum access space recommended  
 ▶ 4 inch (100 mm)    ▶▶ 8 inch (200 mm)



A-100

# Your job made easier with Siemens HVAC solutions

Siemens HVAC solutions transform building operations, energy efficiency and comfort. Increase productivity with innovations that simplify installation and commissioning to improve building performance and indoor air quality. Rely on Siemens solutions — built to last for buildings of all sizes.

Visit [usa.siemens.com/hvac](https://usa.siemens.com/hvac) to learn more.



Siemens offers a 5-year warranty on valves, actuators, damper actuators, sensors and thermostats.

**SIEMENS**



## Two-Way Flanged PICV

*Control Valve, Adjustable Flow Limiter,  
and Automatic Pressure Regulator*  
2-1/2 to 6"  
ANSI Class 125 or 250



Flanged PICV Valve.

### Description

Pressure Independent Control Valves automatically adjust to differential pressure changes, providing constant flow in HVAC systems. This reduces “hunting” for the right setting, and results in better control and increased comfort. Overall system performance can be optimized with PICV, requiring less pumping energy and contributing to more efficient loading of boilers and chillers.

Siemens Pressure Independent Control Valves integrate three functions into a single device: control valve, adjustable flow limiter, and automatic pressure regulator. The 2-1/2 and 3 inch valves have a 3/4-inch (20 mm) stroke and use the SAX non-spring return electronic valve actuators and the SQV spring return electronic valve actuators. The 4 to 6 inch valves have a 1-1/2-inch (40 mm) stroke and use the SAV non-spring return electronic valve actuators and the SQV spring return electronic valve actuators.

### Features

- 3-in-1 device includes a control valve, field adjustable flow limiter, and automatic pressure regulator
- Full stroke regardless of maximum flow setting
- Maximum flow preset is easily field adjustable
- Available in both ANSI 125 and ANSI 250 pressure classes
- Can be equipped with SAX, SAV, or SQV electromotoric actuators
- Both SQV actuators (normally open and normally closed) can be wired for floating, 0-10V or 4-20 mA control signals

### Applications

Typical applications include control of hot or chilled water or water-glycol solutions up to 50% in closed loop systems.

A-101

Valves

# Specifications

## Valve Specifications

Body Material .....	Cast Iron
Plug .....	Brass
Seat .....	Stainless Steel
Stem .....	Stainless Steel
Line size .....	2-1/2-inch (65 mm), 3-inch (80 mm), 4-inch (100 mm), 5-inch (125 mm), 6-inch (150 mm)
Action .....	2-way
Valve Body Rating .....	ANSI 125 and 250
Close-off .....	100 psi (700 kPa)
Leakage Rate .....	< ANSI Class IV (0.01%)
Medium Temperature Range .....	34° to 250°F (1° to 120°C)
Flow Characteristic .....	Linear
Connection .....	ANSI Flanged

## Actuator Specifications

<b>Operating Voltage</b>	
SAV .....	24 Vac ± 20%
SAX, SQV .....	24 Vdc +20%/-15%, Class 2
<b>Frequency</b>	
SAV .....	45 to 65 Hz
SAX, SQV .....	50/60 Hz

## Power Consumption (Normal Operation)

SAV61.00U .....	Stem retracts/extends 9.5 VA/4.5 W Holding State 3.75 VA/1.7 5W
SAX .....	.8 VA/3.75W
SQV .....	.20 VA/7.5W

## Control Signal

SAV61.00U .....	Positioning signal "Y" (0 to 10 Vdc) Current draw < 0.1 mA Input impedance > 100K Ω (4 to 20 mA) Current draw DC 4 to 20 mA + 1% Input impedance < 500 Ω
SAX61.03U .....	0 to 10 Vdc
SQV .....	Selectable (Floating, 0 to 10 Vdc, 4 to 20 mA)

## Run time

SAV .....	120 seconds
SAX .....	30 seconds
SQV .....	40 to 120 seconds (adjustable)

## Force

SAV .....	.360 lb (1600 N)
SAX .....	.180 lb (800 N)
SQV .....	.250 lb (1100 N)

## Agency Certification

UL .....	Meets UL 873
cUL .....	Certified to Canadian Standard C22.2 No. 24.93




A-102

Valves

## Valve Product Ordering

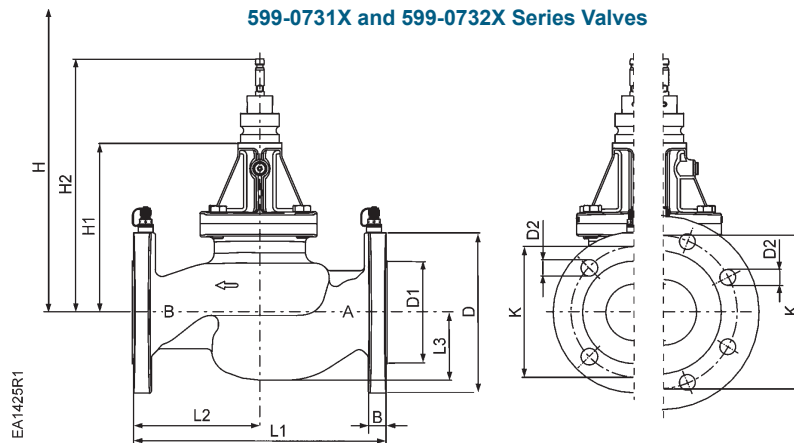
Line Size Inch (mm)	Maximum GPM Flow Range	Valve Body Part No. ANSI 125	Valve Body Part No. ANSI 250
2-1/2 (65)	21 to 132	599-07330	599-07335
3 (80)	32 to 195	599-07331	599-07336
4 (100)	43 to 370	599-07332	599-07337
5 (125) Low Flow	85 to 485	599-07313	599-07323
5 (125) High Flow	105 to 595	599-07318	599-07328
6 (150) Low Flow	115 to 650	599-07314	599-07324
6 (150) High Flow	140 to 860	599-07319	599-07329

## Actuator Product Ordering

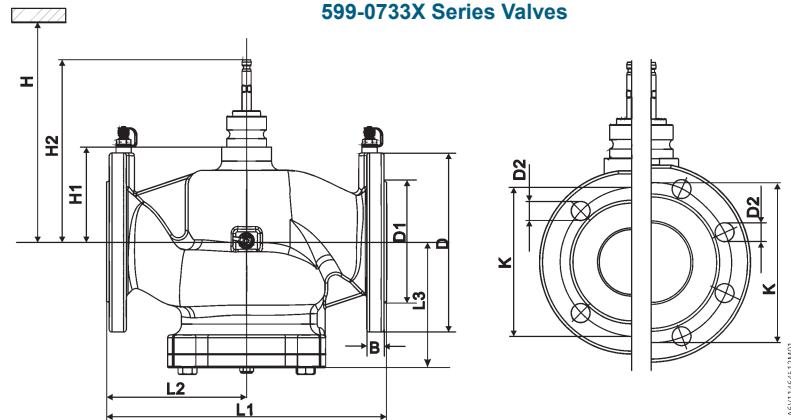
Description		Part No.	Actuator Prefix Code	
	Electro-Mechanical	Floating, 0-10V or 4 to 20mA, Spring Return, Normally Open	<b>SQV91P30U</b>	238
	Electro-Mechanical	Floating, 0-10V or 4 to 20mA, Spring Return, Normally Closed	<b>SQV91P40U</b>	239
	Electro-Mechanical	Proportional Non-Spring Return	<b>SAX61.03U</b>	371
	Electro-Mechanical	Proportional, Non-Spring Return	<b>SAV61.00U</b>	378

# Dimensions

599-0731X and 599-0732X Series Valves



599-0733X Series Valves



Product Number	Valve Size in. (mm)	Dimensions											H			Weight lb. (kg)
		B	Ø D	Ø D1	Ø D2	L1	L2	L3	Ø K	H1	H2	SAX	SAV	SQV		
599-07330	2.5 (65)	0.69 (17.5)	7.01 (178)	N/A	0.75 (19)	10.87 (276)	5.43 (138)	5.1 (129.5)	5.5 (140)	4.09 (104)	7.89 (200.5)	21.5 (546)	—	23.35 (593)	42 (19)	
599-07335		0.94 (24)	7.48 (190)	4.96 (126)	0.88 (22.4)	11.5 (292)	5.75 (146)	5.1 (129.5)	5.88 (149.4)	4.09 (104)	7.89 (200.5)	21.5 (546)	—	23.35 (593)	62 (28.1)	
599-07331	3 (80)	0.75 (19)	7.5 (191)	N/A	0.75 (19)	11.75 (298)	5.87 (149)	5.77 (146.5)	6 (152)	4.09 (104)	7.89 (200.5)	21.5 (546)	—	23.35 (593)	59 (26.8)	
599-07336		1.06 (27)	8.25 (210)	5.74 (145.8)	0.88 (22.4)	12.5 (318)	6.26 (159)	5.77 (146.5)	6.62 (168)	4.09 (104)	7.89 (200.5)	21.5 (546)	—	23.35 (593)	80 (36.3)	
599-07332	4 (100)	0.98 (25)	9.00 (228.6)	N/A	0.75 (19)	13.86 (352)	6.93 (176)	7.26 (184.5)	7.5 (190.5)	6.65 (169)	11.24 (285.5)	—	24.96 (634)	25.91 (658)	82 (37.2)	
599-07337		1.04 (26.5)	10 (254)	6.94 (176.3)	0.88 (22.4)	14.40 (365.8)	7.2 (183)	7.26 (184.5)	7.88 (200.2)	6.65 (169)	11.24 (285.5)	—	24.96 (634)	25.91 (658)	146 (66.2)	
599-07313	5 (125)	0.98 (25)	10 (254)	—	0.88 (22.4)	15.75 (400)	8.07 (205)	5.30 (134.7)	8.50 (215.9)	14.06 (357)	15.63 (397)	—	34.06 (865)	35.00 (889)	170 (77.2)	
599-07318		1.52 (38.6)	10.9 (276.9)	8.31 (211.1)	0.88 (22.4)	16.62 (422.2)	8.51 (216.1)	5.50 (139.6)	9.25 (235)	14.06 (357)	15.63 (397)	—	34.92 (887)	35.87 (911)	221 (100)	
599-07323		1.05 (26.70)	11 (279.4)	—	0.88 (22.4)	17.76 (451)	9.17 (233)	6.15 (156.3)	9.50 (241.3)	15.79 (401)	17.48 (444)	—	36.06 (916)	37.01 (940)	235 (106)	
599-07314		1.58 (40.1)	12.5 (317.5)	9.69 (246.1)	0.88 (22.4)	18.62 (473)	9.61 (244)	6.34 (161.1)	10.63 (270)	15.79 (401)	17.48 (444)	—	36.93 (938)	37.87 (962)	303 (138)	

**Table Notes:**

ØD1 = Raised area of flange

H = Total actuator height plus minimum distance to the wall or the ceiling for mounting, connection, operation, maintenance, etc.

H1 = Dimension from the pipe center to install the actuator (upper edge)

H2 = Valve in the «Open» position means that the valve stem is fully extended



Siemens offers a 5-year warranty on valves and actuators.



A-104

# A complete line of globe valves for any HVAC application

Siemens offers a large selection of globe valves to suit any heating or cooling application using water or low-pressure steam. This complete portfolio allows you to meet your design needs and helps ensure that heating and cooling systems are operating at optimum levels. Siemens globe valves have the highest close-off in the industry. For wider selection, reliable shut off and precision control, choose Siemens globe valves.

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**Complete Product Portfolio**  
Largest selection of globe valves in the industry



**Quality**  
Siemens standards



**75+ Years**  
Innovating control valves



**100%**  
Factory tested



**Up to 5 Million**  
Repositions for longer life



**Up to 100 Thousand**  
Full strokes



## SQV Valve Actuator

*24 Vac/dc, Floating or Proportional Control*

*Floating, 0-10 V or 4-20 mA*

*Spring Return*



SQV Series Electro-Motoric Valve Actuators.

### Description

Pressure Independent Control Series SQV Electro-Motoric Valve Actuators require a 24 V ac or dc power supply and receive a floating, 0-10 V or 4-20 mA signal to control a valve. The SQV Actuators are available as either fail open or fail closed when used with the Siemens Flanged Pressure Independent Control Valves.

These actuators are designed to work the 2-1/2 to 6-inch Pressure Independent Control Series Valves with a 3/4-inch (20 mm) or 1-1/2-inch (40 mm) stroke and the standard Siemens Flowrite bonnet connection.

### Features

- Operating voltage: AC/DC 24V
- Control signals: 3-position, DC 0 to 10V, DC 4 to 20 mA
- Fail-safe function
- Position feedback
- Manual adjuster
- Position and status indication (LED)
- Selectable positioning times from 40 to 240 seconds
- Selection of acting direction and flow characteristic
- Direct mounting on Pressure Independent Control Valves
- UL Listed

### Applications

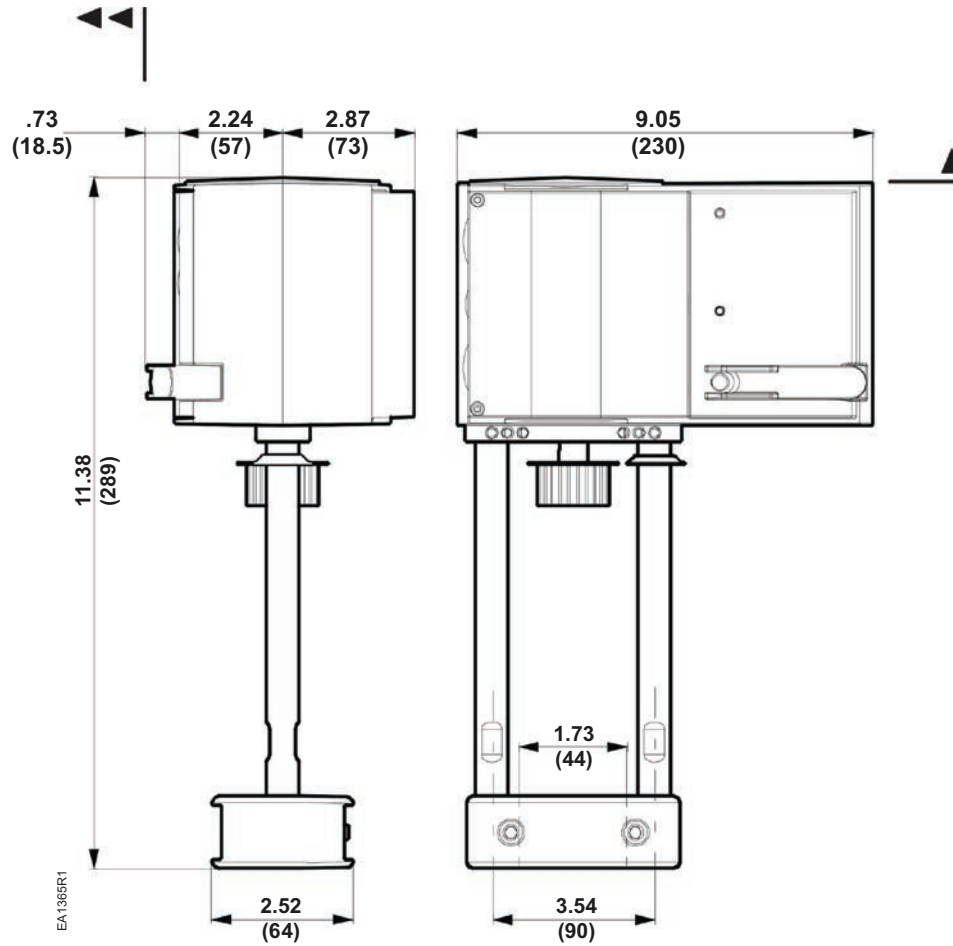
Electromotoric actuators to operate Siemens Pressure Independent Control Valves with 3/4-inch (20 mm) or 1-1/2-inch (40 mm) stroke as control valves for large air handling units and distribution of hot and chilled water.

A-105

Valves



## Dimensions



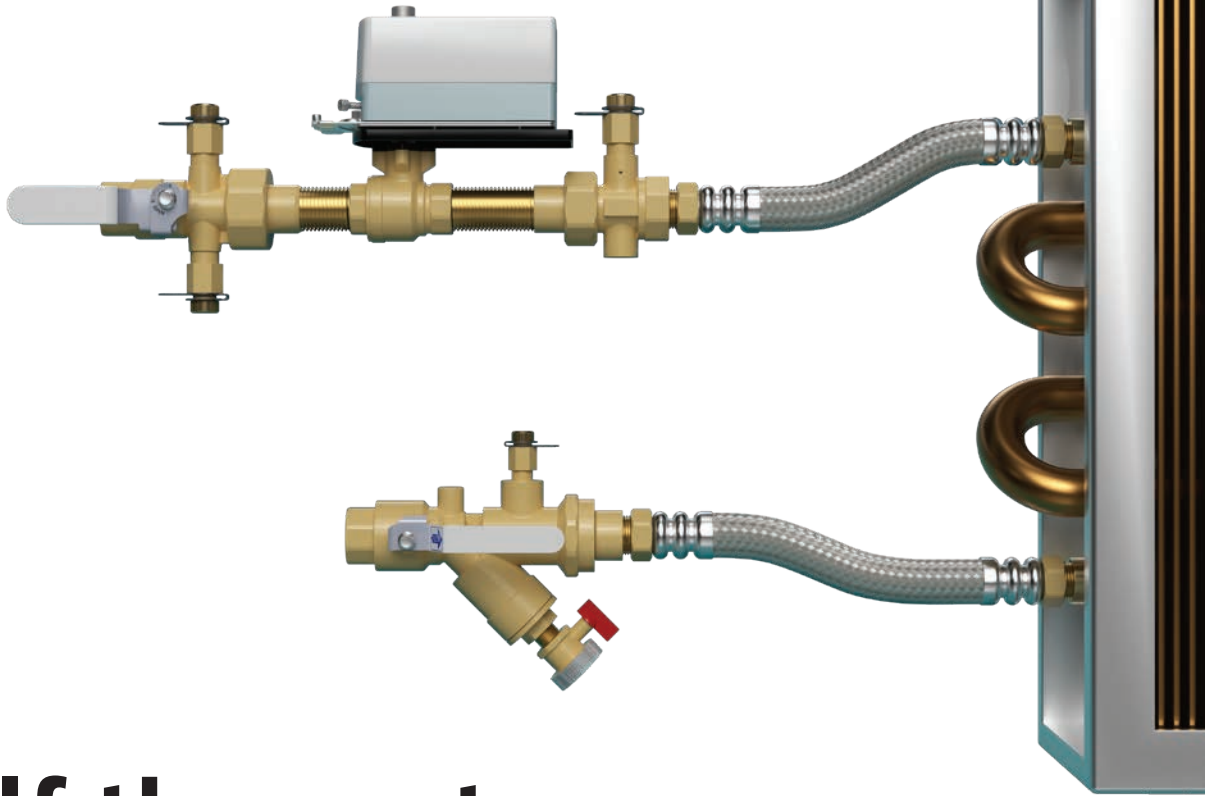
Dimensions shown in inches (mm).

**\* Height of actuator after fitting on valve**

- ▲ 4 inches (100 mm) Minimum clearance from wall or ceiling
- ◀◀ 8 inches (200 mm) for mounting, connection, operation, service, and so on



Siemens offers a 5-year warranty on valves and actuators.



A-108

# Half the cost, Half the time, Fast and easy selection

Say goodbye to hours of HVAC system design time with Siemens pre-assembled piping packages offered in the most popular valves and sizes. The packages make installation effortless by reducing several connections, which minimizes the chance for error; simplifies commissioning; and cuts costs, time and labor in half.

Product selection is fast and easy using Siemens HVAC Integrated Tool (HIT).

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**Better Value**  
Half the cost,  
half the time



**Less Effort**  
Less installation effort  
and no callbacks



**Fast and Easy**  
Product selection



**75+ Years**  
Innovating control valves

# SIEMENS



## SAX Valve Actuator

*24 Vac, Proportional Control,*

*0 to 10Vdc or 4 to 20 mA*

*Non-Spring Return*



SAX Electronic Valve Actuator.

### Description

Designed for use with Siemens 2-1/2 and 3-inch flanged Pressure Independent Control Valves with a 3/4-inch (20 mm) stroke. The SAX Electronic Actuator requires either a 24 Vac or 24 Vdc supply, and receives a 0 to 10 Vdc or 4 to 20 mA control signal to proportionally control the valve.

### Features

- 24 Vac/dc operating voltage
- Proportional or floating (3P) control
- Direct-coupled installation requires no special tools or adjustments
- Manual override
- Overload and stall protection
- Visual stroke indication
- Non-spring return (fail-in-place)
- 180 lb (800N) nominal force
- Automatic stroke calibration
- LED status
- Electronic stroke indication
- Maintenance-free
- Optional functions with auxiliary switches, function module, and stem heater
- Can be wired for normally closed operations; proportional actuators require AZX61.1 function module. See Installation or Technical Instructions.

### Applications

Typical applications include control of hot or chilled water or water-glycol solutions up to 50% in closed loop systems. They are ideal for installations requiring quick response and excellent resolution.

A-109

Valves

## Specifications

<b>Operating Voltage</b> .....	24 Vac ±20%, 24 Vdc +20%/-15%
<b>Frequency</b> .....	45 to 65 Hz
<b>Power Consumption</b> .....	8 VA
<b>Control Signals</b>	
Control Input (Y)	
Voltage.....	0 to 10 Vdc
Current.....	4 to 20 mA
Control Input (Z)	
Resistance.....	0 to 1000 Ohm
Position Feedback Output (U).....	0 to 10 Vdc
<b>Function</b>	
Nominal Stroke .....	3/4" (20 mm)
Run Time .....	30 sec.
Nominal Force .....	180 lb. (800 N)

<b>Agency Approvals</b> .....	UL873 CSA C22.2 No. 24-93
<b>Operating and Storage Temperature</b>	
Operating Temperature .....	23° to 131°F (-5° to 55°C)
Storage Temperature .....	5° to 131°F (-15° to 55°C)
Transport Temperature .....	-13° to 158°F (-25° to 70°C)
Ambient Humidity .....	5 to 95% RH, Non-condensing
Media Temperature .....	Up to 266°F (130°C)
<b>Conduit Opening</b> .....	1/2" NPSM
<b>Mounting Location</b> .....	NEMA 1 (Interior Only)

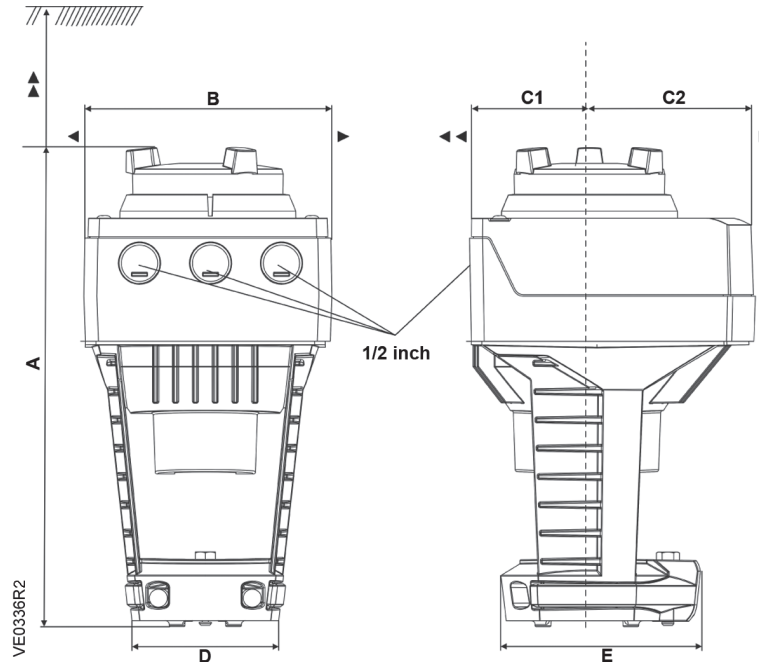
## Product Ordering

Description	Part No.	Actuator Prefix Code
Proportional, Non-Spring Return	<b>SAX61.03U</b>	<b>371</b>

A-110

Valves

# Dimensions



Dimensions shown in inches (mm).

A-111

Valves

	Dimensions									Weight lb. (kg)
	A	B	C	C1	C2	D	E	▶	▶▶	
<b>SAX</b>	9.53 (242)	4.88 (124)	5.91 (150)	2.68 (68)	3.23 (82)	3.15 (80)	3.94 (100)	3.94 (100)	7.87 (200)	4.1 (1.85)
<b>With ASK39.1</b>	10.51 (267)	6.06 (154)	11.81 (300)	7.87 (200)	3.94 (100)	–	–	–	–	4.6 (2.08)

**Table Notes:**

**Service envelope** Minimum access space recommended  
 ▶ 4 inch (100 mm)    ▶▶ 8 inch (200 mm)



Siemens offers a 5-year warranty on valves and actuators.



A-112

# Get the job done with ball valves

With line sizes ranging from 1/2" to 2" size (Cv ranging from 0.4 to 250) Siemens ball valves and valve actuators deliver comprehensive control solutions. We have the highest close-off in the industry and the largest selection of valve trim finishes for chrome plated brass and 316 stainless steel. Our premium grade materials and construction includes a better design blowout proof stem that withstands high pressure and a double O-ring stem packing.

Visit [usa.siemens.com/valves](http://usa.siemens.com/valves) to learn more.



75+ Years  
Innovating  
control valves



Fast and Easy  
Product selection



Quality  
Siemens standards



100%  
Factory tested



Up to 5 Million  
Repositions  
for longer life



Up to 100 Thousand  
Full strokes

# SIEMENS

## SAV Valve Actuator

*24 Vac/dc Proportional Control,  
0 to 10Vdc or 4 to 20 mA  
Non-Spring Return*



SAV Electronic Valve Actuator.

### Description

The SAV Non-spring Return (NSR) Electronic Valve Actuator requires a 24 Vac/dc supply. To proportionally control a valve, the actuator requires a 0 to 10 Vdc or a 4 to 20 mA control signal. SAV actuators are designed to work with Siemens 4 to 6-inch Flanged Pressure Independent Control Valves with a 1-1/2-inch (40 mm) stroke.

### Features

- 24 Vac/dc operating voltage
- Proportional control
- Direct-coupled installation requires no special tools or adjustments
- Manual override
- Overload and stall protection
- Visual stroke indication
- Non-spring return (fail-in-place)
- 360 lb (1600N) nominal force
- Automatic stroke calibration
- LED status
- Electronic stroke indication
- Maintenance-free
- Optional functions with auxiliary switches, function module, and stem heater
- Can be wired for normally closed operations; proportional actuators require AZX61.1 function module. See Installation or Technical Instructions.

### Applications

Typical applications include control of hot or chilled water or water-glycol solutions up to 50% in closed loop systems. They are ideal for installations requiring quick response and excellent resolution.

A-113

Valves

# Specifications

**Operating Voltage** ..... 24 Vac  $\pm$ 20%, 24 Vdc +20%/-15%  
**Frequency** ..... 45 to 65 Hz  
**Power Consumption** ..... 8 VA  
**Power Consumption** ..... 5 VA  
**Control Signals**  
 Control Input (Y)  
     Voltage..... 0 to 10 Vdc  
     Current..... 4 to 20 mA  
 Control Input (Z)  
     Resistance..... 0 to 1000 Ohm  
 Position Feedback Output (U)..... 0 to 10 Vdc  
**Function**  
 Nominal Stroke ..... 1-1/2-inch (40 mm)  
 Run Time ..... 30 sec.  
 Nominal Force ..... 360 lb. (1600 N)

**Agency Approvals** ..... UL873  
 CSA C22.2 No. 24-93  
**Operating and Storage Temperature**  
 Operating Temperature ..... 23° to 131°F (-5° to 55°C)  
 Storage Temperature ..... 5° to 131°F (-15° to 55°C)  
 Transport Temperature ..... -13° to 158°F (-25° to 70°C)  
 Ambient Humidity ..... 5 to 95% RH, Non-condensing  
 Media Temperature ..... Up to 266°F (130°C)  
**Conduit Opening** ..... 1/2" NPSM  
**Mounting Location** ..... NEMA 1 (Interior Only)

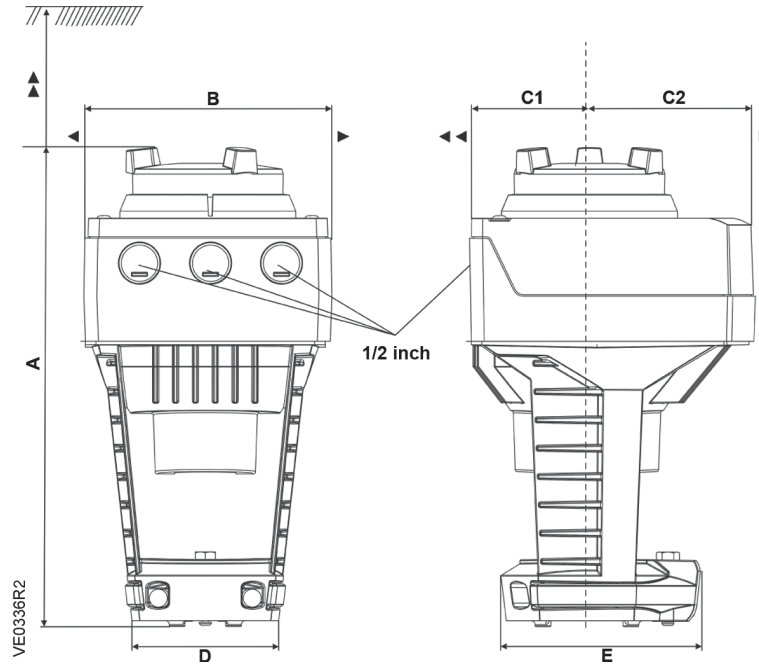
## Product Ordering

Description	Part No.	Actuator Prefix Code
Proportional, Non-Spring Return	SAV61.00U	378

A-114

Valves

# Dimensions



Dimensions shown in inches (mm).

A-115

Valves

	Dimensions									Weight lb. (kg)
	A	B	C	C1	C2	D	E	▶	▶▶	
SAV	10.43 (265)	4.88 (124)	5.91 (150)	2.68 (68)	3.23 (82)	3.15 (80)	3.94 (100)	3.94 (100)	7.87 (200)	4.23 (1.92)
With ASK39.1	11.42 (290)	6.06 (154)	11.81 (300)	7.87 (200)	3.94 (100)	—	—	—	—	4.74 (2.15)

**Table Notes:**

**Service envelope** Minimum access space recommended  
 ▶ 4 inch (100 mm)    ▶▶ 8 inch (200 mm)



A-116

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Don't miss the latest blogs where you'll learn more about exciting HVAC technologies and products. Our subject-matter experts share their forward-thinking perspectives on issues and innovations that will not only transform your business, but also increase productivity. Articles ranging from HVAC solutions on energy efficiency to indoor air quality and more will keep you informed about the latest news and trends. Read what our experts have to say today!

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**SIEMENS**



## Zone Valves



A-117

Valves

Ranging from 1/2 to 1-inch (15 to 25 mm), the Zone Valves provide excellent control of fan coils, unit ventilators and other applications where on/off, floating or proportional control is required. Featuring direct-coupled technology for quick connection of the valve body and actuator without tools, the Zone Valves and Actuators use all-metal plugs and seat to deliver superior control of water and glycol solutions with NPT connection.

### Features

- Metal-to-metal seat/plug design
- Direct coupled installation of actuator to valve without tools
- Low ANSI Class III Leakage for SFA/SFP and SSA; ANSI Class IV leakage for SSE/SSF
- Choice of interchangeable on/off (2P), floating (3P), and 0-10V proportional actuators
- On/off actuators available in 24V and 120V supply voltages
- Manual override
- Visual LED motion and position indication on SSE/SSF actuators





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# Building Technology Webinars

Join thousands of industry professionals who have attended our informative webinars on relevant HVAC products and Building Automation solutions. We provide educational opportunities led by our product experts who explain in detail the latest products and technologies from Siemens. Engaging presentations include demonstrations, how-to videos, informational slides, illustrations, photos, and a Q&A session at the end. Webinars are also available on demand so you can view them at your convenience.

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**SIEMENS**

## Two- and Three-Way Zone Valves

1/2 to 1" Brass Body

Normally Open/Normally Closed/Diverting



Two-Way NPT Zone Valve.



Three-Way NPT Zone Valve.

### Description

Two- and Three-Way Zone Valves have a 1/10-inch (2.5 mm) stroke. The Zone Valves work with any SFA/SFP Series or SSA/SSP Series electric actuator. The actuators accept one of either 24 Vac or 120 Vac power supply signal to provide on/off, floating or 0 to 10 Vdc control.

### Features

- All metal plug and seat for superior control
- Direct-coupled universal bonnet – install actuators without tools
- NPT end connection
- Order separately or with an actuator as a complete assembly

### Applications

Typical applications for Two- and Three-Way Zone Valves are hot or chilled water for zones with radiators; floor heating via manifolds; fan coil units; cooling ceilings; wall-mounted boilers; and VAV applications.

#### Recommendation:

Use only with Zone Valve Actuators.

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Valves

# Specifications

**Line Size** ..... 1/2-inch to 1-inch (15 mm to 25 mm)  
**Body Style** ..... Globe  
**Action**  
 2-way ..... NO/NC Determined by Actuator  
 3-way ..... Diverting/Mixing (Limited Application)  
**Valve Body Rating** ..... 232 psi  
**Stem Travel (Stroke)** ..... 1/10-inch (2.5 mm)  
**Materials**  
 Body ..... Brass  
 Trim ..... Brass  
 Stem ..... Stainless Steel ASTM A582 Type 303  
 Packing ..... EPDM O-rings

**Controlled Medium** ..... Water, Glycol Solutions to 50%  
**Medium Temperature Range** ..... 34° to 230°F (1° to 110°C)  
**Maximum Inlet Pressure** ..... 232 psi  
**Leakage Rate** ..... See close-off tables  
**Close-off Ratings** ..... According to ANSI/FCI 70-2  
**Flow Characteristic** ..... Linear

## Valve Product Ordering

Nominal Valve Size		Flow Rate		Part No.
Inch	mm	Cv	(Kvs)	
<b>Two-Way Valve Bodies</b>				
1/2	15	1.0	(0.85)	<b>599-00210</b>
1/2	15	2.5	(2.15)	<b>599-00211</b>
1/2	15	4.0	(3.4)	<b>599-00214</b>
3/4	20	4.1	(3.5)	<b>599-00212</b>
1	25	7.0	(6.0)	<b>599-00213</b>
<b>Three-Way Valve Bodies</b>				
1/2	15	1.0	(0.85)	<b>599-00230</b>
1/2	15	2.5	(2.15)	<b>599-00231</b>
1/2	15	4.0	(3.4)	<b>599-00234</b>
3/4	20	4.1	(3.5)	<b>599-00232</b>
1	25	7.0	(6.0)	<b>599-00233</b>

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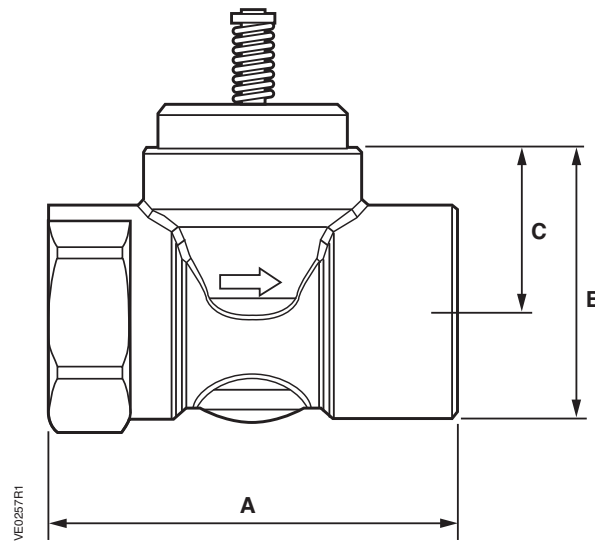
Valves

## Actuator Product Ordering

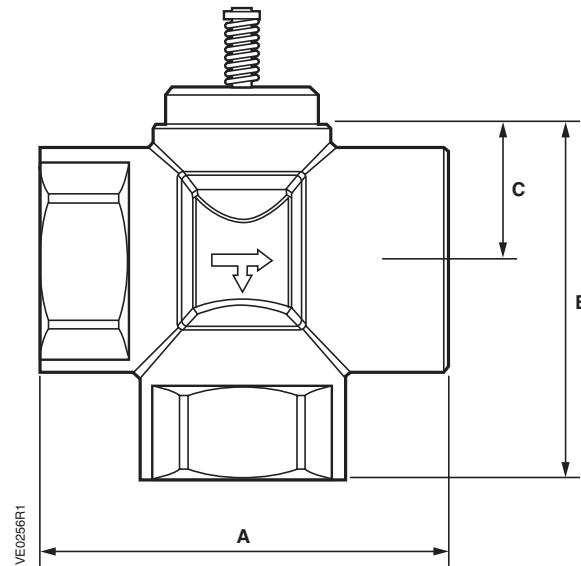
Description		Part No.	Actuator Prefix Code
Two-Way Valves	Three-Way Valves		
<b>Normally Open</b>			
24 Vac/dc, 0 to 10 Vdc, Modulating	24 Vac, 0-10 Vdc, Modulating	<b>SSF161.05U</b>	248
24 Vac, 2-Position, Spring Return	24 Vac, 2-Position, Fail AB→A	<b>SFP71U</b>	243
120 Vac, 2-Position, Spring Return	120 Vac, 2-Position, Fail AB→A	<b>SFP11U</b>	241
<b>Normally Closed</b>			
24 Vac, Floating	24 Vac, Floating	<b>SSA81U</b>	244
24 Vac/dc, 0 to 10 Vdc, Modulating	24 Vac, 0-10 Vdc, Modulating	<b>SSE161.05U</b>	245
24 Vac, 2-Position, Spring Return	24 Vac, 2-Position, Fail AB→B	<b>SFA71U</b>	242
120 Vac, 2-Position, Spring Return	120 Vac, 2-Position, Fail AB→B	<b>SFA11U</b>	240

# Dimensions

## Two-Way Zone Valve Body



## Three-Way Zone Valve Body



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Valves

Valve Size in. (mm)	2-Way Valve				3-Way Valve				
	A	B	C	Weight lb. (kg)	A	B	C	Weight lb. (kg)	
<b>NPT</b>									
0.5 (15)	2.76 (70)	1.63 (41.5)	1.00 (25.4)	0.82 (0.37)	2.76 (70)	2.34 (59.5)	1.00 (25.4)	1.08 (0.49)	
0.75 (20)	2.76 (70)	1.77 (45)	1.00 (25.4)	0.99 (0.45)	2.76 (70)	2.34 (59.5)	1.00 (25.4)	1.26 (0.57)	
1.0 (25)	3.50 (89)	2.10 (54)	1.00 (25.4)	1.68 (0.76)	3.50 (89)	2.85 (67.3)	1.00 (25.4)	2.14 (0.97)	
<b>Sweat</b>									
0.5 (15)	2.66 (66)	1.48 (38)	1.00 (25.4)	0.60 (0.27)	2.66 (68)	2.26 (57.5)	1.00 (25.4)	0.71 (0.32)	
0.75 (20)	2.76 (70)	1.63 (41.5)	1.00 (25.4)	0.71 (0.32)	2.76 (70)	2.34 (59.5)	1.00 (25.4)	0.86 (0.39)	
1.00 (25)	3.50 (89)	1.77 (45)	1.00 (25.4)	1.06 (0.48)	3.50 (89)	2.65 (67)	1.00 (25.4)	1.24 (0.56)	

**Table Notes:**

Table expressed in inches (mm).



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# EngineeringAdvantage Program Webinar Series

Buildings are becoming more and more complex. Structures that used to be passive now have to meet higher demands for efficiency, safety, sustainability and comfort. While digitization enables new ways of connecting and operating buildings, cost and time pressures create resistance for the adoption of these new technologies. We experience the same challenges as you and would like to help you overcome them.

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**SIEMENS**

## SFA/SFP Series Electronic Valve Actuator

24 and 120 Vac, Two-Position Control  
Spring Return



SFA/SFP Series Electronic Valve Actuator.

### Description

The SFA/SFP Series of Electronic Valve Actuators accepts 24 or 120 Vac power supply signal to provide two-position control. This actuator works with Zone Valves with 1/10-inch (2.5 mm) stroke.

### Features

- UL listed for plenum installations
- Direct coupled installation without tools
- Manual override with auto unlock
- Visual position indication

### Applications

The SFA/SFP Series of Electronic Valve Actuators is for use in heating and cooling HVAC applications with Zone Valves.

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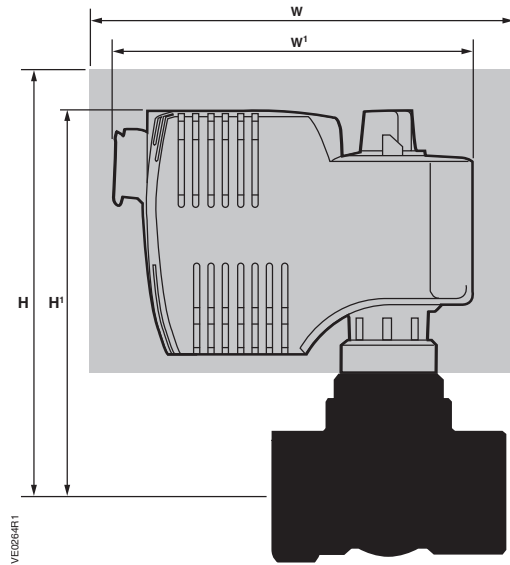
Valves



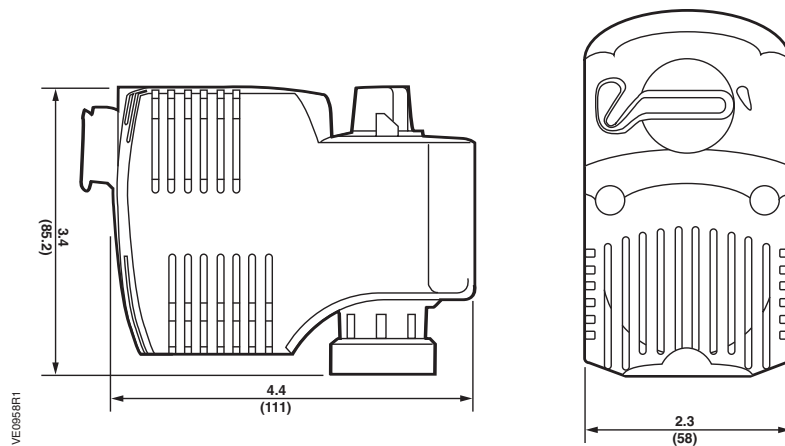
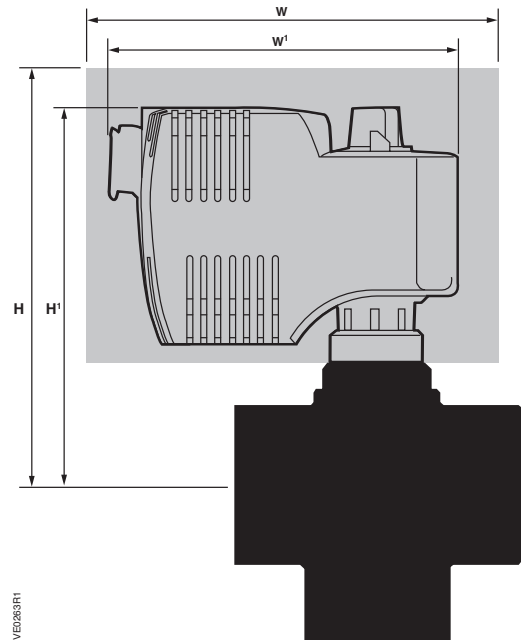


# Dimensions

**SFA/SFP Series Actuator:  
Service Envelope for 2-Way Valve Assembly**



**SFA/SFP Series Actuator:  
Service Envelope for 3-Way Valve Assembly**



Dimensions shown in inches (mm).

Valve Size in. (mm)	Valve Center Line to Top of Actuator H'		Service Height H		Width or Diameter of Actuator W'		Service Width W	
	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way
0.5 (15)	4.38 (112)	4.38 (112)	12.38 (315)	12.38 (315)	4.38 (112)	4.38 (112)	12.38 (315)	12.38 (315)
0.75 (20)	4.38 (112)	4.38 (112)	12.38 (315)	12.38 (315)	4.38 (112)	4.38 (112)	12.38 (315)	12.38 (315)
1.00 (25)	4.38 (112)	4.38 (112)	12.38 (315)	12.38 (315)	4.38 (112)	4.38 (112)	12.38 (315)	12.38 (315)

**Table Notes:**

Table expressed in inches (mm).

Service height and width are the recommended dimensions to allow access to the product.

# HIT

## HVAC Integrated Tool



Order



Selection



Projects



Replacement

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An intuitive selection tool that **makes it faster and easier to find the right products** for your projects.

Siemens HVAC Integrated Tool (HIT) is an intuitive online selection tool with enhanced filters and calculators that make it faster and easier to find the right products for your projects. HIT is continually updated with the latest products and pricing for accurate planning and budgeting.

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**SIEMENS**

## SSA81U Series Electronic Valve Actuator

24 Vac, Floating  
Non-Spring Return



SSA Series Electronic Valve Actuator.

### Description

The SSA81U Electronic Valve Actuator requires a 24 Vac power supply and receives a floating control signal to control a valve. This actuator is designed to work with Zone Control Valves with a 1/10-inch (2.5 mm) stroke and a threaded valve bonnet that fits the actuator.

### Features

- UL listed for plenum installations
- Direct-coupled installation without tools
- Manual override with hex wrench
- Visual position indication

### Applications

The SSA81U Electronic Valve Actuators are for use with heating and cooling HVAC applications with Zone Valves.

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Valves

## Specifications

### Power Supply

Operating Voltage ..... 24 Vac ±20%  
 Frequency ..... 50/60 Hz

### Power Consumption

SSA81 ..... 0.8 VA

### Agency Certifications..... CE Conformance

EMC Directive ..... 89/336/EEC  
 Low Voltage Directive ..... 73/23/EEC  
 UL listed ..... UL873  
 cUL Certified to Canadian Standard  
 C22.2 No. 24-93

### Function

Running Time  
 SSA81 ..... 150 sec.  
 Nominal Stroke..... 1/10-inch (2.5 mm)  
 Nominal Force..... 36 lb. (160N)

### Ambient Temperature

Operation.....41° to 122°F (5° to 50°C)  
 Transport and Storage .....-13° to 158°F (-25° to 70°C)

### Medium Temperature

..... 34° to 230°F (1° to 110°C)

### Dimensions

..... 3.26" H x 3.26" W x 1.9" D  
 (82 mm H x 83 mm W x 48 mm D)

### Shipping Weight

..... 9 oz. (0.25 kg)

## Product Ordering

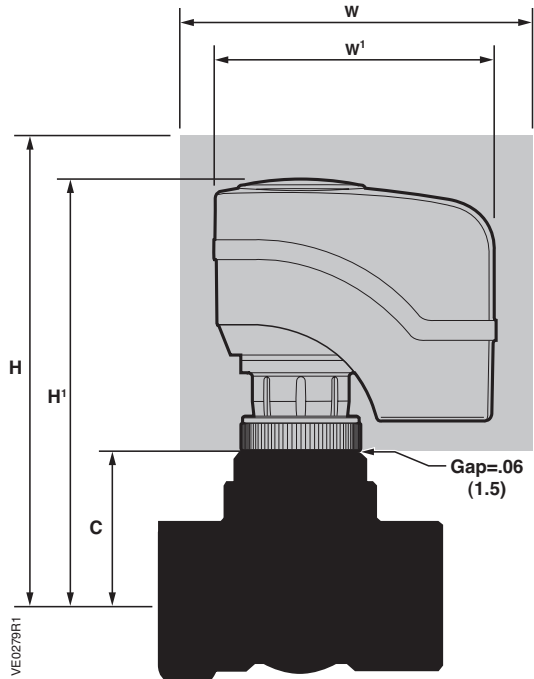
Description	Part No.	Actuator Prefix Code
24 Vac, Floating, Normally Closed	SSA81U	244

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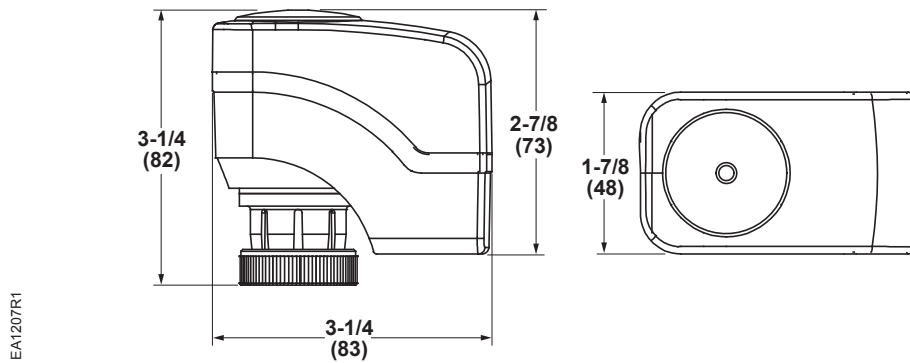
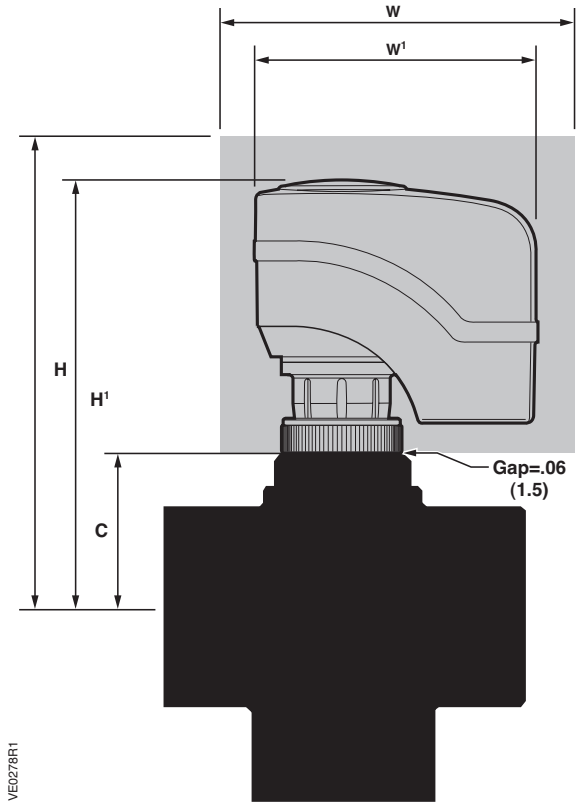
Valves

# Dimensions

**SSA Series Actuator:  
Service Envelope for 2-Way Valve Assembly**



**SSA Series Actuator:  
Service Envelope for 3-Way Valve Assembly**



Dimensions shown in inches (mm).

Valve Size in. (mm)	Valve Center Line to Top of Actuator H'		Service Height H		Valve Center Line to Actuator Coupling C		Width or Diameter of Actuator W'		Service Width W	
	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way
0.5 (15)	4.26 (108.2)	4.26 (108.2)	12.26 (311.4)	12.26 (311.4)	1.00 (25.4)	1.00 (25.4)	3.26 (82.8)	3.26 (82.8)	11.26 (286.0)	11.26 (286.0)
0.75 (20)	4.26 (108.2)	4.26 (108.2)	12.26 (311.4)	12.26 (311.4)	1.00 (25.4)	1.00 (25.4)	3.26 (82.8)	3.26 (82.8)	11.26 (286.0)	11.26 (286.0)
1.00 (25)	4.26 (108.2)	4.26 (108.2)	12.26 (311.4)	12.26 (311.4)	1.00 (25.4)	1.00 (25.4)	3.26 (82.8)	3.26 (82.8)	11.26 (286.0)	11.26 (286.0)

**Table Notes:**

Table expressed in inches (mm).

Service height and width are the recommended dimensions to allow access to the product.



Siemens offers a 5-year warranty on valves and actuators.



A-130

# A more durable butterfly valve design that lasts even longer

At Siemens, we continuously challenge ourselves to improve butterfly valves to exceed hydronic system demands with improved performance, efficiency, and value. So, we set our sights on designing the best version of the most widely used butterfly valve type to be more durable and last even longer — delivering better value and improved comfort.

Visit [usa.siemens.com/valves](http://usa.siemens.com/valves) to learn more.



75+ Years  
Innovating  
control valves



Quality  
Siemens standards



Better Value  
Product lasts  
even longer



100%  
Factory tested



Up to 5 Million  
Repositions  
for longer life



Up to 100 Thousand  
Full strokes



## SSE/SSF Series Electronic Valve Actuator

24 Vac/dc 0-10V Control

Non-Spring Return



SSE/SSF Series Electronic Valve Actuator.

### Description

The SSE/SSF Electronic Valve Actuator requires a 24 Vac or 24 Vdc power supply and receives a 0 to 10 Vdc signal to control a valve. This actuator is designed to work with Zone Control Valves with a 1/10-inch (2.5 mm) stroke and a threaded valve bonnet that fits the actuator.

### Features

- UL listed for plenum installations
- Direct-coupled installation without tools
- Manual override with hex wrench
- Visual LED motion and position indication
- Self-calibration to valve stroke
- Non-spring return

### Applications

The SSE/SSF Electronic Valve Actuators are for use with heating and cooling HVAC applications with Zone Valves.

A-131

Valves

# Specifications

## Power Supply

Operating Voltage ..... AC 24 V (± 15 %) or DC 24 V (± 20 %)  
 Frequency ..... 50/60 Hz

## Power Consumption

SSE/SSF161.05U ..... AC 3 V or DC 1.2 W

## Agency Certifications

EMC Directive ..... 2014/30/EU  
 UL listed ..... UL as per UL60730-1, UL60730-2-14  
 ..... cUL as per CSA – CAN E60730-1, E730-2-14

## Function

Running Time  
 SSE/SSF161.05U ..... 12.5 s ± 25 %  
 Nominal Stroke ..... 1/10-inch (2.5 mm)  
 Nominal Force ..... 45 lb. (200N)

## Ambient Temperature

Operation ..... 34° to 122°F (1° to 50°C)  
 Transport and Storage ..... -13° to 158°F (-25° to 70°C)

## Medium Temperature

..... 34° to 230°F (1° to 110°C)

## Dimensions

..... 3.7" H x 4.1" W x 1.9" D  
 (92.6 mm H x 104.4 mm W x 49 mm D)

**Shipping Weight** ..... 7.7 oz. (0.22 kg)

# Product Ordering

Description	Part No.	Actuator Prefix Code
24 Vac/dc, 0-10 Vdc, AB-A NC	<b>SSE161.05U</b>	248
24 Vac/dc, 0-10 Vdc, AB-A NO	<b>SSF161.05U</b>	248

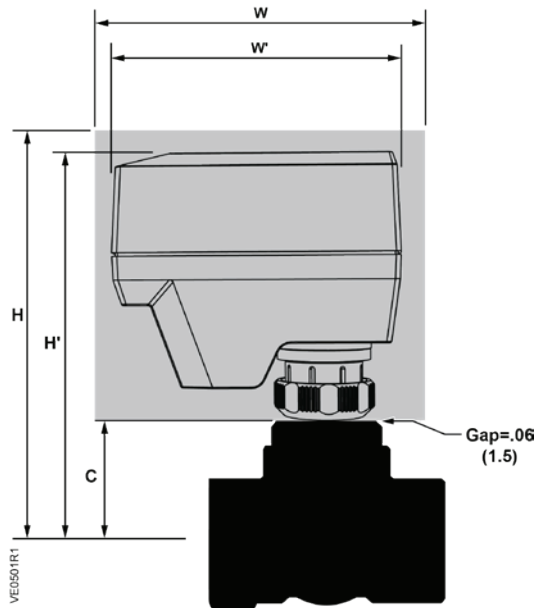
A-132

Valves

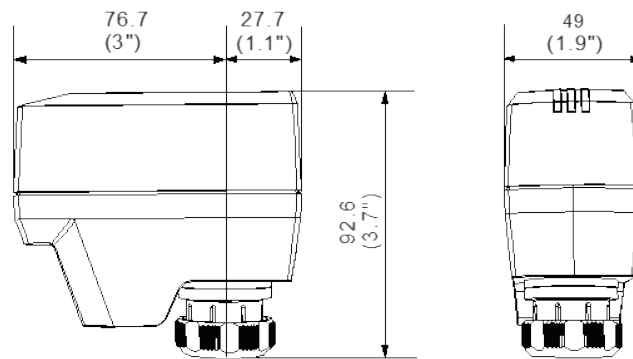
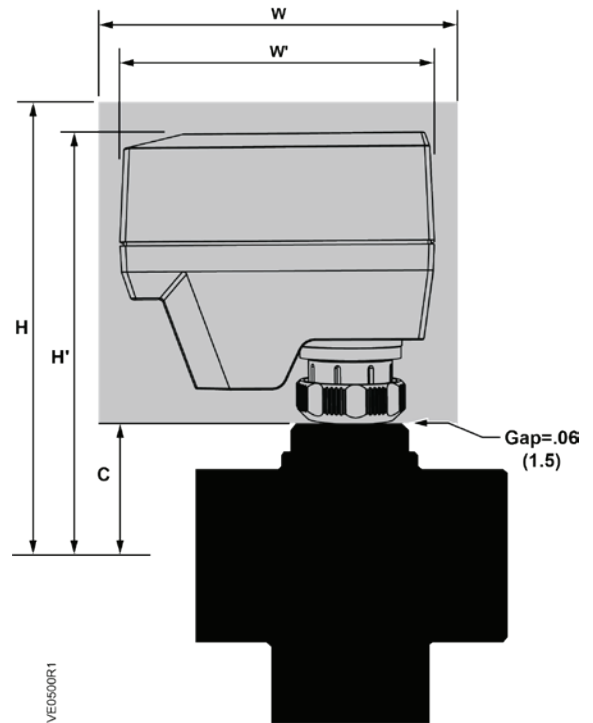


# Dimensions

**SSE/SSF Series Actuator:  
Service Envelope for 2-Way Valve Assembly**



**SSE/SSF Series Actuator:  
Service Envelope for 3-Way Valve Assembly**



Dimensions shown in inches (mm).

Valve Size in. (mm)	Valve Center Line to Top of Actuator H <sup>1</sup>		Service Height H		Valve Center Line to Actuator Coupling C		Width or Diameter of Actuator W <sup>1</sup>		Service Width W	
	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way
0.5 (15)	4.70 (118)	4.70 (118)	12.70 (321)	12.70 (321)	1.00 (25.4)	1.00 (25.4)	4.10 (104.4)	4.10 (104.4)	12.10 (307.4)	12.10 (307.4)
0.75 (20)	4.70 (118)	4.70 (118)	12.70 (321)	12.70 (321)	1.00 (25.4)	1.00 (25.4)	4.10 (104.4)	4.10 (104.4)	12.10 (307.4)	12.10 (307.4)
1.00 (25)	4.70 (118)	4.70 (118)	12.70 (321)	12.70 (321)	1.00 (25.4)	1.00 (25.4)	4.10 (104.4)	4.10 (104.4)	12.10 (307.4)	12.10 (307.4)

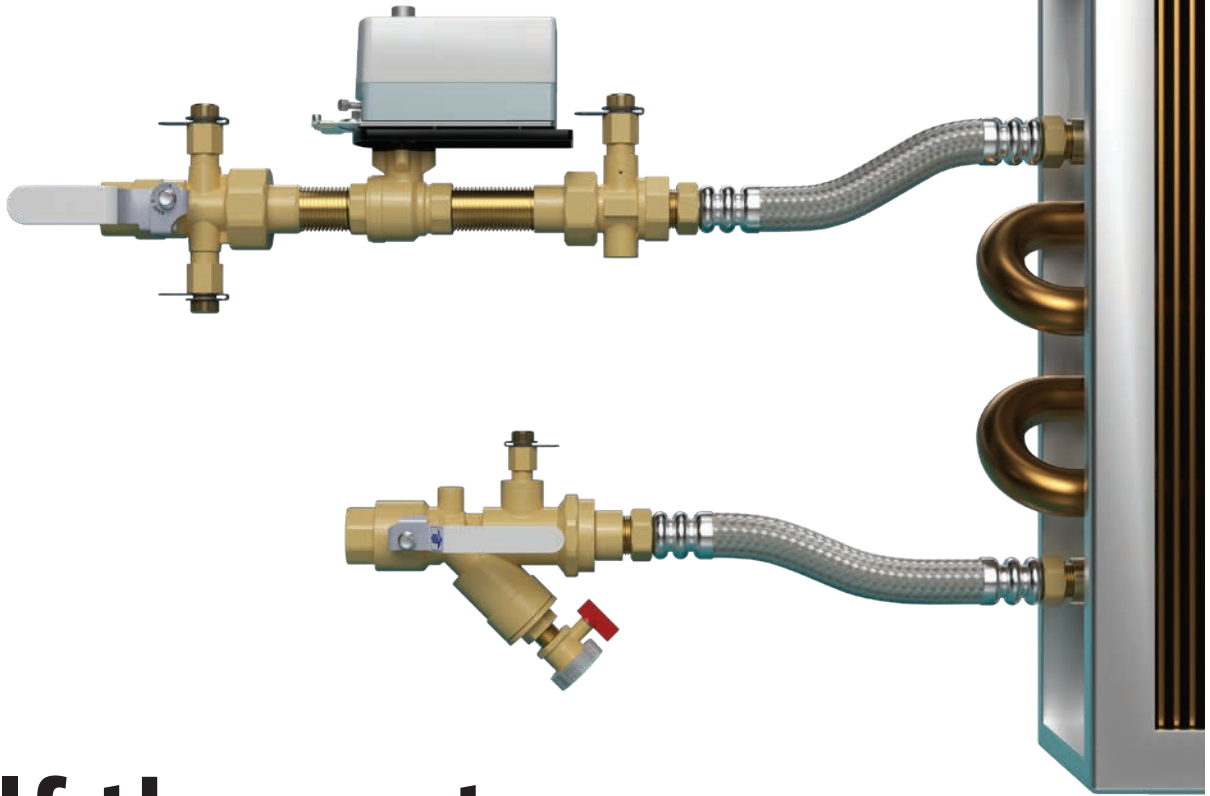
**Table Notes:**

Table expressed in inches (mm).

Service height and width are the recommended dimensions to allow access to the product.



Siemens offers a 5-year warranty on valves and actuators.



A-134

# Half the cost, Half the time, Fast and easy selection

Say goodbye to hours of HVAC system design time with Siemens pre-assembled piping packages offered in the most popular valves and sizes. The packages make installation effortless by reducing several connections, which minimizes the chance for error; simplifies commissioning; and cuts costs, time and labor in half.

Product selection is fast and easy using Siemens HVAC Integrated Tool (HIT).

Visit [usa.siemens.com/piping-packages](http://usa.siemens.com/piping-packages) to learn more.



**Better Value**  
Half the cost,  
half the time



**Less Effort**  
Less installation effort  
and no callbacks



**Fast and Easy**  
Product selection



**75+ Years**  
Innovating control valves

# SIEMENS

## Powermite Globe Valves



A-135

Valves

Ranging from 1/2 to 1 inch (Cv range of 0.4 to 10), Powermite Globe Valves provide more choices for applications, featuring direct-coupled technology for connection of valve body and actuator without tools – other features include a compact housing design, actuators capable of handling a variety of media, and a wide variety of options and end connections. For ease of product selection and ordering, the Powermite valves and actuators follow the same sizing and selection process as the Flowrite.

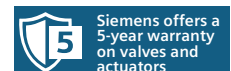
### The Powermite Globe Valve line features:

#### MZ Series

- Close-off up to 70 psi
- Electronic Non-Spring Return actuators only
  - 0 to 10 V
  - Floating control
- Low leakage rate (ANSI Class IV)

#### MT Series for Terminal Unit Control

- Close-off up to 160 psi
- Pneumatic and Electronic actuators
  - 3 to 8 psig spring range
  - 8 to 13 psig spring range
  - 10 to 15 psig spring range
  - Floating Spring Return or Non-Spring Return electronic actuators
  - 0 to 10 V or 40 to 20 mA Spring Return or Non-Spring Return electronic actuators
  - Low leakage rate (ANSI Class IV)



Siemens offers a  
5-year warranty  
on valves and  
actuators



Siemens offers a 5-year warranty on valves and actuators.



A-136

# A complete line of globe valves for any HVAC application

Siemens offers a large selection of globe valves to suit any heating or cooling application using water or low-pressure steam. This complete portfolio allows you to meet your design needs and helps ensure that heating and cooling systems are operating at optimum levels. Siemens globe valves have the highest close-off in the industry. For wider selection, reliable shut off and precision control, choose Siemens globe valves.

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**Complete Product Portfolio**  
Largest selection of globe valves in the industry



**Quality**  
Siemens standards



**75+ Years**  
Innovating control valves



**100%**  
Factory tested



**Up to 5 Million**  
Repositions for longer life



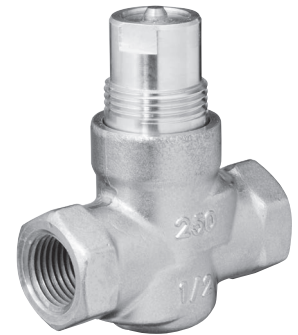
**Up to 100 Thousand**  
Full strokes

# SIEMENS

## Two-way Valves

1/2 to 1-inch

Normally Open or Normally Closed



Powermite MZ Series  
Two-way Globe Valve.

### Description

The Powermite MZ Series Two-way Globe Valves are designed to work with the SSB MZ Series Actuator with a 7/32-inch (5.5 mm) stroke.

### Features

- Direct-coupled universal bonnet/no tools required for installation
- ANSI Leakage Class IV (0.01% of Cv)
- ANSI Class 250 body
- Variety of actuators available
  - 0 to 10 V non-spring return
  - Floating control non-spring return
- Choice of end connections
- Greater than 100:1 rangeability for  $C_v \geq 1$
- Orderable as a valve only or as a complete valve/actuator assembly

### Applications

The Powermite MZ Series Two-way Globe Valves are used for control of hot or chilled water for convectors, fan coil units, unit conditioners, radiation, reheat coils, and similar terminal units requiring an actuator that delivers a minimum of 45 lbf. (200 N) of force.

### Recommendation:

Use only with the MZ Series SSB Valve Actuators.


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Valves

## Specifications

Valve Size	1/2 to 1" (15 to 25 mm)
Body Style	Globe
Seat Style	Metal to Metal
Action	NO/NC
Valve Body Rating	ANSI Class 250
Stem Travel (Stroke)	7/32" (5.5 mm)
<b>Materials</b>	
Body	Forged Brass C37700 (1/2 and 3/4 inch) or UNS CA 844 Bronze (1 inch)
Trim	Brass
Stem	Stainless Steel ASTM A 582 Type 303
Packing	EPDM O-rings
Controlled Medium	Water, Glycol Solutions up to 50%
Medium Temperature Range	35° to 250°F (2° to 120°C)

<b>Max. Recommended Differential Pressure for Modulating Service</b>	25 psig (173 kPa)
<b>Rangeability</b>	
Cv < 1	> 50:1
Cv ≥ 1	> 100:1
<b>Close-off Ratings</b>	According to ANSI/FCI 70-2
<b>Leakage Rate</b>	Class IV (0.01% of Cv)
<b>Flow Characteristics</b>	Modified Equal Percentage
<b>Mounting Location</b>	NEMA 1 (Interior Only)

 Refer back to the Selection Charts at the beginning of this section to make sure the configuration is valid.

## Valve Product Ordering

### Normally Open/Normally Closed, Brass Trim



Connection	Valve Size		Flow Rate		Normally Open Part No.	Normally Closed Part No.
	in.	(mm)	Cv	(Kvs)		
Female x Female	1/2	(15)	0.4	(0.34)	<b>599-01115</b>	<b>599-01100</b>
	1/2	(15)	0.63	(0.54)	<b>599-01117</b>	<b>599-01102</b>
	1/2	(15)	1	(0.85)	<b>599-01119</b>	<b>599-01104</b>
	1/2	(15)	1.6	(1.37)	<b>599-01121</b>	<b>599-01106</b>
	1/2	(15)	2.5	(2.14)	<b>599-01123</b>	<b>599-01108</b>
	1/2	(15)	4	(3.42)	<b>599-01126</b>	<b>599-01110</b>
	3/4	(20)	6.3	(5.38)	<b>599-01129</b>	<b>599-01112</b>
	1	(25)	10	(8.55)	<b>599-01131</b>	<b>599-01114</b>

There are no repair parts for this product. Replace the entire valve body if inoperative.

A-138

Valves

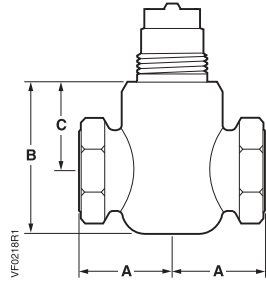
## Actuator Product Ordering

Description		Part No.	Actuator Prefix Code
	Electro-Mechanical	<b>SSB81U</b>	<b>254</b>
24 V, Floating Non-Spring Return			
	24 V, 0-10 V Non-Spring Return	<b>SSB161.05U</b>	<b>255</b>

Accessories & Service Kits

A-317

## Dimensions



Female NPT by Female NPT  
(FxF)

Valve Size in.	Dimensions			Weight
	A	B	C	
1/2" (15 mm)	1-3/8" (35 mm)	2-1/4" (57 mm)	1-5/16" (33 mm)	1.3 lb. (0.6 kg)
3/4" (20 mm)	1-5/8" (41 mm)	2-3/8" (59 mm)	1-5/16" (33 mm)	1.8 lb. (0.8 kg)
1" (25 mm)	1-15/16" (49 mm)	2-3/4" (69 mm)	1-9/16" (39 mm)	2.6 lb. (1.2 kg)

A-139

Valves



Siemens offers a 5-year warranty on valves and actuators.



A-140

# A more durable butterfly valve design that lasts even longer

At Siemens, we continuously challenge ourselves to improve butterfly valves to exceed hydronic system demands with improved performance, efficiency, and value. So, we set our sights on designing the best version of the most widely used butterfly valve type to be more durable and last even longer — delivering better value and improved comfort.

Visit [usa.siemens.com/valves](http://usa.siemens.com/valves) to learn more.



75+ Years  
Innovating  
control valves



Quality  
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Better Value  
Product lasts  
even longer



100%  
Factory tested



Up to 5 Million  
Repositions  
for longer life



Up to 100 Thousand  
Full strokes

# SIEMENS



## Three-way Mixing Valves

1/2 to 1-inch



Powermite MZ Series  
Three-way Globe Valve.

### Description

The Powermite MZ Series Three-way Globe Valves are designed to work the SSB MZ Series Actuator with a 7/32-inch (5.5 mm) stroke.

### Features

- Direct-coupled universal bonnet/no tools required for installation
- ANSI Leakage Class IV (0.01% of Cv)
- ANSI Class 250 body
- Variety of actuators available
  - 0 to 10 V non-spring return
  - Floating control non-spring return
- Choice of end connections
- Greater than 100:1 rangeability for  $C_v \geq 1$
- Orderable as a valve only or as a complete valve/actuator assembly

### Applications

The Powermite MZ Series Three-way Globe Valves are used for mixing of hot or chilled water for convectors, fan coil units, unit conditioners, radiation, reheat coils, and similar terminal units requiring an actuator that delivers a minimum of 45 lbf. (200 N) force.

#### Recommendation:

Use only with the MZ Series SSB Valve Actuators.

A-141

Valves

## Specifications

Valve Size	.....	1/2 to 1" (15 to 25 mm)
Body Style	.....	Globe
Seat Style	.....	Metal to Metal
Action	.....	Three-way Mixing
Valve Body Rating	.....	ANSI Class 250
Stem Travel (Stroke)	.....	7/32" (5.5 mm)
<b>Materials</b>		
Body	.....	Forged Brass C37700 (1/2 and 3/4 inch) or UNS CA 844 Bronze (1 inch)
Trim	.....	Brass
Stem	.....	Stainless Steel ASTM A582 Type 303
Packing	.....	EPDM O-rings
Controlled Medium	.....	Water, Glycol Solutions up to 50%
Medium Temperature Range	.....	35° to 250°F (2° to 120°C)

<b>Max. Recommended Differential Pressure for Modulating Service</b>	.....	25 psig (173 kPa)
<b>Rangeability</b>		
Cv<1	.....	>50:1
Cv≥1	.....	>100:1
<b>Close-off Ratings</b>	.....	According to ANSI/FCI 70-2
<b>Leakage Rate</b>	.....	Class IV (0.01% of Cv)
<b>Flow Characteristics</b>		
A→AB	.....	Modified Equal Percentage
B→AB	.....	Linear
<b>Mounting Location</b>	.....	NEMA 1 (Interior Only)

Refer back to the Selection Charts at the beginning of this section to make sure the configuration is valid.

## Valve Product Ordering

### Water Mixing, Brass Trim





Valve Size in.	Valve Size (mm)	Flow Rate		Part No.
		Cv	(Kvs)	
1/2	(15)	0.4	(0.34)	<b>599-01132</b>
1/2	(15)	0.63	(0.54)	<b>599-01133</b>
1/2	(15)	1	(0.85)	<b>599-01134</b>
1/2	(15)	1.6	(1.37)	<b>599-01135</b>
1/2	(15)	2.5	(2.14)	<b>599-01136</b>
1/2	(15)	4	(3.42)	<b>599-01137</b>
3/4	(20)	6.3	(5.38)	<b>599-01138</b>
1	(25)	10	(8.55)	<b>599-01139</b>

There are no repair parts for this product. Replace the entire valve body if inoperative.

A-142

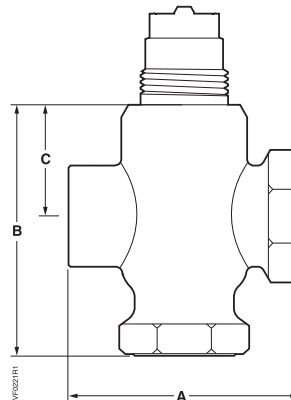
Valves

## Actuator Product Ordering

Description		Part No.	Actuator Prefix Code
	Electro-Mechanical	SSB81U	254
24 V, Floating Non-Spring Return			
	24 V, 0-10 V Non-Spring Return	SSB161.05U	255

## Dimensions and Weights

Valve Size in.	Dimensions			Weight
	A	B	C	
1/2" (15 mm)	2-3/4" (70 mm)	2-15/16" (74 mm)	1-5/16" (33 mm)	1.5 lb. (0.7 kg)
3/4" (20 mm)	3-1/4" (83 mm)	2-3/8" (59 mm)	1-5/16" (33 mm)	2.3 lb. (1.05 kg)
1" (25 mm)	3-7/8" (98 mm)	3-15/16" (99 mm)	1-9/16" (39 mm)	3.3 lb. (1.5 kg)



Accessories & Service Kits

A-317

## SSB Valve Actuator

24 Vac, 0-10V Control  
Non-Spring Return



Powermite MZ Series  
SSB161.05U Electronic Valve Actuator.

### Description

The Powermite SSB161.05U Electronic Valve Actuator requires a 24 Vac/dc supply and receives a 0 to 10 Vdc control signal to proportionally control a valve. This actuator is designed to work with Powermite MZ Series Valves with a 7/32-inch (5.5 mm) stroke and a threaded valve bonnet that fits the actuator.

### Features

- UL-listed for plenum installations
- Direct-coupled for installation without tools
- Close-off up to 70 psi on 1/2-inch valve
- Non-spring return
- Self-calibration to valve stroke
- Manual override
- Visual LED motion and position indication
- Orderable as an actuator only or as a complete valve/actuator assembly

### Applications

The Powermite SSB161.05U Electronic Valve Actuator is for use in heating and cooling HVAC applications with Powermite Valves that need 45 lbf. (200 N) of nominal force.

#### Recommendation:

Use only with the MZ Series valve bodies.

A-143

Valves

# Specifications

**Operating Voltage** ..... 24 Vac  $\pm$ 15% or 24 Vdc  $\pm$ 20%  
**Frequency** ..... 50/60 Hz  
**Power Supply** ..... Earth Ground Isolating, Class 2, 24 Vac Transformer  
**Power Consumption** ..... 3.0 VA (ac), 1.2W (dc)  
**Control Signal (Y)**  
 Voltage ..... 0 to 10 Vdc  
**Running Time** ..... 27.5 sec. (+/-25%)  
**Nominal Stroke** ..... 7/32" (5.5 mm)  
**Nominal Force** ..... 45 lbf. (200 N)

**Agency Approvals** ..... UL/cUL, UL67030  
**Ambient Temperature**  
 Operation ..... 34° to 122°F (1° to 50°C)  
 Transport and Storage ..... -13° to 158°F (-25° to 70°C)  
**Ambient Humidity** ..... 0 to 95% RH, Non-condensing  
**Wiring Connection** ..... Terminal Block for Plenum Cable  
 (Accessory Available for 3/8-inch Flex Conduit)  
**Mounting Location** ..... NEMA 2/IP20 (Interior Only)

## Product Ordering

Description	Part No.	Actuator Prefix Code
0 to 10 V	<b>SSB161.05U</b>	<b>255</b>
There are no repair parts for this product. Replace the entire actuator if inoperative.		

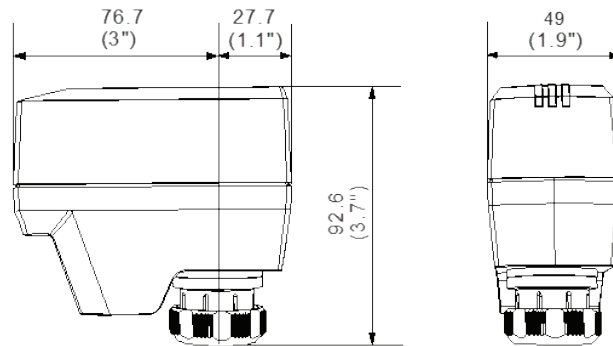
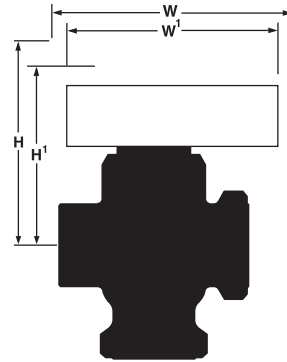
A-144

Valves

## Dimensions

Valve Size in.	Center Line to Top of Actuator	Service Height	Actual Width	Service Width
	H <sup>1</sup>	H	W <sup>1</sup>	W
1/2" (15 mm)	4.9" (125 mm)	12.9" (328 mm)	4.1" (104 mm)	12.1" (307 mm)
3/4" (20 mm)	4.9" (125 mm)	12.9" (328 mm)	4.1" (104 mm)	12.1" (307 mm)
1" (25 mm)	5.2" (131 mm)	13.2" (335 mm)	4.1" (104 mm)	12.1" (307 mm)

Service height and width are the recommended dimensions to allow access to the product.



Dimensions shown in inches (mm).

## SSB Valve Actuator

*24 Vac, Floating Control  
Non-Spring Return*



Powermite SSB81U MZ Series  
Electronic Valve Actuator.

### Description

The Powermite SSB81U Electronic Valve Actuator requires a 24 Vac supply floating control signal to provide three-position control. This actuator is designed to work with Powermite MZ Series Valves with a 7/32-inch (5.5 mm) stroke and a threaded valve bonnet that fits the actuator.

### Features

- UL-listed for plenum installations
- Direct-coupled installation without tools
- Close-off up to 70 psi on 1/2-inch valve
- Non-Spring Return
- Manual override
- Visual position indication
- Orderable as an actuator only or as a complete valve/actuator assembly

### Applications

The Powermite SSB81U Electronic Valve Actuator is for use in heating and cooling HVAC applications with Powermite valves that need 45 lbf. (200 N) of nominal force.

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Valves

# Specifications

Operating Voltage ..... 24 Vac  $\pm$ 20%  
 Frequency ..... 50/60 Hz  
 Power Supply ..... Earth Ground Isolating, Class 2, 24 Vac Transformer  
 Power Consumption ..... 0.8 VA  
 Running Time ..... (60 Hz) 150 sec.  
 Nominal Stroke ..... 7/32" (5.5 mm)  
 Nominal Force ..... 45 lbf. (200 N)

Agency Approvals ..... UL/cUL, UL873  
 CSA C22.2 No. 24-93

**Ambient Temperature**  
 Operation ..... 34° to 122°F (1° to 50°C)  
 Transport and Storage ..... -13° to 158°F (-25° to 70°C)

**Ambient Humidity** ..... 0 to 90% RH, Non-condensing

**Wiring Connection** ..... Terminal Block for Plenum Cable  
 (Accessory Available for 3/8-inch Flex Conduit)

**Mounting Location** ..... NEMA 1 (Interior Only)

## Product Ordering

Description	Part No.	Actuator Prefix Code
Floating	SSB81U	254

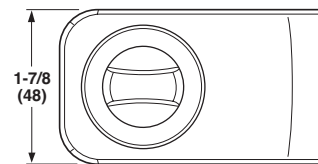
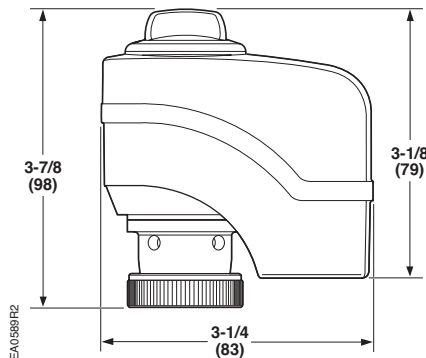
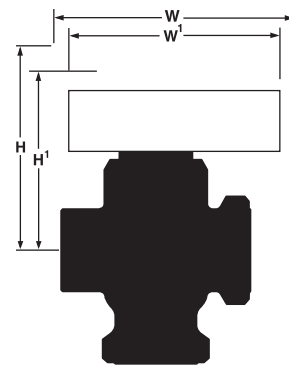
**There are no repair parts for this product.  
 Replace the entire actuator if inoperative.**

## Dimensions

Valve Size in.	Center Line to Top of Actuator	Service Height	Actual Width	Service Width
	H <sup>1</sup>	H	W <sup>1</sup>	W
1/2" (15 mm)	5-1/8" (130 mm)	13-1/8" (330 mm)	3-1/4" (83 mm)	11-1/4" (282 mm)
3/4" (20 mm)	5-1/8" (130 mm)	13-1/8" (330 mm)	3-1/4" (83 mm)	11-1/4" (282 mm)
1" (25 mm)	5-3/8" (136 mm)	13-3/8" (335 mm)	3-1/4" (83 mm)	11-1/4" (282 mm)

**Table Notes:**

Service height and width are the recommended dimensions to allow access to the product.



Dimensions shown in inches (mm).

A-146

Valves

## Two-way Valves

1/2 to 1-inch

Normally Open or Normally Closed



Powermite MT Series  
Two-way Globe Valve.

### Description

The Powermite MT Series Two-way Globe Valves are designed to work with either a pneumatic or electronic actuator with a 7/32-inch (5.5 mm) stroke. Compatible actuators deliver a minimum of 67 lbf. (300 N) of force.

### Features

- Direct-coupled universal bonnet/No tools required for installation
- Choice of brass or stainless steel trim
- ANSI Leakage Class IV (0.01% of Cv)
- ANSI Class 250 body
- Available in 3 to 8 psig, 8 to 13 psig or 10 to 15 psig spring ranges with pneumatic actuation
- Rated for 15 psig steam with stainless steel trim
- Interchangeable pneumatic or electronic actuators
- Orderable as a valve only or as a complete valve/actuator assembly

### Applications

The Powermite MT Series Globe Valves are used for hot or chilled water or low pressure steam (<15 psig with stainless steel trim only) control on convectors, fan coil units, unit conditioners, radiation, reheat coils, and similar terminal units.

#### Recommendation:

Only use the MT Series Valve Actuators. When using this valve with a pneumatic actuator, note that MT valve bodies have the spring in the body, rather than the actuator. To order the correct valve body, select the proper spring range.

Alternate spring ranges for pneumatic sequencing are available as valve and actuator factory assemblies only.

A-147

Valves

# Specifications

**Valve Size** ..... 1/2 to 1" (15 to 25 mm)

**Body Style** ..... Globe

**Seat Style** ..... Metal to Metal

**Action** ..... NO/NC

**Valve Body Rating** ..... ANSI Class 250

**Stem Travel (Stroke)** ..... 7/32" (5.5 mm)

**Materials**

Body ..... Forged Brass C37700 (1/2 and 3/4 inch  
or UNS CA 844 Bronze (1 inch)

Trim ..... Stainless Steel or Brass

Stem ..... Stainless Steel ASTM A582 Type 303

Packing ..... EPDM O-rings

**Controlled Medium** ..... Water, Low Pressure Steam  
less than 15 Psi, Glycol Solutions up to 50%

**Spring Range**

Standard

Normally Closed ..... 10 to 15 psig (69 to 103 kPa)

Normally Open ..... 3 to 8 psig (21 to 55 kPa)

Optional

Normally Closed ..... 3 to 8 psig (21 to 55 kPa)  
8 to 13 psig (55 to 90 kPa)

Normally Open ..... 8 to 13 psig (55 to 90 kPa)  
10 to 15 psig (69 to 103 kPa)

**Medium Temperature Range** ..... 35° to 250°F (2° to 120°C)

**Max. Recommended Differential Pressure for Modulating Service**

Brass Trim ..... 25 psi (173 kPa)

Stainless Steel Trim ..... 50 psi (345 kPa)

Steam Stainless Steel Trim ..... 15 psi (103 kPa)

**Rangeability**

Cv<1 ..... >50:1

Cv≥1 ..... >100:1

**Close-off Ratings** ..... According to ANSI/FCI 70-2

**Leakage Rate** ..... Class IV (0.01% of Cv)

**Flow Characteristics** ..... Modified Equal Percentage

**Mounting Location** ..... NEMA 1 (Interior Only)

Refer back to the Selection Charts at the beginning of this section to make sure the configuration is valid.

A-148

Valves



## Valve Product Ordering

### Normally Open/Normally Closed, Modified Equal Percentage, Brass Trim



Connection	Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke (in.)	Normally Open Part No.	Normally Closed Part No.
<b>Standard Temperature Packing – 20° to 250°F (-7° to 120°C)</b>					
Female x Female	1/2 (15)	0.4 (0.34)	7/32	599-02030	599-02000
	1/2 (15)	0.63 (0.54)	7/32	599-02032	599-02002
	1/2 (15)	1 (0.85)	7/32	599-02034	599-02004
	1/2 (15)	1.6 (1.37)	7/32	599-02036	599-02006
	1/2 (15)	2.5 (2.14)	7/32	599-02038	599-02008
	1/2 (15)	4 (3.42)	7/32	599-02041	599-02010
	3/4 (20)	6.3 (5.38)	7/32	599-02044	599-02012
1 (25)	10 (8.55)	7/32	599-02046	599-02014	
<b>There are no repair parts for this product. Replace the entire valve body if inoperative.</b>					

A-149

Valves




## Valve Product Ordering

### Normally Open/Normally Closed, Modified Equal Percentage, Stainless Steel Trim



Connection	Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke (in.)	Normally Open Part No.	Normally Closed Part No.
<b>Standard Temperature Packing – 20° to 250°F (-7° to 120°C)</b>					
Female x Female	1/2 (15)	0.4 (0.34)	7/32	599-02047	599-02015
	1/2 (15)	0.63 (0.54)	7/32	599-02049	599-02017
	1/2 (15)	1 (0.85)	7/32	599-02051	599-02019
	1/2 (15)	1.6 (1.37)	7/32	599-02053	599-02021
	1/2 (15)	2.5 (2.14)	7/32	599-02055	599-02023
	1/2 (15)	4 (3.42)	7/32	599-02058	599-02025
	3/4 (20)	6.3 (5.38)	7/32	599-02061	599-02027
	1 (25)	10 (8.55)	7/32	599-02063	599-02029
<b>There are no repair parts for this product. Replace the entire valve body if inoperative.</b>					

# Actuator Product Ordering

Description		Part No.	Actuator Prefix Code	
 2"	Pneumatic*	3-8 psi (21-55 kPa)	<b>599-01088</b>	<b>257</b>
		8-13 psi (55-90 kPa)	<b>599-01088</b>	—*
		10-15 psi (69-103 kPa)	<b>599-01088</b>	—*
	Electro-Mechanical	24 V, Floating, Spring Return	<b>SSC131.39U</b>	<b>260</b>
		24 V, Floating, Non-Spring Return	<b>SSC81U</b>	<b>259</b>
		24 V, 0-10 V, Spring Return	<b>SSC161.35U</b>	<b>262</b>
		24 V, 0-10 V, Non-Spring Return	<b>SSC161.05U</b>	<b>261</b>
	Electro-Mechanical	24 V, Floating, Spring Return	<b>SAS81.33U</b>	<b>366</b>
		24 V, Floating, Non-Spring Return	<b>SAS81.03U</b>	<b>363</b>
		24 V, 0-10 V, Spring Return	<b>SAS61.33U</b>	<b>365</b>
		24 V, 0-10 V, Non-Spring Return	<b>SAS61.03U</b>	<b>364</b>

**Table Notes:**

\*Powermite MT Series valve bodies have the spring in the body, rather than in the pneumatic actuator. There are different valve part numbers for the different spring ranges.

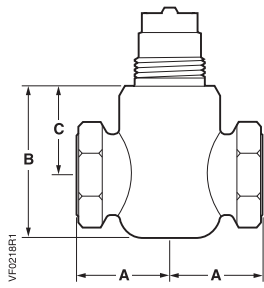
Not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

Refer back to the Selection Chart at the beginning of this section to make sure the configuration is valid.

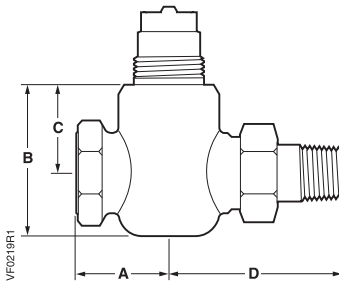
A-150

Valves

## Dimensions and Weights



Female NPT by Female NPT  
(FxF)

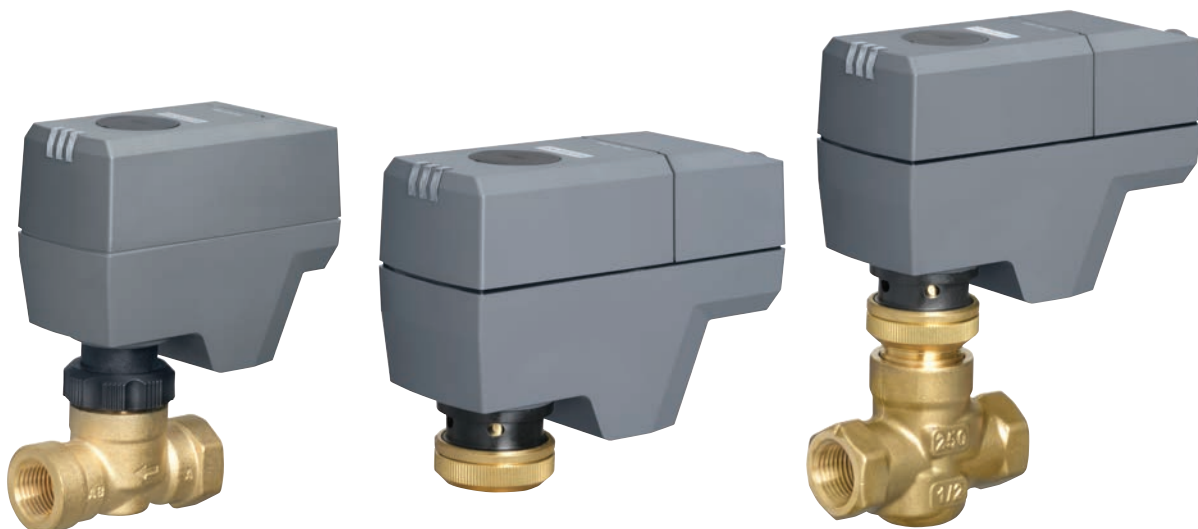


Female NPT by Union Male  
(FxUM)

Valve Size In.	Dimensions					Weight		
	A	B		C		D	FxF	FxUM
		FxF & FxUM		NO	NC			
		NO	NC	NO	NC			
1/2" (15 mm)	1-3/8" (35 mm)	2-1/4" (57 mm)		1-5/16" (33 mm)		2-5/8" (67 mm)	1.3 lb. (0.6 kg)	1.5 lb. (0.7 kg)
3/4" (20 mm)	1-5/8" (41 mm)	2-3/8" (59 mm)		1-5/16" (33 mm)		3-1/8" (79 mm)	1.8 lb. (0.8 kg)	2.2 lb. (1 kg)
1" (25 mm)	1-15/16" (49 mm)	2-3/4" (69 mm)		1-9/16" (39 mm)		—	2.6 lb. (1.2 kg)	—
1-1/4" (32 mm)	2-1/2" (63.5 mm)	4-1/4" (108 mm)	3-7/8" (98.4 mm)	2-3/16" (55.6 mm)	1-11/16" (42.9 mm)	—	4 lb. (1.8 kg)	—
1-1/2" (40 mm)	2-9/16" (65 mm)	4-1/4" (108 mm)	3-7/8" (98.4 mm)	2-1/4" (57.2 mm)	1-5/8" (41.3 mm)	—	5 lb. (2.3 kg)	—



Siemens offers a 5-year warranty on valves and actuators.



A-152

# More functions. More applications. **More opportunities.**

Designed with you in mind, the new line of SS series modulating room actuators used with Zone and Powermite Globe Valve assemblies have enhanced performance features to improve building operations.

The self-calibrating actuators with three LED indicators for position and actuator motion provide status and actuator information for easier troubleshooting and improved

productivity. More application opportunities await with actuators that have a low noise level, are pre-configured out of the box, and boast a modern and compact design.

Discover the difference with Siemens innovations for efficient flow control to optimize comfort.

Visit [usa.siemens.com/valves](https://usa.siemens.com/valves) to learn more.

**SIEMENS**

## Three-way Mixing Valves

1/2 to 1-inch



Powermite MT Series  
Three-way Globe Valve.

### Description

The Powermite MT Series Three-way Globe Valves are designed to work with either a pneumatic or electronic actuator with a 7/32-inch (5.5 mm) stroke.

### Features

- Direct-coupled universal bonnet
- No tools required for installation
- Choice of brass or stainless steel trim
- ANSI Leakage Class IV (0.01% of Cv)
- ANSI Class 250 body
- Available in 3 to 8 psig, 8 to 13 psig or 10 to 15 psig spring ranges with pneumatic actuation
- Interchangeable pneumatic or electronic actuators
- Orderable as valve only or complete valve/actuator assembly

### Applications

The Powermite MT Series Three-way Globe Valves are used for mixing of hot or chilled water for convectors, fan coil units, unit conditioners, radiation, reheat coils, and similar terminal units requiring water mixing.

#### Recommendation:

Only use the MT Series Valve Actuators. When using this valve with a pneumatic actuator, note that MT valve bodies have the spring in the body, rather than the actuator. To order the correct valve body, select the proper spring range.

Alternate spring ranges for pneumatic sequencing are available as valve and actuator factory assemblies only.

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Valves

## Specifications

<b>Valve Size</b> .....	1/2 to 1" (15 to 25 mm)
<b>Body Style</b> .....	Globe
<b>Seat Style</b> .....	Metal to Metal
<b>Action</b> .....	Three-way Mixing
<b>Valve Body Rating</b> .....	ANSI Class 250
<b>Stem Travel (Stroke)</b> .....	7/32" (5.5 mm)
<b>Materials</b>	
Body .....	Forged Brass C37700 (1/2 and 3/4 inch) or UNS CA 844 Bronze (1 inch)
Trim .....	Stainless Steel or Brass
Stem .....	Stainless Steel ASTM A582 Type 303
Packing .....	EPDM O-rings
<b>Spring Ranges</b>	
Standard .....	8 to 13 psig
Optional .....	3 to 8 psig (21 to 55 kPa) 10 to 15 psig (69 to 103 kPa)
<b>Controlled Medium</b> .....	Water, Low Pressure Steam less than 15 Psi, Glycol Solutions up to 50%
<b>Medium Temperature Range</b> .....	35° to 250°F (2° to 120°C)

<b>Max. Recommended Differential Pressure for Modulating Service</b>	
Brass Trim .....	25 psi (173 kPa)
Stainless Steel Trim .....	50 psi (345 kPa)
Steam Stainless Steel Trim .....	15 psi (103 kPa)
<b>Rangeability</b>	
Cv<1 .....	>50:1
Cv≥1 .....	>100:1
<b>Close-off Ratings</b> .....	According to ANSI/FCI 70-2
<b>Leakage Rate</b> .....	Class IV (0.01% of Cv)
<b>Flow Characteristics</b>	
A→AB .....	Modified Equal Percentage
B→AB .....	Linear
<b>Mounting Location</b> .....	NEMA 1 (interior only)

Refer back to the Selection Charts at the beginning of this section to make sure the configuration is valid.

A-154

## Valve Product Ordering






Valves

Valve Size		Flow Rate		Stroke (in.)	Part No.
in.	(mm)	Cv	(Kvs)		
<b>Brass Trim</b>					
1/2	(15)	0.4	(0.34)	7/32	<b>599-02064</b>
1/2	(15)	0.63	(0.54)	7/32	<b>599-02065</b>
1/2	(15)	1	(0.85)	7/32	<b>599-02066</b>
1/2	(15)	1.6	(1.37)	7/32	<b>599-02067</b>
1/2	(15)	2.5	(2.14)	7/32	<b>599-02068</b>
1/2	(15)	4	(3.42)	7/32	<b>599-02069</b>
3/4	(20)	6.3	(5.38)	7/32	<b>599-02070</b>
1	(25)	10	(8.55)	7/32	<b>599-02071</b>
<b>Stainless Steel Trim</b>					
1/2	(15)	0.4	(0.34)	7/32	<b>599-02072</b>
1/2	(15)	0.63	(0.54)	7/32	<b>599-02073</b>
1/2	(15)	1	(0.85)	7/32	<b>599-02074</b>
1/2	(15)	1.6	(1.37)	7/32	<b>599-02075</b>
1/2	(15)	2.5	(2.14)	7/32	<b>599-02076</b>
1/2	(15)	4	(3.42)	7/32	<b>599-02077</b>
3/4	(20)	6.3	(5.38)	7/32	<b>599-02078</b>
1	(25)	10	(8.55)	7/32	<b>599-02079</b>

There are no repair parts for this product. Replace the entire valve body if inoperative.

## Actuator Product Ordering

Description		Part No.	Actuator Prefix Code	
 2"	Pneumatic*	3-8 psi (21-55 kPa)	599-01088	257
		8-13 psi (55-90 kPa)	599-01088	—*
		10-15 psi (69-103 kPa)	599-01088	—*
	Electro-Mechanical	24 V, Floating, Spring Return	SSC131.39U	260
		24 V, Floating, Non-Spring Return	SSC81U	259
		24 V, 0-10 V, Spring Return	SSC161.35U	262
		24 V, 0-10 V, Non-Spring Return	SSC161.05U	261
	Electro-Mechanical	24 V, Floating, Spring Return	SAS81.33U	366
		24 V, Floating, Non-Spring Return	SAS81.03U	363
		24 V, 0-10 V, Spring Return	SAS61.33U	365
		24 V, 0-10 V, Non-Spring Return	SAS61.03U	364

### Table Notes:

\*Powermite MT Series valve bodies have the spring in the body, rather than in the pneumatic actuator. There are different valve part numbers for the different spring ranges.

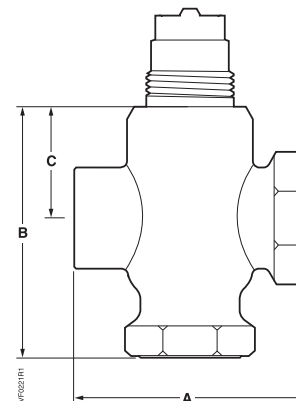
Not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

A-155

Valves

## Dimensions and Weights

Valve Size in.	Dimensions			Weight
	A	B	C	
1/2" (15 mm)	2-3/4" (70 mm)	2-15/16" (74 mm)	1-5/16" (33 mm)	1.5 lb. (0.7 kg)
3/4" (20 mm)	3-1/4" (83 mm)	2-3/8" (59 mm)	1-5/16" (33 mm)	2.3 lb. (1.05 kg)
1" (25 mm)	3-7/8" (98 mm)	3-15/16" (99 mm)	1-9/16" (39 mm)	3.3 lb. (1.5 kg)





Siemens offers a 5-year warranty on valves and actuators.



A-156

# An easier delta-T solution featuring one device with three integrated functions

Siemens PICVs have the unique advantage of always maintaining their full stroke, regardless of the maximum adjustable flow setting, to provide better control. This significantly reduces or eliminates hunting for the right actuator setting, resulting in better control and increased comfort. With Siemens PICVs, there are less components, less installation effort, and fewer leak points which leads to fewer callbacks.

Visit [usa.siemens.com/valves](http://usa.siemens.com/valves) to learn more.

**SIEMENS**



## Two-inch Pneumatic Valve Actuator



Powermite MT Series  
Two-inch Pneumatic Valve Actuator.

### Description

The Powermite Two-inch Pneumatic Valve Actuator is designed for use with the 1/2 to 1-inch Powermite MT Series Terminal Unit Valves with a 7/32-inch (5.5 mm) stroke.

### Features

- Low profile
- Freely rotates to aid tubing installation
- Easy installation and removal
- All metal housing
- Orderable as an actuator only or as a complete valve/actuator assembly

### Applications

The Powermite Two-inch Pneumatic Valve Actuator is designed to be used on 1/2 to 1-inch Powermite Terminal Unit Valves in liquid and steam service applications.

The pneumatic actuator relies on the spring inside the bonnet assembly of the MT Series valve bodies to return to the “normal” position.

#### Recommendation:

Use only for MT Series valve bodies, 1/2 to 1-inch only.

A-157

Valves

# Specifications

Effective Diaphragm Area .....3.4 in.<sup>2</sup> (22 cm<sup>2</sup>)  
 Diaphragm Material .....Silicone  
 Nominal Spring Range ..... Valve Dependent  
 Span ..... 5 psi (34 kPa)  
 Nominal Stroke .....7/32" (5.5 mm)  
 Max. Diaphragm Pressure ..... 35 psig (241 kPa)  
 Air Connection .....1/8" NPT Barbed Fitting  
 for 1/4" (6 mm) OD Polyethylene Tubing  
 Ambient Temperature  
 Transportation .....-40° to 180°F (-40° to 82°C)  
 Mounting Location ..... NEMA 1 (Interior Only)

# Product Ordering

Description	Part No.	Actuator Prefix Code
3-8 psig (21-55 kPa)	599-01088	257
8-13 psig (55-90 kPa)	599-01088	258
10-15 psig (69-103 kPa)	599-01088	256

### Ordering Note:

Spring is inside bonnet assembly of valve body. Use the Valve Selection Charts at the front of this section on pages A-24 and A-27 to determine spring range.

# Dimensions

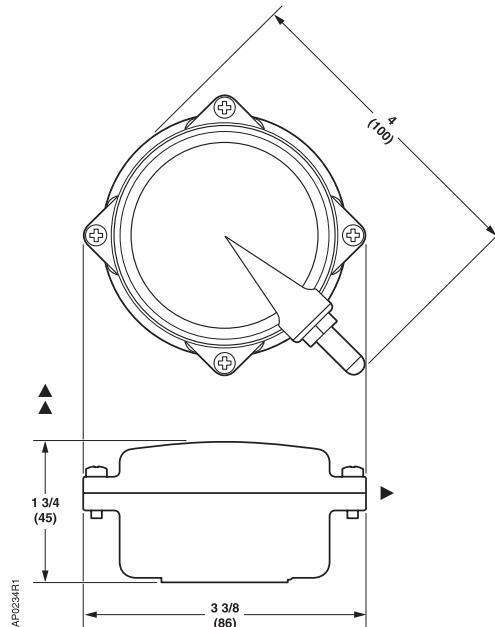
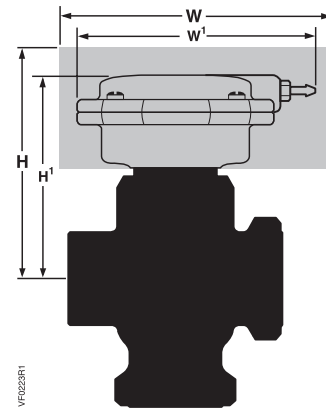
A-158

Valves

Valve Size in.	Center Line to Top of Actuator	Service Height	Actual Width	Service Width
	H <sup>1</sup>	H	W <sup>1</sup>	W
1/2" (15 mm)	3-1/16" (78 mm)	11" (280 mm)	4" (100 mm)	10" (250 mm)
3/4" (20 mm)	3-1/16" (78 mm)	11" (280 mm)	4" (100 mm)	10" (250 mm)
1" (25 mm)	3-5/16" (84 mm)	11-1/4" (285 mm)	4" (100 mm)	10" (250 mm)

### Table Notes:

Service height and width are the recommended dimensions to allow access to the product.



Dimensions shown in inches (mm).

## SSC Electronic Valve Actuator

24 Vac, Floating Control  
Non-Spring Return



SSC81U Electronic Valve Actuator.

### Description

The Powermite SSC81U Electronic Valve Actuator requires a 24 Vac supply and receive a floating control signal. This actuator controls Powermite MT Series Valves with a 7/32-inch (5.5 mm) stroke.

### Features

- UL listed for plenum installations
- Direct coupled, one step installation without special tools
- Close off up to 120 psi
- Manual override
- Visual position indication
- Non-spring return
- Orderable as an actuator only or as a complete valve/actuator assembly

### Applications

The Powermite SSC81U Electronic Actuator and MT Series Valves are used in heating and cooling applications in liquid and low pressure steam (<5 psi) applications requiring a minimum of 67 lbs. (300 N) nominal force. The SSC81U accepts plenum cable or 3/8-inch flex conduit connection.

A-159

Valves

# Specifications

**Operating Voltage** ..... 24 Vac  $\pm$  20%  
**Frequency** ..... 50/60 Hz  $\pm$  2 Hz  
**Power Supply** ..... Earth Ground Isolating, Class 2, 24 Vac Transformer  
**Power Consumption**  
 SSC81U ..... 0.8 VA  
**Control Signal**  
 Y2 ..... 24 Vac Retracts Actuator Shaft  
 Y1 ..... 24 Vac Extends Actuator Shaft  
**Running Time**  
 SSC81U ..... 125 sec.  $\pm$ 2% at 60 Hz

**Nominal Stroke** ..... 7/32-inch (5.5 mm)  
**Nominal Force** ..... 67 lbs. (300N)  
**Agency Approvals** ..... UL/cUL, UL873 Listed, Certified to Canadian Standard C22.2 No. 24-93  
**Media Temperature in Valve** ..... 35° to 230° F (2° to 110° C)  
**Ambient Temperature**  
 Operation ..... 41° to 122°F (5° to 50°C)  
 Transport and Storage ..... -13° to 158°F (-25° to 70°C)  
**Ambient Humidity** ..... 0 to 90% RH, Non-condensing  
**Wiring Connection** ..... Plenum Cable or 3/8-inch Flex Conduit  
**Mounting Location** ..... NEMA 1 (Interior Only)

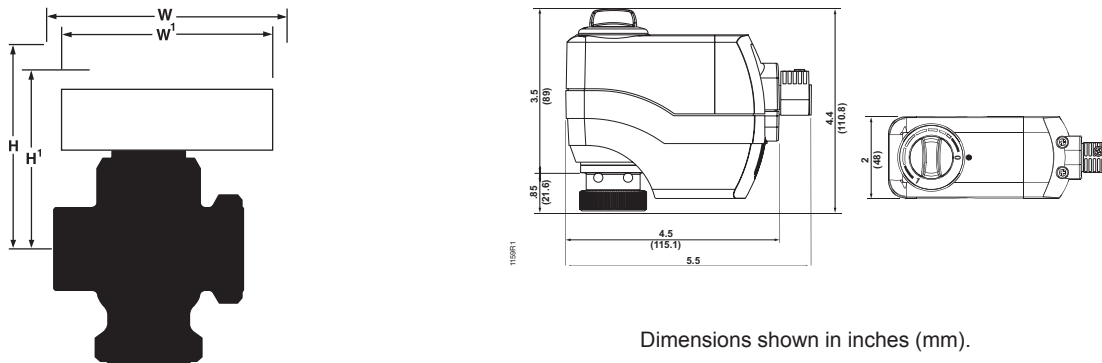
## Product Ordering

Description	Part No.	Actuator Prefix Code
Non-Spring Return	SSC81U	259

A-160

Valves

## Dimensions



Dimensions shown in inches (mm).

Valve Size in.	Center Line to Top of Actuator	Service Height	Actual Width of Actuator	Service Width
	H'	H	W'	W
1/2" (15 mm)	5-1/2" (140 mm)	13-1/2" (343 mm)	5-1/2" (140 mm)	13-1/2" (343 mm)
3/4" (20 mm)	5-1/2" (140 mm)	13-1/2" (343 mm)	5-1/2" (140 mm)	13-1/2" (343 mm)
1" (25 mm)	5-3/4" (146 mm)	13-3/4" (349 mm)	5-1/2" (140 mm)	13-1/2" (343 mm)

### Table Notes:

Service height and width are the recommended dimensions to allow access to the product.

## SSC Electronic Valve Actuator

24 Vac, Floating Control  
Fail-Safe



SSC131.39U Electronic Valve Actuator.

### Description

The Powermite SSC131.39U Electronic Valve Actuator requires a 24 Vac supply and receive a floating control signal. This actuator controls Powermite MT Series Valves with a 7/32-inch (5.5 mm) stroke.

### Features

- UL listed for plenum installations
- Direct coupled, one step installation without special tools
- Close off up to 120 psi
- Manual override
- Visual LED motion and position indication
- Fail-safe operation
- Orderable as an actuator only or as a complete valve/actuator assembly

### Applications

The Powermite SSC131.39U Electronic Actuator and MT Series Valves are used in heating and cooling applications in liquid and low pressure steam (<15 psi) applications requiring a minimum of 67 lbs. (300 N) nominal force. The SSC131.39U accepts plenum cable or standard 1/2-inch threaded conduit connection.

A-161

Valves

# Specifications

**Operating Voltage** ..... 24 Vac  $\pm$  20%  
**Frequency** ..... 50/60 Hz  $\pm$  2 Hz  
**Power Supply** ..... Earth Ground Isolating, Class 2, 24 Vac Transformer  
**Power Consumption**  
 SSC131.39U ..... 3 VA  
**Control Signal**  
 Y2 ..... 24 Vac Retracts Actuator Shaft  
 Y1 ..... 24 Vac Extends Actuator Shaft  
**Running Time**  
 SSC131.39U ..... 88 sec  $\pm$  25 %  
 Fail-safe ..... < 30 sec  
**Nominal Stroke** ..... 7/32-inch (5.5 mm)  
**Nominal Force** ..... 67 lbs. (300N)

**Fail-safe** ..... Non-mechanical, Electronic Return  
 Fails to Stem up (0 Position)

**Agency Certifications**  
 EMC Directive ..... 2014/30/EU  
 UL listed ..... UL as per UL60730-1, UL60730-2-14  
 ..... cUL as per CSA – CAN E60730-1, E730-2-14

**Media Temperature in Valve** ..... 35° to 248° F (2° to 120° C)

**Ambient Temperature**  
 Operation ..... 34° to 122°F (1° to 50°C)  
 Transport and Storage ..... -13° to 158°F (-25° to 70°C)

**Ambient Humidity** ..... 5 to 95% RH, Non-condensing

**Wiring Connection** ..... Plenum Cable or  
 1/2-inch threaded conduit connection

**Mounting Location** ..... NEMA 2 (Interior Only)

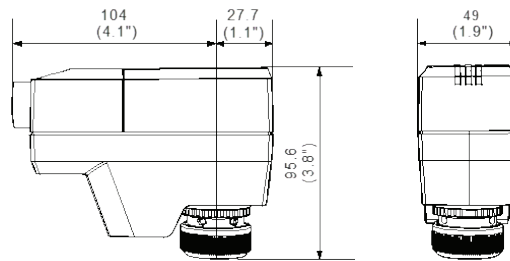
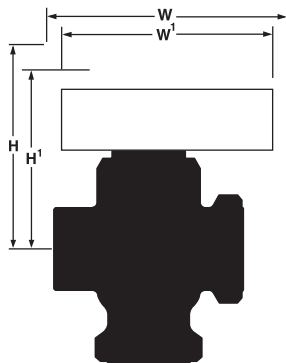
## Product Ordering

Description	Part No.	Actuator Prefix Code
Fail-Safe	SSC131.39U	260

A-162

Valves

## Dimensions



Dimensions shown in inches (mm).

Valve Size in.	Center Line to Top of Actuator	Service Height	Actual Width of Actuator	Service Width
	H'	H	W'	W
1/2" (15 mm)	5" (125 mm)	13" (330 mm)	5.2" (132 mm)	13.2" (335 mm)
3/4" (20 mm)	5" (125 mm)	13" (330 mm)	5.2" (132 mm)	13.2" (335 mm)
1" (25 mm)	5.2" (131 mm)	13.2" (335 mm)	5.2" (132 mm)	13.2" (335 mm)

**Table Notes:**

Service height and width are the recommended dimensions to allow access to the product.

## SSC Electronic Valve Actuator

24 Vac/dc, Proportional Control  
Fail-Safe or Fail-in-Place



SSC161...U Electronic Valve Actuator.

### Description

The Powermite SSC161.05U and SSC161.35U Electronic Valve Actuators require a 24 Vac/dc supply and receive a 0 to 10 Vdc control signal to control Powermite MT series valves with a 7/32-inch (5.5 mm) stroke and a threaded valve bonnet that fits the actuators.

### Features

- UL listed for plenum installations
- Direct coupled, one step installation without special tools
- Close off up to 120 psi
- Manual override
- Self-calibrating to stroke of valve
- Visual LED motion and position indication
- Spring return or non-spring return
- Orderable as an actuator only or as a complete valve/actuator assembly

### Applications

The Powermite SSC161... electronic actuators and MT Series Valves are used in heating and cooling applications to control hot or chilled water or low pressure steam (<15 psi) for convectors, fan coil units, unit conditioners, radiation, reheat coils and similar terminal units requiring a minimum of 67 lbs. (300 N) nominal force. The SSC161... accepts a standard 1/2 inch threaded conduit fitting connection.

A-163

Valves

# Specifications

**Operating Voltage** .....24 Vac ( $\pm 15\%$ ) or 24 Vdc ( $\pm 20\%$ )  
**Frequency** .....50/60 Hz  
**Power Supply** ..... Earth Ground Isolating Class 2, 24 Vac Transformer  
**Power Consumption** .....Normal operation 3.5 VA (ac), 1.5W (dc)  
**Control Signal (Y)**  
 Voltage ..... 0 to 10 Vdc  
 Input Impedance..... 100 kOhm  
**Running Time**  
 at 50/60 Hz..... 27.5 sec ( $\pm 25\%$ )  
**Fail-safe** .....<30 sec  
**Nominal Stroke** ..... 7/32" (5.5 mm)  
**Nominal Force** ..... 67 lbs. (300 N)

**Stroke/Signal Relationship** .....Linear  
**Spring Return (SSC161.35U only)** .....Non-mechanical, Electronic  
 Return Fails to Stem up (0 Position)  
**Agency Approvals** ..... UL/cUL 67030 Listed  
**Media Temperature in Valve** .....34° to 248° F (1° to 120° C)  
**Ambient Temperature**  
 Operation.....34° to 122°F (1° to 50°C)  
 Transport and Storage ..... -13° to 158°F (-25° to 70°C)  
**Ambient Humidity** ..... 5 to 95% RH, Non-condensing  
**Wiring Connection** ..... Plenum Cable or 1/2-inch threaded conduit fitting  
**Protection Rating**..... NEMA 2/IP20

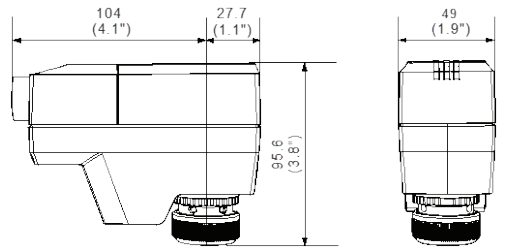
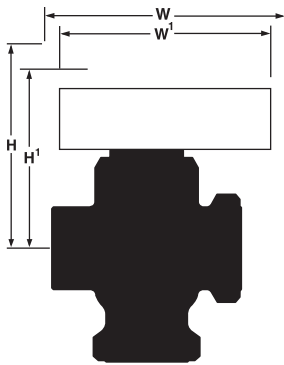
## Product Ordering

Description	Part No.	Actuator Prefix Code
Fail-Safe	<b>SSC161.35U</b>	<b>262</b>
Fail-in-Place	<b>SSC161.05U</b>	<b>261</b>

A-164

Valves

## Dimensions



Dimensions shown in inches (mm).

Valve Size in.	Center Line to Top of Actuator	Service Height	Actual Width of Actuator	Service Width
	H'	H	W'	W
1/2" (15 mm)	5" (125 mm)	13" (330 mm)	5.2" (132 mm)	13.2" (335 mm)
3/4" (20 mm)	5" (125 mm)	13" (330 mm)	5.2" (132 mm)	13.2" (335 mm)
1" (25 mm)	5.2" (131 mm)	13.2" (335 mm)	5.2" (132 mm)	13.2" (335 mm)

**Table Notes:**

Service height and width are the recommended dimensions to allow access to the product.



## SAS Electronic Valve Actuator

24 Vac, Proportional Control  
Spring Return or Non-Spring Return



Powermite M1 Series SAS Spring Return  
Electronic Valve Actuator.



Powermite MT Series SAS Non-Spring Return  
Electronic Valve Actuator.

### Description

The Powermite SAS Electronic Valve Actuators require a 24 Vac supply and receive a 0 to 10 Vdc or a 4 to 20 mA control signal to proportionally control a valve. This actuator is designed to work with Powermite MT Series Valves with a 7/32-inch (5.5 mm) stroke.

### Features

- Maintenance-free with reversible motor
- UL listed for plenum installations
- Close off up to 160 psi
- Position output signal 0 to 10 Vdc
- Non-spring return or spring return
- Small, compact design
- Manual adjustment knob with indication of stroke allows for repositioning in power-off condition
- Mechanical spring allows the valve to return to normal position in power-off condition (SAS61.33U actuator only)
- Suitable for low pressure (<15 psi) steam applications
- Orderable as an actuator only or as a complete valve/actuator assembly

### Applications

For use in small to medium HVAC installations with Powermite valves with a 7/32-inch (5.5 mm) stroke requiring a minimum of 90 pounds force (400 N). These valves can be used in liquid and low pressure (<15 psi) steam service applications.

#### Recommendation:

Use only with the MT Series valve bodies. This actuator is not recommended for 2-position or pulse applications.

A-165

Valves

# Specifications

**Operating Voltage** ..... 24 Vac, ±20%; 24 Vdc, +20%/-15%  
**Frequency** ..... 45 to 65 Hz  
**Power Supply** ..... Earth Ground Isolating, Class 2, 24 Vac Transformer  
*Do not power more than 10 actuators with one transformer.*  
**Power Consumption (Max.)**  
 SAS61.03U ..... 5.3 VA  
 SAS61.33U ..... 5.9 VA  
**Control Signal (Y)** ..... 0 to 10 Vdc, 4 to 20 mA  
**Current Draw** ..... ≤0.1 mA for 0 to 10 Vdc control  
 4 to 20 mA ± 1% for 4 to 20 mA control  
**Input Impedance** ..... >100K ohms  
**Position Feedback (U)**  
 Voltage ..... 0 to 10 Vdc ± 1%  
 Load impedance ..... >10K Ω res.  
 Current load ..... 1 mA max.  
**Forced control (Z)**  
 Resistance ..... 0 to 1000Ω, stroke proportional to R  
 Z connected to G ..... Max. stroke 100%  
 Z connected to G0 ..... Min. stroke 0%  
 Voltage ..... Max. 24 Vac to 20%,  
 Max 24 Vdc+20%,-15%  
 Current draw ..... ≤0.1 mA

**Running Time**  
 at 60 Hz ..... 30 sec.  
 Spring Return (SAS61.33U only) ..... <14 sec.  
**Nominal Stroke** ..... 7/32" (5.5 mm)  
**Nominal Force** ..... 90 lbf. (400 N)  
**Agency Approvals** ..... UL/cUL, UL873  
 CSA C22.2 No. 24-93  
**Media Temperature in Valve** ..... 34° to 248° F (1° to 120° C)  
**Ambient Temperature**  
 Operation ..... 23° to 131°F (-5° to 55°C)  
 Transport and Storage ..... -13°F to 158°F (-25°C to 70°C)  
**Ambient Humidity** ..... 5 to 95% RH, Non-condensing  
**Wiring Connection** ..... Plenum Cable or Conduit via a 1/2" Knockout  
**Mounting Location** ..... NEMA 1 (Interior Only)

A-166

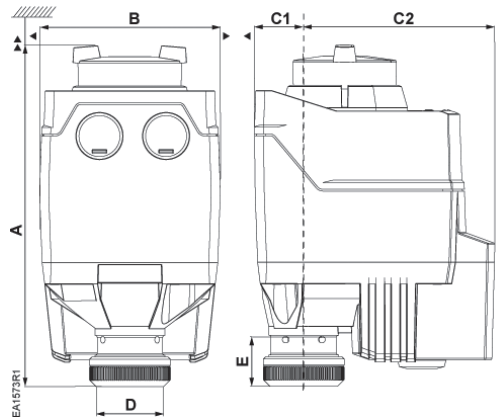
Valves

## Product Ordering

Description	Part No.	Actuator Prefix Code
Spring Return	SAS61.33U	365
Non-Spring Return	SAS61.03U	364

# Dimensions

## SAS Series Spring Return Actuator



Dimensions shown in inches (mm).

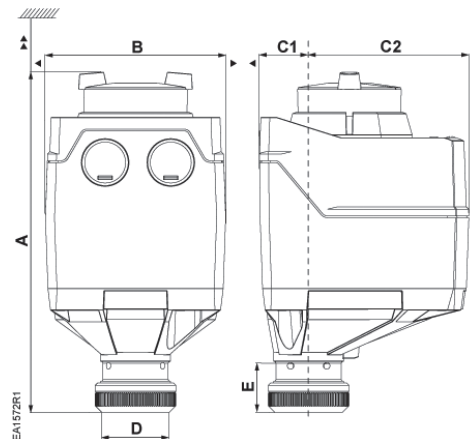
Dimensions							
A	B	C1	C2	D	E	▶	▶▶
5.9 (151 mm)	3.1 (80 mm)	0.9 (21.9 mm)	3.3 (84.6 mm)	1.2 (29.9 mm)	0.9 (21.8 mm)	4 (100 mm)	8 (200 mm)

**Table Notes:** **Service envelope** Minimum access space recommended  
 ▶ 4 inch (100 mm)    ▶▶ 8 inch (200 mm)

A-167

Valves

## SAS Series Non-Spring Return Actuator



Dimensions shown in inches (mm).

Dimensions							
A	B	C1	C2	D	E	▶	▶▶
5.9 (151 mm)	3.1 (80 mm)	0.9 (21.9 mm)	2.8 (71.1 mm)	1.2 (29.9 mm)	0.9 (21.8 mm)	4 (100 mm)	8 (200 mm)

**Table Notes:** **Service envelope** Minimum access space recommended  
 ▶ 4 inch (100 mm)    ▶▶ 8 inch (200 mm)



Siemens offers a 5-year warranty on valves and actuators.



A-168

# Get the job done with ball valves

With line sizes ranging from 1/2" to 2" size (Cv ranging from 0.4 to 250) Siemens ball valves and valve actuators deliver comprehensive control solutions. We have the highest close-off in the industry and the largest selection of valve trim finishes for chrome plated brass and 316 stainless steel. Our premium grade materials and construction includes a better design blowout proof stem that withstands high pressure and a double O-ring stem packing.

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75+ Years  
Innovating  
control valves



Fast and Easy  
Product selection



Quality  
Siemens standards



100%  
Factory tested



Up to 5 Million  
Repositions  
for longer life



Up to 100 Thousand  
Full strokes

# SIEMENS

## SAS Electronic Valve Actuator

24 Vac, Floating Control  
Spring Return or Non-Spring Return



Powermite MT Series SAS Spring Return  
Electronic Valve Actuator.



Powermite MT Series SAS Non-Spring Return  
Electronic Valve Actuator.

### Description

The Powermite SAS Electronic Valve Actuators require a 24 Vac supply and receive a floating signal to provide three-position control of a valve. This actuator is designed to work with Powermite MT Series Valves with a 7/32-inch (5.5 mm) stroke.

### Features

- Maintenance-free with reversible motor
- Small compact design
- UL listed for plenum installations
- Close off up to 160 psi
- Non-spring return or spring return
- Floating control signal input
- Manual adjustment knob with indication of stroke allows for repositioning in power off condition
- Mechanical spring returns the valve to its normal (spring return) position in power off condition (SAS81.33U only)
- Suitable for liquid and low pressure (15 psi) steam applications
- Orderable as an actuator only or as a complete valve/actuator assembly

### Applications

For use in small to medium HVAC installations with Powermite valves with a 7/32-inch (5.5 mm) stroke requiring a minimum of 90 pounds force (400 N). These valves can be used in liquid and low pressure (<15 psi) steam service applications.

### Recommendation:

Use only with the MT Series valve bodies. This actuator is not recommended for 2-position or pulse applications.

A-169

Valves

## Specifications

**Operating Voltage** ..... 24 Vac, ±20%; 24 Vdc, +20%/-15%  
**Frequency** ..... 45 to 65 Hz  
**Power Supply** ..... Earth Ground Isolating, Class 2, 24 Vac Transformer  
*Do not power more than 10 actuators with one transformer.*  
**Power Consumption (Max.)**  
 SAS81.03U ..... 2.5 VA  
 SAS81.33U ..... 3.4 VA  
**Control signal** ..... Floating (3-position)  
 Y1 ..... Positioning signal extends actuator stem  
 Y2 ..... Positioning signal retracts actuator stem  
**Running Time**  
 at 60 Hz ..... 30 sec.  
 Spring Return (SAS81.33U only) ..... <14 sec.

**Nominal Stroke** ..... 7/32" (5.5 mm)  
**Nominal Force** ..... 90 lbf. (400 N)  
**Agency Approvals** ..... UL/cUL, UL873  
 CSA C22.2 No. 24-93  
**Media Temperature in Valve** ..... 34° to 248° F (1° to 120° C)  
**Ambient Temperature**  
 Operation ..... 23° to 131°F (-5° to 55°C)  
 Transport and Storage ..... -13° to 158°F (-25° to 70°C)  
**Ambient Humidity** ..... 5 to 95% RH, Non-condensing  
**Wiring Connection** ..... Plenum Cable or Conduit via a 1/2" Knockout  
**Mounting Location** ..... NEMA 1 (Interior Only)

## Product Ordering

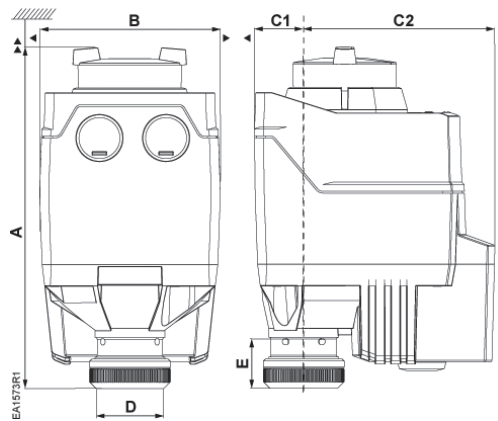
Description	Part No.	Actuator Prefix Code
Spring Return	SAS81.33U	366
Non-Spring Return	SAS81.03U	363

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Valves

# Dimensions

## SAS Series Spring Return Actuator



Dimensions shown in inches (mm).

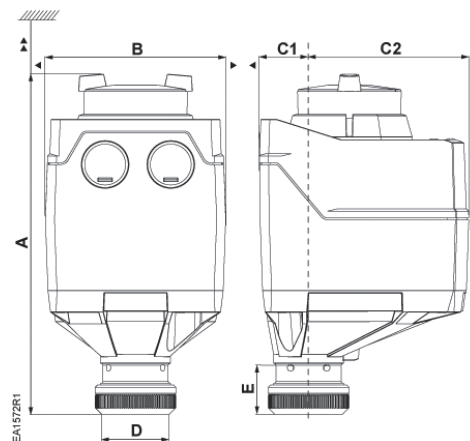
Dimensions							
A	B	C1	C2	D	E	▶	▶▶
5.9 (151 mm)	3.1 (80 mm)	0.9 (21.9 mm)	3.3 (84.6 mm)	1.2 (29.9 mm)	0.9 (21.8 mm)	4 (100 mm)	8 (200 mm)

**Table Notes:** **Service envelope** Minimum access space recommended  
 ▶ 4 inch (100 mm)    ▶▶ 8 inch (200 mm)

A-171

Valves

## SAS Series Non-Spring Return Actuator



Dimensions shown in inches (mm).

Dimensions							
A	B	C1	C2	D	E	▶	▶▶
5.9 (151 mm)	3.1 (80 mm)	0.9 (21.9 mm)	2.8 (71.1 mm)	1.2 (29.9 mm)	0.9 (21.8 mm)	4 (100 mm)	8 (200 mm)

**Table Notes:** **Service envelope** Minimum access space recommended  
 ▶ 4 inch (100 mm)    ▶▶ 8 inch (200 mm)



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# Hydronic Flow Optimization turns your design goals into reality

The right devices in a hydronic system can lead to greater energy efficiency and significant savings in first costs and lifecycle costs. Discover total system performance solutions to optimize delta-T through precise control. Make your building operations more efficient and bring balance to your bottom line with the right valves, variable frequency drives, and differential pressure sensors for optimal hydronic system balancing.

Visit [usa.siemens.com/hfo](http://usa.siemens.com/hfo) to learn more.



**Energy Savings**  
Up to 30%



**Maximize Comfort**  
Hydronic flow optimization leads to higher comfort





## Flowrite Globe Valves



A-173

Valves

Compatible with piping line sizes ranging from 1/2 to 6-inch (Cv range 1.0 to 400), the Flowrite Globe Valves offer electronic and pneumatic valve actuators. Flowrite valves bodies and actuators feature a unique, direct-coupled design that requires no additional parts to connect the valve and the actuator for time and labor savings.

### Nearly 80 Years of Legendary Performance

Since 1934, Flowrite has been recognized as the best globe valve in the HVAC control market. The Flowrite Globe Valve is an excellent choice for small to large air handling units and for central plant applications.

### Simple to Specify and Order

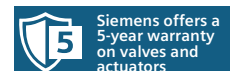
The direct-coupled connection provides flexibility and ease of installation. Specify the valve and actuator configuration to meet your specific requirements. In addition, you can select how you would like the components shipped – either as separate components or factory-assembled and tagged at no additional cost.

### Save Time

Installation is simple. There is no linkage to assemble or adjust.

### Flowrite Features

- Unique caged-plug design improves controllability and reduces noise
- Highest close off pressures in the industry – up to 250 psi
- Low leakage 0.01% (ANSI Class IV)
- Greater than 100:1 rangeability
- Industry leading simplicity in serviceability



Siemens offers a  
5-year warranty  
on valves and  
actuators



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# Technical support

Our Technical Support Center is open 7:00 am–6:00 pm Central time, Monday–Friday. Outside of normal operating hours, we provide an on-call service for emergency support situations via our Dallas Customer Support Center.

When you need assistance

- Call 800-877-7545, option 2
- Email [support.us.i-bt@siemens.com](mailto:support.us.i-bt@siemens.com)
- For Siemens Partners and team members, access support here: [usa.siemens.com/supportrequest](https://usa.siemens.com/supportrequest)

**SIEMENS**

## Two-way Globe Valves

*1/2 to 2-inch Bronze Body  
Normally Open or Normally Closed*



Flowrite Two-way Globe Valve.

### Description

Designed to work with either a pneumatic or electronic actuator with a 3/4-inch (20 mm) stroke, the Flowrite Two-way Globe Valves are available in ANSI Class 250 for Normally Closed or Normally Open action.

### Features

- Direct-coupled bonnet
- Equal percentage or linear flow characteristics
- Brass or stainless steel trim
- Standard- or high-temperature packing
- Close-off up to 250 psi
- Fully serviceable
- Greater than 100:1 rangeability
- Accepts any 3/4-inch stroke Flowrite pneumatic or electronic actuator
- ANSI Leakage Class IV (0.01% of Cv)
- Cartridge-type packing for easy service
- Orderable as a valve only or as a complete valve/actuator assembly

### Applications

The Flowrite Two-way Globe Valves are recommended for water, low and high pressure steam, and glycol solutions up to 50 percent.

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Valves

# Specifications

- Valve Size** ..... 1/2 to 2" (15 to 50 mm)  
**Body Style** .....Globe Style Control Valve  
**Seat Style** .....Single Seat, Metal to Metal  
**Action** .....Normally Closed (NC),  
Normally Open (NO)  
**Stem Travel (Stroke)** ..... 3/4" (20 mm)  
**Valve Body** ..... ANSI Class 250  
**Materials**  
Body ..... UNS CA 844 Bronze  
Trim ..... Brass or Stainless Steel  
Stem ..... Stainless Steel ASTM A582 Type 303  
**Packing**  
Normal Duty ..... EPDM O-rings  
Steam ..... PTFE V-rings and EPDM O-ring  
**Operating**  
Controlled Medium ..... Saturated Steam, Water,  
Glycol Solutions up to 50%  
Medium Temperature Range  
Normal Duty Packing ..... 20° to 250°F (-7° to 120°C)  
Steam Packing ..... 337°F (170°C) Max.

- Max. Recommended Differential Pressure for Modulating Service**  
Brass Trim  
Liquid ..... 25 psi (173 kPa)  
Steam ..... 15 psi (103 kPa)  
Stainless Steel Trim  
Liquid ..... 50 psi (345 kPa)  
Steam ..... 50 psi (345 kPa)  
**Max. Inlet Pressure**  
Water ..... Refer to Flowrite Reference Section.  
Steam ..... 100 psig (690 kPa)  
**Rangeability** ..... >100:1  
**Close-off Ratings** ..... According to ANSI/FCI 70-2  
**Leakage Rate** ..... Class IV (0.01% of Cv)  
**Flow Characteristics** ..... Equal Percentage or Linear

## Valve Product Ordering

### Normally Open/Normally Closed, Equal Percentage



Connection	Valve Size		Flow Rate		Stroke	Normally Open Part No.	Normally Closed Part No.
	in.	(mm)	Cv	(Kvs)	(in.)		
Standard-Temperature Packing – 20° to 250°F (-7° to 120°C)							
Brass Trim							
Female x Female	1/2	(15)	1	(0.9)	3/4	599-03162	599-03180
	1/2	(15)	1.6	(1.4)	3/4	599-03163	599-03181
	1/2	(15)	2.5	(2.2)	3/4	599-03164	599-03182
	1/2	(15)	4	(3.4)	3/4	599-03165	599-03183
	3/4	(20)	6.3	(5.4)	3/4	599-03166	599-03184
	1	(25)	10	(8.6)	3/4	599-03167	599-03185
	1-1/4	(32)	16	(14)	3/4	599-03168	599-03186
	1-1/2	(40)	25	(22)	3/4	599-03169	599-03187
	2	(50)	40	(34)	3/4	599-03170	599-03188
Stainless Steel Trim							
Female x Female	1/2	(15)	1	(0.9)	3/4	599-03108	599-03126
	1/2	(15)	1.6	(1.4)	3/4	599-03109	599-03127
	1/2	(15)	2.5	(2.2)	3/4	599-03110	599-03128
	1/2	(15)	4	(3.4)	3/4	599-03111	599-03129
	3/4	(20)	6.3	(5.4)	3/4	599-03112	599-03130
	1	(25)	10	(8.6)	3/4	599-03113	599-03131
	1-1/4	(32)	16	(14)	3/4	599-03114	599-03132
	1-1/2	(40)	25	(22)	3/4	599-03115	599-03133
	2	(50)	40	(34)	3/4	599-03116	599-03134

## Valve Product Ordering






Normally Open/Normally Closed, Linear, Stainless Steel Trim



Connection	Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke (in.)	Normally Open Part No.	Normally Closed Part No.
<b>Standard-Temperature Packing – 20° to 250°F (-7° to 120°C)</b>					
Female x Female	1/2 (15)	1 (0.9)	3/4	599-03000	599-03018
	1/2 (15)	1.6 (1.4)	3/4	599-03001	599-03019
	1/2 (15)	2.5 (2.2)	3/4	599-03002	599-03020
	1/2 (15)	4 (3.4)	3/4	599-03003	599-03021
	3/4 (20)	6.3 (5.4)	3/4	599-03004	599-03022
	1 (25)	10 (8.6)	3/4	599-03005	599-03023
	1-1/4 (32)	16 (14)	3/4	599-03006	599-03024
	1-1/2 (40)	25 (22)	3/4	599-03007	599-03025
2 (50)	40 (34)	3/4	599-03008	599-03026	
<b>High-Temperature Packing – 337°F (170°C)</b>					
Female x Female	1/2 (15)	1 (0.9)	3/4	599-03054	599-03072
	1/2 (15)	1.6 (1.4)	3/4	599-03055	599-03073
	1/2 (15)	2.5 (2.2)	3/4	599-03056	599-03074
	1/2 (15)	4 (3.4)	3/4	599-03057	599-03075
	3/4 (20)	6.3 (5.4)	3/4	599-03058	599-03076
	1 (25)	10 (8.6)	3/4	599-03059	599-03077
	1-1/4 (32)	16 (14)	3/4	599-03060	599-03078
	1-1/2 (40)	25 (22)	3/4	599-03061	599-03079
2 (50)	40 (34)	3/4	599-03062	599-03080	

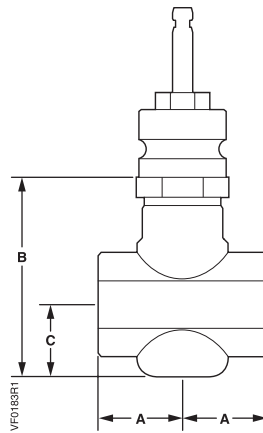
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## Actuator Product Ordering

Description		Part No.	Actuator Prefix Code	
 4"	Pneumatic	3-8 psi (21-55 kPa)	599-01081	268
		5-10 psi (34-69 kPa)	599-01082	—*
		10-15 psi (69-103 kPa)	599-01083	270
 8"	Pneumatic	Normal Temp.	599-01050	277
		High-Temp.	599-01051	—*
 8"	Pneumatic w/ Positioner	Normal Temp. w/Positioner	599-01050 + 599-00426	283
		High-Temp. w/Positioner	599-01051 + 599-00426	—*
	Electro-Mechanical	Rack & Pinion 2P, Spring Return	599-03611	299
		Rack & Pinion, 0-10 Vdc, Spring Return	599-03609	298
		24 V, Floating 3P, Non-Spring Return	SAX81.03U	373
		24 V, 0-10 V, 4-20 mA, Non-Spring Return	SAX61.03U	371
	Electro-Hydraulic	24 V, Floating 3P, Spring Return	SKD82.51U	—*
		24 V, Floating 3P, Non-Spring Return	SKD82.50U	—*
		24 V, 0-10 V, 4-20 mA, Spring Return	SKD62U	274
		24 V, 0-10 V, 4-20 mA, Non-Spring Return	SKD60U	267
		24 V, 0-10 V, 4-20 mA, Spring Return	SKB62U	291

\*Not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

# Dimensions and Weights



Female NPT by Female NPT (FxF)

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Valves

Valve Size	Dimensions			Weight
	A	B	C	
<b>Normally Open</b>				
1/2" (15 mm)	1-7/16" (36 mm)	2-15/16" (74 mm)	1-1/4" (32 mm)	3 lb. (1.4 kg)
3/4" (20 mm)	1-11/16" (43 mm)	3-15/16" (99 mm)	1-7/16" (36 mm)	4 lb. (1.8 kg)
1" (25 mm)	2" (50 mm)	3-3/4" (96 mm)	1-1/4" (32 mm)	5 lb. (2.3 kg)
1-1/4" (32 mm)	2-1/2" (62 mm)	4-1/4" (109 mm)	2" (50 mm)	7 lb. (3.2 kg)
1-1/2" (40 mm)	2-9/16" (65 mm)	4-1/4" (109 mm)	2" (50 mm)	8 lb. (3.6 kg)
2" (50 mm)	3-1/8" (79 mm)	4-9/16" (116 mm)	2-1/4" (57 mm)	16 lb. (7.3 kg)
<b>Normally Closed</b>				
1/2" (15 mm)	1-7/16" (36 mm)	3-13/16" (97 mm)	2-13/16" (55 mm)	3 lb. (1.4 kg)
3/4" (20 mm)	1-11/16" (43 mm)	3-13/16" (97 mm)	2-13/16" (55 mm)	4 lb. (1.8 kg)
1" (25 mm)	2" (50 mm)	3-13/16" (97 mm)	2-13/16" (55 mm)	5 lb. (2.3 kg)
1-1/4" (32 mm)	2-1/2" (62 mm)	3-13/16" (97 mm)	2-13/16" (55 mm)	7 lb. (3.2 kg)
1-1/2" (40 mm)	2-9/16" (65 mm)	3-7/8" (99 mm)	2-1/4" (58 mm)	8 lb. (3.6 kg)
2" (50 mm)	3-1/8" (79 mm)	4-1/2" (114 mm)	2-9/16" (65 mm)	16 lb. (7.3 kg)

## Three-way Globe Valves

1/2 to 2-inch Bronze Body



Flowrite Three-way Globe Valve.

### Description

Designed to work with either pneumatic or electronic actuators with a 3/4-inch (20 mm) stroke, the Flowrite Three-way Globe Valves are available in ANSI Class 250.

### Features

- Direct-coupled, universal bonnet
- Equal percentage (NC port) and linear flow (NO port) characteristics
- Brass or stainless steel trim
- Accepts any 3/4-inch stroke Flowrite pneumatic or electronic actuator
- Greater than 100:1 rangeability
- ANSI Leakage Class IV (0.01% of Cv)
- Cartridge-type packing for easy service
- Orderable as a valve only or as a complete valve/actuator assembly

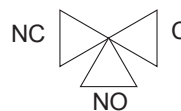
### Applications

Flowrite Three-way Globe Valves are recommended for mixing applications. The upper port is closed in the normal stem up, failed position. The lower port is open in the stem up position.

This valve can also be used for throttling or bypass coil control application. However, a pump is recommended on the coil circuit to improve the heat transfer characteristic of the coil and for freeze protection.

To use this valve as a diverting valve, refer to Technical Instructions 155-185P25 for limitations or contact your local representative for more information.

### Flow Characteristics



Equal percentage for NC/Linear for NO

A-179

Valves

# Specifications

**Valve Size** ..... 1/2 to 2" (15 to 50 mm)  
**Body Style** .....Globe Style Control Valve  
**Seat Style** .....Metal to Metal  
**Action** ..... Three-way Mixing  
**Stem Travel (Stroke)** ..... 3/4" (20 mm)  
**Valve Body Rating** ..... ANSI Class 250  
**Material**  
 Body ..... UNS CA 844 Bronze  
 Trim ..... Brass or Stainless Steel  
 Stem ..... Stainless Steel ASTM A582 Type 303  
 Packing ..... EPDM O-rings

**Operating**  
 Controlled Medium ..... Water, Glycol Solutions up to 50%  
 Medium Temperature Range ..... 20° to 250°F (-7° to 120°C)  
**Max. Recommended Differential Pressure for Modulating Service**  
 Brass Trim ..... 25 psi (173 kPa)  
 Stainless Steel Trim ..... 50 psi (345 kPa)  
**Max. Inlet Pressure** ..... Refer to the Flowrite Reference Section  
**Rangeability** ..... >100:1  
**Close-off Ratings** ..... According to ANSI/FCI 70-2  
**Leakage Rate** ..... Class IV (0.01% of Cv)

## Valve Product Ordering

### Brass and Stainless Steel Trim








Connection	Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke (in.)	Brass Trim Part No.	Stainless Steel Trim Part No.
<b>Standard-Temperature Packing – 20° to 250°F (-7° to 120°C)</b>					
Female x Female	1/2 (15)	1 (0.9)	3/4	599-03198	599-03144
	1/2 (15)	1.6 (1.4)	3/4	599-03199	599-03145
	1/2 (15)	2.5 (2.2)	3/4	599-03200	599-03146
	1/2 (15)	4 (3.4)	3/4	599-03201	599-03147
	3/4 (20)	6.3 (5.4)	3/4	599-03202	599-03148
	1 (25)	10 (8.6)	3/4	599-03203	599-03149
	1-1/4 (32)	16 (14)	3/4	599-03204	599-03150
	1-1/2 (40)	25 (22)	3/4	599-03205	599-03151
2 (50)	40 (34)	3/4	599-03206	599-03152	

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Valves



## Actuator Product Ordering

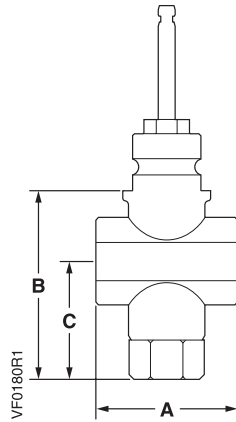
Description		Part No.	Actuator Prefix Code	
 4"	Pneumatic	3-8 psi (21-55 kPa)	599-01081	268
		5-10 psi (34-69 kPa)	599-01082	—*
		10-15 psi (69 -103 kPa)	599-01083	270
 8"	Pneumatic	Normal Temp.	599-01050	277
		High-Temp.	599-01051	—*
 8"	Pneumatic w/ Positioner	Normal Temp. w/Positioner	599-01050 + 599-00426	283
		High-Temp. w/Positioner	599-01051 + 599-00426	—*
	Electro-Mechanical	Rack & Pinion 2P, Spring Return	599-03611	299
		Rack & Pinion, 0-10 Vdc, Spring Return	599-03609	298
		24 V, Floating 3P, Non-Spring Return	SAX81.03U	373
		24 V, 0-10 V, 4-20 mA, Non-Spring Return	SAX61.03U	371
	Electro-Hydraulic	24 V, Floating 3P, Spring Return	SKD82.51U	—*
		24 V, Floating 3P, Non-Spring Return	SKD82.50U	—*
		24 V, 0-10 V, 4-20 mA, Spring Return	SKD62U	274
		24 V, 0-10 V, 4-20 mA, Non-Spring Return	SKD60U	267
		24 V, 0-10 V, 4-20 mA, Spring Return	SKB62U	291

\*Not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

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Valves

## Dimensions and Weights



Female NPT x Female NPT x Female NPT  
(FxFxF)

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Valves

Valve Size	Dimensions			Weight
	A	B	C	
1/2" (15 mm)	2-7/8" (72 mm)	4-5/16" (110 mm)	2-11/16" (68 mm)	3.0 lb. (1.4 kg)
3/4" (20 mm)	3-3/8" (85 mm)	4-5/16" (110 mm)	2-3/4" (69 mm)	4.0 lb. (1.8 kg)
1" (25 mm)	3-15/16" (100 mm)	4-1/2" (114 mm)	2-7/8" (72 mm)	5.0 lb. (2.3 kg)
1-1/4" (32 mm)	4-15/16" (125 mm)	4-5/8" (116 mm)	2-15/16" (74 mm)	7.0 lb. (3.2 kg)
1-1/2" (40 mm)	5-1/8" (130 mm)	4-5/8" (117 mm)	3" (76 mm)	9.0 lb. (4.1 kg)
2" (50 mm)	6-1/4" (158 mm)	5-1/8" (130 mm)	3-3/16" (81 mm)	13.0 lb. (5.9 kg)

## Two-way Flanged Iron Globe Valves

2-1/2 to 6-inch

Normally Open or Normally Closed



Flowrite Two-Way Flanged Iron Valve.

### Description

Designed to work with either pneumatic or electronic actuators, the Flowrite Two-way Valves are available in both ANSI Class 125 and 250 for normally closed or normally open action.

### Features

- Valve flange face-to-face dimensions meet ANSI/ISA S75.03 standards
- Direct-coupled, universal bonnet
- Bronze or stainless steel trim
- Standard- or high-temperature packing
- Close-off up to 250 psi
- Fully serviceable
- Greater than 100:1 rangeability
- Equal percentage or linear flow characteristics
- 2-1/2 and 3-inch sizes available with 3/4-inch stroke only
- 4-, 5-, 6-inch are available with a 1-1/2-inch stroke
- ANSI Leakage Class IV (0.01% of Cv)
- Cartridge-type packing for easy service
- Orderable as a valve only or as a complete valve/actuator assembly

### Applications

The Flowrite Two-way valves are recommended for water, steam, and glycol solutions up to 50 percent. Additional specifications include the following:

- Water inlet pressures up to ANSI 125 and ANSI 250 cast iron body rating
- Water modulating differential pressure up to 25 psi (172 kPa) for bronze trim and 50 psi (345 kPa) for stainless steel trim
- Steam inlet to 100 psi with modulating differential pressure up to 50 psi (345 kPa)

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Valves

# Specifications

**Valve Size** .....2-1/2 to 6" (65 to 150 mm)  
**Body Style** .....Flanged  
**Seat Style** .....Single seat  
**Action** .....Normally Closed (NC); Normally Open (NO)  
**Valve Body Rating** .....ANSI Class 125 or 250  
**Stem Travel (Stroke)**  
 2-1/2 and 3" .....3/4" (20 mm)  
 4, 5 and 6" .....1-1/2" (40 mm)  
**Materials**  
 Body .....Cast Iron ASTM A126 Class B  
 Trim .....Bronze or Stainless Steel  
 Stem .....Stainless Steel ASTM A582 Type 303  
**Packing**  
 Normal Duty Packing..... EPDM O-rings  
 Steam Packing .....PTFE V-rings and EPDM O-ring  
**Operating**  
 Controlled Medium ..... Saturated Steam, Water,  
 Glycol Solutions up to 50%  
**Medium Temperature Range**  
 Normal Duty Packing..... 20° to 250°F (-7° to 120°C)  
 Steam Packing .....337°F (170°C) max.

**Max. Inlet Pressure**  
 Water.....Refer to Flowrite Reference Section  
 Steam..... 100 psig (690 kPa)  
**Max. Recommended Differential Pressure for Modulating Service**  
 Bronze Trim  
 Liquid ..... 25 psi (173 kPa)  
 Steam ..... 15 psi (103 kPa)  
 Stainless Steel Trim  
 Liquid ..... 50 psi (345 kPa)  
 Steam ..... 50 psi (345 kPa)  
**Rangeability** ..... >100:1  
**Close-off Ratings** ..... According to ANSI/FCI 70-2  
**Close-off Pressure** .....Refer to the Flowrite Reference Section.  
**Leakage Rate** ..... Class IV (0.01% of Cv)  
**Flow Characteristics** .....Equal Percentage or Linear  
**Dimensions**  
 Face-to-face ..... ANSI/ISA S75.03

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Valves

## Valve Product Ordering

### Normally Open/Normally Closed, Equal Percentage



Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke (in.)	ANSI Class 125		ANSI Class 250	
			Normally Open Part No.	Normally Closed Part No.	Normally Open Part No.	Normally Closed Part No.
<b>Standard-Temperature Packing – 20° to 250°F (-7° to 120°C)</b>						
<b>Bronze</b>						
2-1/2 (65)	63 (54)	3/4	<b>599-05980</b>	<b>599-05990</b>	<b>599-05940</b>	<b>599-05950</b>
3 (80)	100 (86)	3/4	<b>599-05981</b>	<b>599-05991</b>	<b>599-05941</b>	<b>599-05951</b>
4 (100)	160 (140)	1-1/2	<b>599-05982</b>	<b>599-05992</b>	<b>599-05942</b>	<b>599-05952</b>
5 (125)	250 (215)	1-1/2	<b>599-05983</b>	<b>599-05993</b>	<b>599-05943</b>	<b>599-05953</b>
6 (150)	400 (340)	1-1/2	<b>599-05984</b>	<b>599-05994</b>	<b>599-05944</b>	<b>599-05954</b>
<b>Stainless Steel</b>						
2-1/2 (65)	63 (54)	3/4	<b>599-05960</b>	<b>599-05970</b>	<b>599-05920</b>	<b>599-05930</b>
3 (80)	100 (86)	3/4	<b>599-05961</b>	<b>599-05971</b>	<b>599-05921</b>	<b>599-05931</b>
4 (100)	160 (140)	1-1/2	<b>599-05962</b>	<b>599-05972</b>	<b>599-05922</b>	<b>599-05932</b>
5 (125)	250 (215)	1-1/2	<b>599-05963</b>	<b>599-05973</b>	<b>599-05923</b>	<b>599-05933</b>
6 (150)	400 (340)	1-1/2	<b>599-05964</b>	<b>599-05974</b>	<b>599-05924</b>	<b>599-05934</b>






## Valve Product Ordering

### Normally Open/Normally Closed, Linear, Stainless Steel



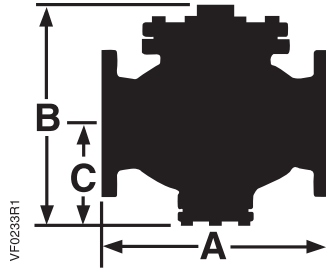
Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke (in.)	ANSI Class 125		ANSI Class 250		
			Normally Open Part No.	Normally Closed Part No.	Normally Open Part No.	Normally Closed Part No.	
<b>Standard-Temperature Packing – 20° to 250°F (-7° to 120°C)</b>							
2-1/2 (65)	63 (54)	3/4	<b>599-06060</b>	<b>599-06070</b>	<b>599-06140</b>	<b>599-06150</b>	
3 (80)	100 (86)	3/4	<b>599-06061</b>	<b>599-06071</b>	<b>599-06141</b>	<b>599-06151</b>	
4 (100)	160 (140)	1-1/2	<b>599-06062</b>	<b>599-06072</b>	<b>599-06142</b>	<b>599-06152</b>	
5 (125)	250 (215)	1-1/2	<b>599-06063</b>	<b>599-06073</b>	<b>599-06143</b>	<b>599-06153</b>	
6 (150)	400 (340)	1-1/2	<b>599-06064</b>	<b>599-06074</b>	<b>599-06144</b>	<b>599-06154</b>	
<b>High-Temperature Packing – 337°F (170°C)</b>							
2-1/2 (65)	63 (54)	3/4	<b>599-06040</b>	<b>599-06050</b>	<b>599-06120</b>	<b>599-06130</b>	
3 (80)	100 (86)	3/4	<b>599-06041</b>	<b>599-06051</b>	<b>599-06121</b>	<b>599-06131</b>	
4 (100)	160 (140)	1-1/2	<b>599-06042</b>	<b>599-06052</b>	<b>599-06122</b>	<b>599-06132</b>	
5 (125)	250 (215)	1-1/2	<b>599-06043</b>	<b>599-06053</b>	<b>599-06123</b>	<b>599-06133</b>	
6 (150)	400 (340)	1-1/2	<b>599-06044</b>	<b>599-06054</b>	<b>599-06124</b>	<b>599-06134</b>	

## Actuator Product Ordering

Description		Part No.	Actuator Prefix Code	
 8"	Pneumatic	20 mm Stroke/Normal Temp.	<b>599-01050</b>	<b>277</b>
		20 mm Stroke/Hi-Temp.	<b>599-01051</b>	—*
 12"	Pneumatic	20 mm Stroke	<b>599-01010</b>	—*
		40 mm Stroke	<b>599-01000</b>	<b>281</b>
 8"	Pneumatic w/ Positioner	20 mm Stroke/Normal Temp.	<b>599-01050 + 599-00426</b>	<b>283</b>
		20 mm Stroke/Hi-Temp.	<b>599-01051 + 599-00426</b>	—*
 12"	Pneumatic w/ Positioner	20 mm Stroke	<b>599-01010 + 599-00423</b>	—*
		40 mm Stroke	<b>599-01000 + 599-00423</b>	<b>287</b>
	Electro-Hydraulic	<b>20 mm Stroke</b>		
		24 V, Floating 3P, Spring Return	<b>SKD82.51U</b>	—*
		24 V, Floating 3P, Spring Return	<b>SKB82.51U</b>	—*
		24 V, Floating 3P, Non-Spring Return	<b>SKD82.50U</b>	—*
		24 V, 0-10 V, 4-20 mA, Non-Spring Return	<b>SKD60U</b>	<b>267</b>
		24 V, 0-10 V, 4-20 mA, Spring Return	<b>SKD62U</b>	<b>274</b>
		24 V, 0-10 V, 4-20 mA, Spring Return	<b>SKB62U</b>	<b>291</b>
		<b>40 mm Stroke</b>		
		24 V, Floating 3P, Spring Return	<b>SKC82.61U</b>	—*
		24 V, Floating 3P, Non-Spring Return	<b>SKC82.60U</b>	—*
24 V, 0-10 V, 4-20 mA, Spring Return	<b>SKC62U</b>	<b>294</b>		

\*Not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

# Dimensions and Weights



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Valves

Valve Size	ANSI Class 125				ANSI Class 250			
	Dimensions			Weight	Dimensions			Weight
	A	B	C		A	B	C	
<b>Normally Open</b>								
2-1/2" (65 mm)	10-7/8" (276 mm)	11" (281 mm)	4-7/8" (123 mm)	60 lb. (27 kg)	11-1/2" (292 mm)	11" (281 mm)	4-7/8" (123 mm)	76 lb. (34 kg)
3" (80 mm)	11-3/4" (299 mm)	12-1/4" (312 mm)	5-5/16" (135 mm)	76 lb. (34 kg)	12-1/2" (318 mm)	12-1/4" (312 mm)	5-5/16" (135 mm)	99 lb. (45 kg)
4" (100 mm)	13-7/8" (352 mm)	13-9/16" (345 mm)	6-5/16" (160 mm)	124 lb. (56 kg)	14-1/2" (368 mm)	13-5/8" (344.7 mm)	6-5/16" (160 mm)	160 lb. (73 kg)
5" (125 mm)	15-3/4" (400 mm)	15-3/16" (385 mm)	7" (177 mm)	155 lb. (70 kg)	16-5/8" (422 mm)	15-3/16" (385 mm)	7" (177 mm)	208 lb. (94 kg)
6" (150 mm)	17-3/4" (451 mm)	16-3/4" (426 mm)	7-7/8" (200 mm)	212 lb. (96 kg)	18-5/8" (473 mm)	16-3/4" (426 mm)	7-7/8" (200 mm)	302 lb. (137 kg)
<b>Normally Closed</b>								
2-1/2" (65 mm)	10-7/8" (276 mm)	10-5/8" (269 mm)	4-7/8" (125 mm)	58 lb. (26 kg)	11-1/2" (292 mm)	11" (279 mm)	5-3/8" (135 mm)	74 lb. (34 kg)
3" (80 mm)	11-3/4" (299 mm)	11-15/16" (303 mm)	5-5/8" (142 mm)	75 lb. (34 kg)	12-1/2" (318 mm)	12-7/16" (315 mm)	6" (154 mm)	98 lb. (44 kg)
4" (100 mm)	13-7/8" (352 mm)	13-15/16" (354 mm)	6-5/8" (168 mm)	123 lb. (56 kg)	14-1/2" (368 mm)	14-3/8" (364 mm)	7" (178 mm)	159 lb. (72 kg)
5" (125 mm)	15-3/4" (400 mm)	15-1/4" (338 mm)	7-1/2" (185 mm)	153 lb. (69 kg)	16-5/8" (422 mm)	15-3/4" (399 mm)	7-3/4" (196 mm)	207 lb. (94 kg)
6" (150 mm)	17-3/4" (451 mm)	17-1/16" (433 mm)	8-3/16" (207 mm)	209 lb. (95 kg)	18-5/8" (473 mm)	17-1/2" (444 mm)	8-5/8" (218 mm)	299 lb. (136 kg)

## High Pressure Close-off Two-Way Flanged Iron Globe Valves

2-1/2 to 6-inch

Normally Open or Normally Closed



Flowrite Two-Way Flanged Iron High Pressure Close-off.

### Description

The Flowrite 599 Series high pressure close-off, two-way flanged iron body globe valves, are designed to work with either pneumatic or SK Series electro-hydraulic actuators with 3/4-inch (20 mm) or 1-1/2-inch (40 mm) stroke. They are available in both ANSI Class 125 and 250 for normally open or normally closed action.

### Features

- Universal bonnet, for direct-coupled actuators
- Equal percentage flow characteristic
- Stainless steel trim and stem
- Metal-to-metal seat
- 200 psi close-off for all line sizes
- ANSI Class IV leakage ( $\leq 0.01\%$  of Cv)
- Greater than 100:1 rangeability
- EPDM O-ring packing
- Cartridge-type packing for easy service
- Orderable as a valve only or as a complete valve/actuator assembly

### Applications

Typical applications include control of hot or chilled water; or water-glycol solutions up to 50%.

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Valves

# Specifications

**Valve Size** .....2-1/2 to 6" (65 to 150 mm)  
**Body Style** .....Cast Iron ASTM A126 Class B  
**Seat Style** .....Metal to Metal  
**Action** .....Normally Open (NO) or Normally Closed (NC)  
**Valve Body Rating** .....ANSI Class 125 or 250  
**Stem Travel**  
 2-1/2 and 3" ..... 3/4" (20 mm) Stroke  
 4, 5 and 6" ..... 1-1/2" (40 mm) Stroke  
**Materials**  
 Body .....Cast Iron ASTM A126 Class B  
 Trim .....Stainless Steel  
 Stem .....Stainless Steel ASTM A582 Type 303  
**Packing**  
 Normal Duty Packing ..... EPDM O-ring  
**Operating**  
 Controlled Medium ..... Water, Glycol Solutions to 50%

**Medium Temperature Range** ..... 20° to 250°F (-7° to 120°C)  
**Max. Inlet Pressure**  
 Water.....Refer to Flowrite Reference Section  
**Max. Recommended Differential Pressure for Modulating Service**  
 Stainless Steel Trim  
 Liquid..... 50 psig (345 kPa)  
**Rangeability** ..... >100:1  
**Close-off Ratings** ..... According to ANSI/FCI 70-2  
**Close-off Pressure** ..... 200 psig  
**Leakage Rate** ..... Class IV (≤ 0.01% of Cv)  
**Dimensions**  
 Face-to-Face..... ANSI/ISA S75.03




## Valve Product Ordering

### Normally Open/Normally Closed, Equal Percentage



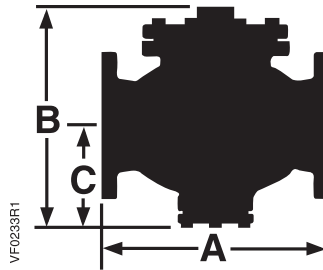
Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke (in.)	ANSI Class 125		ANSI Class 250		
			Normally Open Part No.	Normally Closed Part No.	Normally Open Part No.	Normally Closed Part No.	
<b>Standard-Temperature Packing – 20° to 250°F (-7° to 120°C)</b>							
2-1/2 (65)	63 (54)	3/4	<b>599-06610</b>	<b>599-06615</b>	<b>599-06620</b>	<b>599-06625</b>	
3 (80)	100 (86)	3/4	<b>599-06611</b>	<b>599-06616</b>	<b>599-06621</b>	<b>599-06626</b>	
4 (100)	160 (140)	1-1/2	<b>599-06612</b>	<b>599-06617</b>	<b>599-06622</b>	<b>599-06627</b>	
5 (125)	250 (215)	1-1/2	<b>599-06613</b>	<b>599-06618</b>	<b>599-06623</b>	<b>599-06628</b>	
6 (150)	400 (340)	1-1/2	<b>599-06614</b>	<b>599-06619</b>	<b>599-06624</b>	<b>599-06629</b>	

## Actuator Product Ordering

Description			Part No.	Actuator Prefix Code
	Pneumatic w/ Positioner	20 mm Stroke	<b>599-01050 + 599-00426</b>	<b>283</b>
	Pneumatic w/ Positioner	40 mm Stroke	<b>599-01000 + 599-00423</b>	<b>287</b>
	Electro-Hydraulic	24 V, 0-10 V, 4-20 mA, 3/4" Stroke Spring Return	<b>SKD62U</b>	<b>274</b>
		24 V, 0-10 V, 4-20 mA, 1-1/2" Stroke Spring Return	<b>SKC62U</b>	<b>294</b>



## Dimensions and Weights



Valve Size	ANSI Class 125				ANSI Class 250			
	Dimensions			Weight	Dimensions			Weight
	A	B	C		A	B	C	
<b>Normally Open</b>								
2-1/2" (65 mm)	10-7/8" (276 mm)	11" (281 mm)	4-7/8" (123 mm)	62 lb. (28 kg)	11-1/2" (292 mm)	11" (281 mm)	4-7/8" (123 mm)	78 lb. (36 kg)
3" (80 mm)	11-3/4" (299 mm)	12-1/4" (312 mm)	5-5/16" (135 mm)	79 lb. (36 kg)	12-1/2" (318 mm)	12-1/4" (312 mm)	5-5/16" (135 mm)	102 lb. (46 kg)
4" (100 mm)	13-7/8" (352 mm)	13-9/16" (345 mm)	6-5/16" (160 mm)	129 lb. (58 kg)	14-1/2" (368 mm)	13-5/8" (344.7 mm)	6-5/16" (160 mm)	165 lb. (75 kg)
5" (125 mm)	15-3/4" (400 mm)	15-3/16" (385 mm)	7" (177 mm)	172 lb. (73 kg)	16-5/8" (422 mm)	15-3/16" (385 mm)	7" (177 mm)	215 lb. (97 kg)
6" (150 mm)	17-3/4" (451 mm)	16-3/4" (426 mm)	7-7/8" (200 mm)	222 lb. (111 kg)	18-5/8" (473 mm)	16-3/4" (426 mm)	7-7/8" (200 mm)	312 lb. (142 kg)
<b>Normally Closed</b>								
2-1/2" (65 mm)	10-7/8" (276 mm)	10-5/8" (269 mm)	4-7/8" (125 mm)	60 lb. (27 kg)	11-1/2" (292 mm)	11" (279 mm)	5-3/8" (135 mm)	76 lb. (35 kg)
3" (80 mm)	11-3/4" (299 mm)	11-15/16" (303 mm)	5-5/8" (142 mm)	78 lb. (36 kg)	12-1/2" (318 mm)	12-7/16" (315 mm)	6" (154 mm)	101 lb. (46 kg)
4" (100 mm)	13-7/8" (352 mm)	13-15/16" (354 mm)	6-5/8" (168 mm)	128 lb. (58 kg)	14-1/2" (368 mm)	14-3/8" (364 mm)	7" (178 mm)	164 lb. (74 kg)
5" (125 mm)	15-3/4" (400 mm)	15-1/4" (338 mm)	7-1/2" (185 mm)	160 lb. (72 kg)	16-5/8" (422 mm)	15-3/4" (399 mm)	7-3/4" (196 mm)	214 lb. (97 kg)
6" (150 mm)	17-3/4" (451 mm)	17-1/16" (433 mm)	8-3/16" (207 mm)	219 lb. (100 kg)	18-5/8" (473 mm)	17-1/2" (444 mm)	8-5/8" (218 mm)	309 lb. (141 kg)

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Valves



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# We're **happy** to assist you

Our customer support team is ready to assist you with general inquiries, ordering, fulfillment, shipping questions, and more.

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**SIEMENS**

## Three-way Flanged Iron Globe Valves

2-1/2 to 6-inch



Flowrite Three-way Flanged Iron Globe Valve.

### Description

Designed to work with either a pneumatic or electronic Flowrite actuator, the Flowrite Three-way Globe Valves are available in both ANSI Class 125 and 250.

### Features

- Valve flange face-to-face dimensions meet ANSI/ISA S75.03 standards
- Direct-coupled, universal bonnet
- Equal percentage (NC port) and linear (NO port) flow characteristics
- Bronze or stainless steel trim
- Greater than 100:1 rangeability
- 2-1/2 to 3-inch are available with a 3/4-inch stroke
- 4-, 5-, and 6-inch are available with a 1-1/2-inch stroke
- ANSI Leakage Class IV (0.01% of Cv)
- Cartridge-type packing for easy service

### Option

- Service flange for easy removal of stem and plug through bottom port

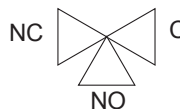
### Applications

The Flowrite Three-way Globe Valves are recommended for water and glycol solutions up to 50 percent. Additional specifications include the following:

- Water inlet pressures up to ANSI 125 and ANSI 250 cast-iron body rating
- Water modulating differential pressure up to 25 psi (172 kPa) for bronze trim and 50 psi (345 kPa) for stainless steel trim

To use this valve as a diverting valve, refer to Technical Instructions 155-160P25 for limitations or contact your local representative for more information.

### Flow Characteristics



Equal percentage for NC/Linear for NO

A-191

Valves

# Specifications

**Valve Size** ..... 2-1/2 to 6"  
**Body Style** ..... Flanged  
**Action** ..... Three-way Water Mix  
**Stem Travel**  
 2-1/2 and 3" ..... 3/4" (20 mm)  
 4, 5 and 6" ..... 1-1/2" (40 mm)  
**Valve Body Rating** ..... ANSI Class 125 or 250  
**Materials**  
 Body ..... Cast Iron, ASTM A 126 Class B  
 Trim ..... Bronze or Stainless Steel  
 Stem ..... Stainless Steel, ASTM A582 Type 303  
**Packing**  
 Liquid Service to 250°F (120°C) ..... EPDM O-rings

**Operating**  
 Controlled Medium ..... Water, Glycol Solutions up to 50%  
 Medium Temperature Range ..... 20° to 250°F (-7° to 120°C)  
**Max. Recommended Differential Pressure for Modulating Service**  
 Bronze Trim ..... 25 psig (173 kPa)  
 Stainless Steel Trim ..... 50 psig (345 kPa)  
**Flow Characteristics**  
 Upper Port ..... Equal Percentage  
 Lower Port ..... Linear  
**Rangeability** ..... >100:1

## Valve Product Ordering

### Bronze Trim



Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke	Valve Body		Service Flange	
			ANSI Class 125	ANSI Class 250	ANSI Class 125	ANSI Class 250
<b>Standard-Temperature Packing – 20° to 250°F (-7° to 120°C)</b>						
2-1/2 (65)	63 (54)	3/4	599-06160	599-06170	599-05011	599-05016
3 (80)	100 (86)	3/4	599-06161	599-06171	599-05012	599-05017
4 (100)	160 (140)	1-1/2	599-06162	599-06172	599-05013	599-05018
5 (125)	250 (215)	1-1/2	599-06163	599-06173	599-05014	599-05019
6 (150)	400 (340)	1-1/2	599-06164	599-06174	599-05015	599-05020

**Ordering Note:**  
Service Flange is sold separately.

### Stainless Steel Trim








Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke	Valve Body		Service Flange	
			ANSI Class 125	ANSI Class 250	ANSI Class 125	ANSI Class 250
<b>Standard-Temperature Packing – 20° to 250°F (-7° to 120°C)</b>						
2-1/2 (65)	63 (54)	3/4	599-06165	599-06175	599-05011	599-05016
3 (80)	100 (86)	3/4	599-06166	599-06176	599-05012	599-05017
4 (100)	160 (140)	1-1/2	599-06167	599-06177	599-05013	599-05018
5 (125)	250 (215)	1-1/2	599-06168	599-06178	599-05014	599-05019
6 (150)	400 (340)	1-1/2	599-06169	599-06179	599-05015	599-05020

**Ordering Note:**  
Service Flange is sold separately.

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Valves

## Actuator Product Ordering

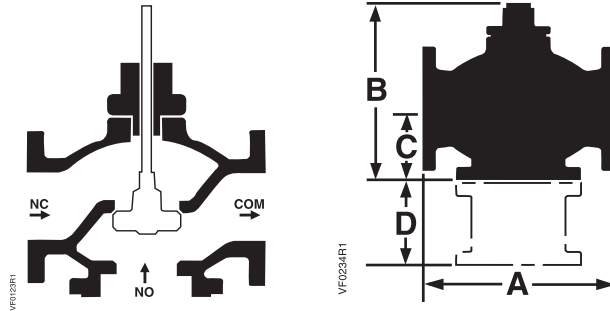
Description		Part No.	Actuator Prefix Code	
 8"	Pneumatic	20 mm Stroke/Normal Temp.	<b>599-01050</b>	<b>277</b>
		20 mm Stroke/Hi-Temp.	<b>599-01051</b>	—*
 12"	Pneumatic	20 mm Stroke	<b>599-01010</b>	—*
		40 mm Stroke	<b>599-01000</b>	<b>281</b>
 8"	Pneumatic w/ Positioner	20 mm Stroke/Normal Temp.	<b>599-01050 + 599-00426</b>	<b>283</b>
		20 mm Stroke/Hi-Temp.	<b>599-01051 + 599-00426</b>	—*
 12"	Pneumatic w/ Positioner	20 mm Stroke	<b>599-01010 + 599-00423</b>	—*
		40 mm Stroke	<b>599-01000 + 599-00423</b>	<b>287</b>
	Electro-Hydraulic	<b>20 mm Stroke</b>		
		24 V, Floating 3P, Spring Return	<b>SKD82.51U</b>	—*
		24 V, Floating 3P, Spring Return	<b>SKB82.51U</b>	—*
		24 V, Floating 3P, Non-Spring Return	<b>SKD82.50U</b>	—*
		24 V, 0-10 V, 4-20 mA, Non-Spring Return	<b>SKD60U</b>	<b>267</b>
		24 V, 0-10 V, 4-20 mA, Spring Return	<b>SKD62U</b>	<b>274</b>
		24 V, 0-10 V, 4-20 mA, Spring Return	<b>SKB62U</b>	<b>291</b>
		<b>40 mm Stroke</b>		
		24 V, Floating 3P, Spring Return	<b>SKC82.61U</b>	—*
		24 V, Floating 3P, Non-Spring Return	<b>SKC82.60U</b>	—*
24 V, 0-10 V, 4-20 mA, Spring Return	<b>SKC62U</b>	<b>294</b>		

\*Not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

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Valves

# Dimensions and Weights



Valve Size	Dimensions					Weight	
	A		B	C	D		
	ANSI Class 125	ANSI Class 250			Service Flange	ANSI Class 125	ANSI Class 250
2-1/2" (65 mm)	10-7/8" (276.4 mm)	11-1/2" (292 mm)	9-3/8" (239.2 mm)	3-3/4" (95 mm)	6.5" (165 mm)	50 lb. (23 kg)	63 lb. (29 kg)
3" (80 mm)	11-3/4" (298.5 mm)	12-1/2" (318 mm)	10-3/4" (272 mm)	4-3/8" (111 mm)	7" (178 mm)	65 lb. (30 kg)	82 lb. (37 kg)
4" (100 mm)	13-7/8" (352.4 mm)	14-1/2" (368 mm)	12-1/2" (317.8 mm)	5-1/8" (131.6 mm)	7.5" (191 mm)	110 lb. (50 kg)	134 lb. (61 kg)
5" (125 mm)	15-3/4" (400 mm)	16-5/8" (422 mm)	13-3/4" (349.2 mm)	5-3/4" (146.2 mm)	8.5" (216 mm)	136 lb. (62 kg)	176 lb. (80 kg)
6" (150 mm)	17-3/4" (451 mm)	18-5/8" (473 mm)	15-1/2" (393 mm)	6-5/8" (167 mm)	9.5" (241 mm)	141 lb. (64 kg)	258 lb. (117 kg)

A-194

Valves

## Pneumatic 4-inch Valve Actuator



Flowrite 4-inch Pneumatic Valve Actuator.

### Description

Designed for use with the threaded Flowrite valves, the Flowrite 4-inch Pneumatic Valve Actuator has a 3/4-inch (20 mm) stroke and is available in three spring ranges.

### Features

- Three spring ranges
  - 3 to 8 psi
  - 5 to 10 psi
  - 10 to 15 psi
- Visual position indication
- 3/4-inch (20 mm) stroke
- Large diaphragm area for control accuracy
- Easy installation and removal
- Rugged, all-metal housing

### Applications

The Flowrite 4-inch Pneumatic Valve Actuator is designed to be used with the threaded Flowrite valves in liquid and steam service applications.

A-195

Valves

# Actuator Specifications

Effective Diaphragm Area ..... 11 in.<sup>2</sup> (71 cm<sup>2</sup>)  
 Diaphragm Material ..... Silicone  
 Nominal Stroke ..... 3/4" (20 mm)  
 Max. Diaphragm Pressure ..... 35 psig (241 kPa)

Air Connection ..... 1/8" NPT  
 Ambient Operating and Storage Temperature ..... 0° to 225°F (-18° to 107°C)  
 Mounting Location ..... NEMA 1 (Interior Only)

## Actuator Product Ordering

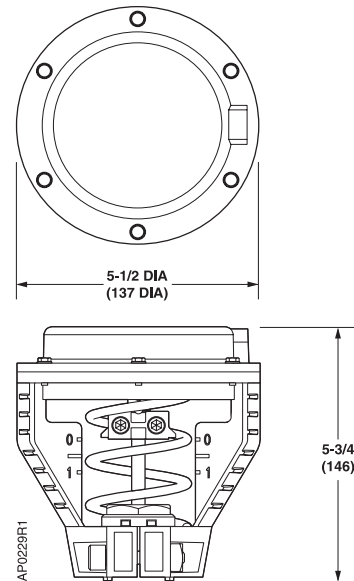
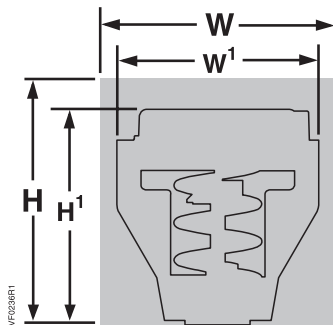
Nominal Spring Range	Part No.	Actuator Prefix Code
3 to 8 psi (21 to 55 kPa)	<b>599-01081</b>	<b>268</b>
5 to 10 psi (34 to 69 kPa)	<b>599-01082</b>	—*
10 to 15 psi (69 to 103 kPa)	<b>599-01083</b>	<b>270</b>

\*Not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

A-196

## Dimensions

Valves



Dimensions shown in inches (mm).

Actuator	Height of Actuator H <sup>1</sup>	Service Height H	Width/Diameter of Actuator W <sup>1</sup>	Service Width W
4" (100 mm)	5-3/4" (146 mm)	14" (350 mm)	5-1/2" (134 mm) Dia.	18" (450 mm)

### Table Notes:

Service height and width are the recommended dimensions to allow access to the product.



## Pneumatic 8-inch Valve Actuator



Flowrite 8-inch Pneumatic Valve Actuator.

### Description

Designed for use with Flowrite valves, the Flowrite 8-inch Pneumatic Valve Actuator has a 3/4-inch (20 mm) stroke and is available with two diaphragm options for normal duty and high-temperature service.

### Features

- Completely enclosed actuator housing protects the diaphragm, spring, and start point adjuster
- A positioning relay is available factory-mounted on valve and actuator assemblies or as an accessory
- Field-adjustable start point for sequencing and calibration
- Easy-to-install
- Legendary Flowrite performance

### Option

- High-temperature model

### Applications

The Flowrite 8-inch Pneumatic Valve Actuator is designed to be used with the Flowrite valves in liquid and steam service applications.

A-197

Valves

# 8-inch Pneumatic Actuator Specifications

**Effective Diaphragm Area** ..... 28 in.<sup>2</sup> (180 cm<sup>2</sup>)

**Diaphragm Material**  
 Standard ..... Buna-N  
 High Temp ..... Silicone

**Temperature Range**  
 Normal Duty Service ..... 25° to 300°F (-4° to 149°C)  
 High-Temperature Service ..... 25° to 366°F (-4° to 186°C)

**Nominal Spring Range**  
 Fixed Span Standard ..... 5 psig (34 kPa)  
 Fixed Span High Temp ..... 10 psig (69 kPa)  
 Adjustable Start Point ..... 3 to 10 psig (21 to 69 kPa)  
 Factory Setting Standard ..... 3 to 8 psig (21 to 55 kPa)  
 Factory Setting High Temp ..... 10 to 20 psig (69 to 138 kPa)

**Nominal Stroke** ..... 3/4" (20 mm)  
**Max. Diaphragm Pressure** ..... 35 psig (241 kPa)  
**Air Connection** ..... 1/8" NPT  
**Ambient Operating and Storage Temperature** ..... 35° to 180°F (2° to 85°C)  
**Mounting Location** ..... NEMA 1 (Interior Only)

## Product Ordering

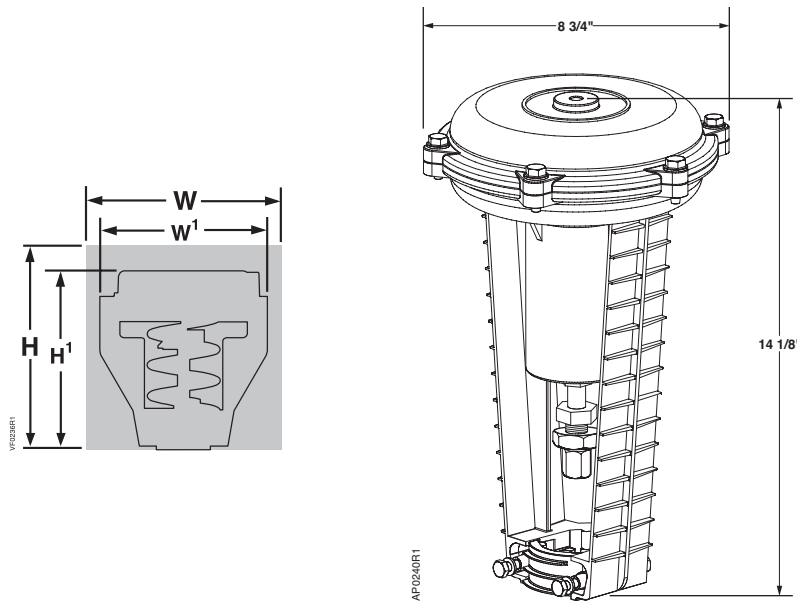
Description	Span	Part No.	Actuator Prefix Code
<b>Normal Duty</b>			
Actuator	5 psi	599-01050	277
Actuator and positioner		599-01050 + 599-00426	283
<b>High-Temperature</b>			
Actuator	10 psi	599-01051	—*
Actuator and positioner		599-01051 + 599-00426	—*

\*Not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

A-198

Valves

## Dimensions

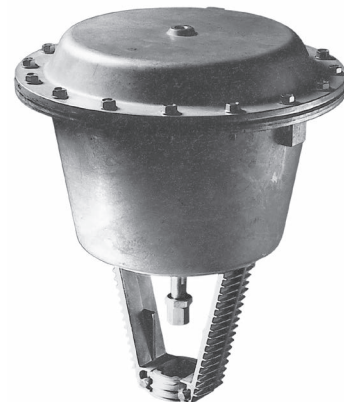


Actuator	Height of Actuator H <sup>1</sup>	Service Height H	Width/Diameter of Actuator W <sup>1</sup>	Service Width W
8" (171 mm)	14-1/8" (359 mm)	26" (660 mm)	8-3/4" (222 mm) Dia.	21" (450 mm)

**Table Notes:**

Service height and width are the recommended dimensions to allow access to the product.

## Pneumatic 12-inch Valve Actuator



Flowrite 12-inch Pneumatic Valve Actuator.

### Description

Designed for use with Flowrite valves, the Flowrite 12-inch Pneumatic Valve Actuator is available with two stem strokes, 3/4-inch (20 mm) stroke and 1-1/2-inch (40 mm).

### Features

- Completely enclosed actuator housing protects the diaphragm, springs, and start point adjuster
- A positioning relay is available factory-mounted on valve and actuator assemblies or as an accessory
- Field-adjustable start point for sequencing and calibration
- Easy-to-install

### Applications

The Flowrite 12-inch Pneumatic Valve Actuator is designed to be used with Flowrite valves in liquid and steam service applications.

A-199

Valves

# Specifications

**Effective Diaphragm Area** ..... 90 in.<sup>2</sup> (580 cm<sup>2</sup>)  
**Diaphragm Material** ..... Buna-N  
**Nominal Spring Range**  
 Fixed Span ..... 5 psig (34 kPa)  
 Adjustable Start Point ..... 3 to 10 psig (21 to 69 kPa)  
 Factory Setting ..... 3 to 8 psig (21 to 55 kPa)  
**Nominal Stroke** ..... 3/4 or 1-1/2" (20 or 40 mm)

**Max. Diaphragm Pressure** ..... 35 psig (241 kPa)  
**Air Connection** ..... 1/4" NPT  
**Medium Temperature** ..... 25° to 366°F (-4° to 186°C)  
**Ambient Operating and Storage Temperature** ..... 35° to 180°F (2° to 85°C)  
**Mounting Location** ..... NEMA 1 (Interior Only)

## Product Ordering

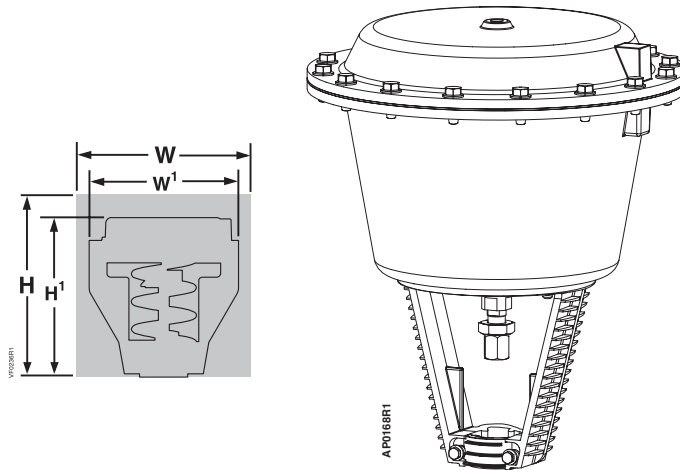
Description	Part No.	Actuator Prefix Code
<b>3/4" Stroke</b>		
Actuator	599-01010	—*
Actuator and positioner	599-01010 + 599-00423	—*
<b>1-1/2" Stroke</b>		
Actuator	599-01000	281
Actuator and positioner	599-01000 + 599-00423	287

\*Not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

A-200

Valves

## Dimensions



Actuator	Height of Actuator H'	Service Height H	Width/Diameter of Actuator W'	Service Width W
12" (305 mm)	17-7/8" (454 mm)	30" (762 mm)	15-1/8" (384 mm) Dia.	27" (686 mm)

### Table Notes:

Service height and width are the recommended dimensions to allow access to the product.

## SAX Valve Actuator

*24 Vac, Floating or Proportional Control*

*Floating, 0 to 10 Vdc or 4 to 20 mA*

*Non-Spring Return*



Flowrite SAX Valve Actuator.

### Description

Designed for use with Flowrite valves with a 3/4-inch (20 mm) stroke. The Flowrite SAX Electronic Actuator requires either a 24 Vac or 24 Vdc supply, and receives a 0 to 10 Vdc or 4 to 20 mA control signal to proportionally control the valve or a floating control signal to provide floating control of the valve.

### Features

- 24 Vac/dc operating voltage
- Proportional or floating (3P) control
- Direct-coupled installation requires no special tools or adjustments
- Manual override
- Overload and stall protection
- Visual stroke indication
- Non-spring return (fail-in-place)
- 180 lb (800N) nominal force
- Automatic stroke calibration on SAX61.03U
- LED status on SAX61.03U
- Electronic stroke indication on SAX61.03U
- Maintenance-free
- Optional functions with auxiliary switches, potentiometer (SAX81.03U), function module (SAX61.03U), and stem heater

### Applications

The Flowrite SAX Electronic Valve Actuator is designed to be used with the Flowrite and other valves in liquid and low pressure steam service applications. They are ideal for installations requiring quick response and excellent resolution.

A-201

Valves

# Specifications

**Operating Voltage** ..... 24 Vac  $\pm 20\%$ , 24 Vdc  $+20\%/-15\%$   
**Frequency** ..... 45-65 Hz  
**Power Consumption (SAX61.03U)** ..... 8 VA  
**Power Consumption (SAX81.03U)** ..... 5 VA  
**Control Signals (SAX61.03U)**  
 Control Input (Y)  
 Voltage..... 0 to 10 Vdc  
 Current..... 4-20 mA  
 Control Input (Z)  
 Resistance..... 0-1000 Ohm  
 Position Feedback Output (U)..... 0 to 10 Vdc  
**Control Signal (SAX81.03U)** ..... 3-Position (Floating)  
**Function**  
 Nominal Stroke .....  $3/4"$  (20 mm)  
 Run Time ..... 30 sec.  
 Nominal Force ..... 180 lb. (800 N)

**Agency Approvals** ..... UL873  
 CSA C22.2 No. 24-93  
**Operating and Storage Temperature**  
 Operating Temperature .....  $23^\circ$  to  $131^\circ\text{F}$  ( $-5^\circ$  to  $55^\circ\text{C}$ )  
 Storage Temperature .....  $5^\circ$  to  $131^\circ\text{F}$  ( $-15^\circ$  to  $55^\circ\text{C}$ )  
 Transport Temperature .....  $-13^\circ$  to  $158^\circ\text{F}$  ( $-25^\circ$  to  $70^\circ\text{C}$ )  
 Ambient Humidity ..... 5 to 90% RH, Non-condensing  
 Media Temperature ..... Up to  $266^\circ\text{F}$  ( $130^\circ\text{C}$ )  
**Conduit Opening** .....  $1/2"$  NPSM  
**Mounting Location** ..... NEMA 1 (Interior Only)

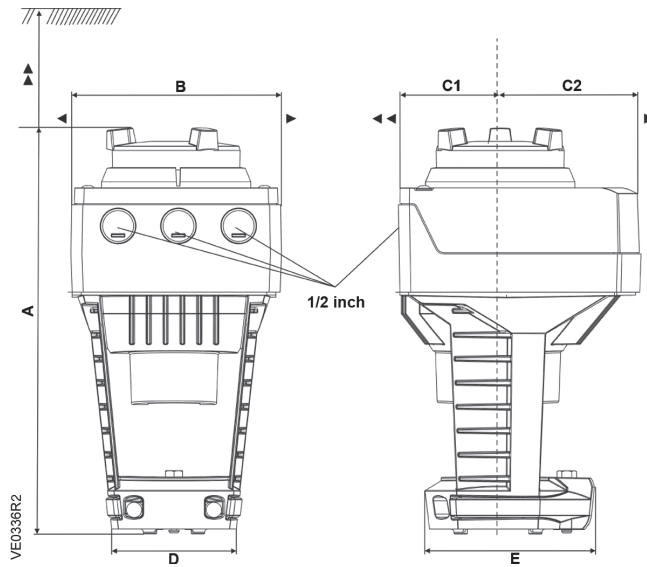
# Product Ordering

Description	Part No.	Actuator Prefix Code
24 Vac Proportional, Non-Spring Return	SAX61.03U	371
Floating 3P, Non-Spring Return	SAX81.03U	373

A-202

Valves

# Dimensions



Dimensions shown in inches (mm).

A	B	C	C1	C2	D	E	►	►►
9.5 (242)	5 (125)	6 (150)	2.7 (68)	3.3 (82)	3 (80)	4 (100)	4 (100)	8 (200)

## Electro-Mechanical Rack and Pinion Actuator

24 Vac, Proportional or On/Off Control  
0 to 10 Vdc or 2-position  
Spring Return



Flowrite Electro-Mechanical Rack and Pinion.

### Description

The Flowrite Electronic Rack and Pinion is designed for use with 1/2- to 2-inch Flowrite two- and three-way valves with a 3/4-inch stroke. A linkage fastens the actuator and the valve body together and transforms the rotary movement of the actuator output shaft to the linear motion required to position the valve.

### Features

- Brushless DC motor technology with stall protection
- Bi-directional fail-safe spring return
- All metal housing
- UL and C-UL listed
- Spring return to fail-safe position

### Applications

The Flowrite Valves and Valve Actuators are used to control water and glycol solutions to 50 percent in small to large air handling units and central plant applications.

A-203

Valves

# Specifications

## Power Supply

Operating Voltage .....24 Vac, +20%, -15%  
 Frequency ..... 50/60 Hz

## Power Consumption

599-03609 assembly  
 (with GCA161.1U actuator) ..... 9 VA running, 5 VA holding  
 599-03611 assembly  
 (with GCA121.1U actuator) ..... 8 VA running, 3 VA holding

Equipment Rating .....Class 2, in accordance with UL/CSA

## Control Signal

(599-03609 assembly with GCA161.1U actuator)  
 Input Signal  
 Voltage Input..... 0 to 10 Vdc (max. 35 Vdc)  
 Input Resistance .....100K Ohms  
 Current Input..... 4 to 20 mA  
 Input Resistance .....500 Ohms  
 Position Output Feedback Signal .....0 to 10 Vdc, ±1 mA maximum

## Mounting

Nominal Angle of Rotation .....90°  
 Maximum Angular Rotation .....95°  
 Noise Level ..... <45 dBA (running)  
 Enclosure .....NEMA 2 in vertical to horizontal 90

**Ambient Operating Temperature** .....-25° to 130° F (-32° to 55°C)

**Storage and Transport Temperature** .....-25° to 158° F (-32° to 70°C)

**Ambient Humidity** .....95% RH, non-condensing

**Agency Certification** .....UL873  
 C-UL certified to Canadian Standard C22.2 No. 24-93

**Pre-connected Cable** ..... 18 AWG, 3 ft. (0.9 m)

# Product Ordering

Description	Part No.	Actuator Prefix Code
0 to 10 Vdc, Spring Return	599-03609	298
2-position, Spring Return	599-03611	299
Bracket Only	599-03610	—

## Table Notes:

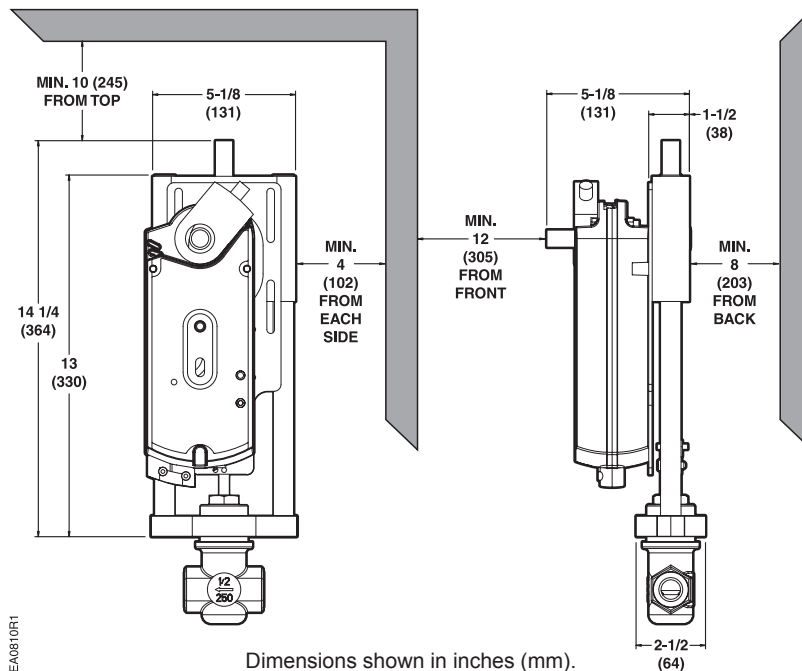
The linkage, OpenAir Actuator, and Flowrite Valve are available as an assembly. Refer to: *TB 249, Flowrite Valve and Actuator Assembly Selection Technical Bulletin*, 155-304P25 for details and product numbers.

A-204

Valves

# Dimensions

## Normal Duty Application as Shipped from Factory





## SKD Valve Actuator

*24 Vac, Proportional Control  
0 to 10 Vdc or 4 to 20 mA  
Spring Return or Non-Spring Return*



Flowrite SKD Valve Actuator.

### Description

Designed for use with the Flowrite and other standard valves with a 3/4" (20 mm) stroke, the Flowrite SKD Electronic Valve Actuator receives a 0 to 10 Vdc or 4 to 20 mA control signal to proportionally control the valve. The spring return actuators are available with standard or advanced functionality.

### Features

#### Standard Features

Part nos. with U suffix have these standard features:

- Direct-coupled installation requires no special tools or adjustments
- Visual and electronic stroke indication
- Die-cast aluminum housing
- 250 lb. (1150 N) nominal force
- 0 to 10 Vdc or 4 to 20 mA
- Integral position feedback
- Manual override
- Spring return or non-spring return
- Maintenance-free

#### Advanced Features (Spring Return only)

Part nos. with UA suffix have standard features, plus these advanced features:

- Adjustable start and span
- Stroke limit control
- Selectable operation direction (direct or reverse acting)
- Choice of linear or equal percentage flow characteristics
- Designed to be used with other manufacturer's valves with the appropriate Universal Valve Retrofit Kit

### Applications

The Flowrite SKD Electronic Valve Actuator requires a 24 Vac supply and is designed to be used with Flowrite and other standard valves in liquid and steam service applications.

A-205

Valves

# Specifications

**Operating Voltage** ..... 24 Vac  $\pm$ 20%

**Frequency** ..... 50/60 Hz

**Power Consumption**..... 17 VA (12 W)

**Control Signals**

Control Input (Y)

Voltage..... 0 to 10 Vdc

Current..... 4 to 20 mA

Control Input (R)

Resistance..... 0 to 1000 Ohms

Voltage..... 0 to 1.6 V

Position Feedback Output (U)

Voltage..... 0 to 10 Vdc

Max. Current..... 0.5 mA max.

Position Feedback Output (U)

Current..... 4 to 20 mA

Max. Impedance..... 250 Ohms

**Function**

Nominal Stroke ..... 3/4" (20 mm)

Run Time with Control Operation (Full Stroke)

Pushing Stroke, 0 to 100% ..... 30 sec.

Pulling Stroke, 100 to 0% ..... 15 sec.

Nominal Force

NC and 3-way Upper

Stroke..... 0%

Force..... 225 lbs. (1000 N)

NO and 3-way By Pass

Stroke..... 100%

Force..... 258 lbs. (1150 N)

**Agency Approvals** ..... UL873, cUL, CSA C22.2 No. 24-93, CE N474

**Operating**

Ambient Temperature ..... 5° to 130°F (-15° to 55°C)

Media Temperature ..... 14° to 300°F (-10° to 150°C)

**Conduit Opening** ..... 1/2" NPSM

**Housing** ..... NEMA 1 (Interior Only)

## Product Ordering

Description	Part No.	Actuator Prefix Code
24 Vac, Proportional Control, Non-Spring Return	SKD60U	267
24 Vac, Proportional Control, Spring Return	SKD62U	274
24 Vac, Proportional Control with Advanced Features, Spring Return	SKD62UA	—

**Ordering Note:**

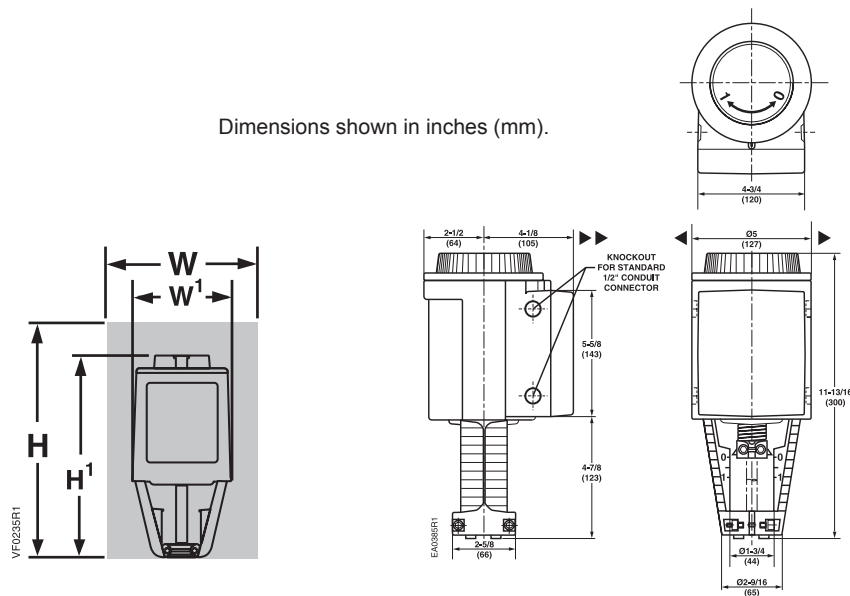
The SKD62UA can be used with other manufacturer's valves with the appropriate Universal Valve Linkage Kit.

A-206

Valves

## Dimensions

Dimensions shown in inches (mm).



Height of Actuator H <sup>1</sup>	Service Height H	Width/Diameter of Actuator W <sup>1</sup>	Service Width W
11-13/16" (300 mm)	19-3/4" (430 mm)	6-5/8" (170 mm) Width	14-1/2" (360 mm)

**Table Notes:**

Service height and width are the recommended dimensions to allow access to the product.

## SKD Valve Actuator

*24 Vac, Floating (3 Position) Control  
Spring Return or Non-Spring Return*



Flowrite SKD Valve Actuator.

### Description

Designed for use with Flowrite and other standard valves with a 3/4-inch (20 mm) stroke, the Flowrite SKD Electronic Valve Actuator requires 24 Vac supply to provide floating control of a valve.

### Features

- Direct-coupled installation requires no special tools or adjustments
- Visual stroke indication
- Die-cast aluminum housing
- 250 lb. (1150 N) nominal force
- Position feedback with optional potentiometer
- Manual override
- Spring return available for fail-safe position
- Maintenance-free

### Applications

The Flowrite SKD Electronic Valve Actuator with 24 Vac, floating control is designed to be used with Flowrite and other standard valves in liquid and steam service applications.

A-207

Valves

# Specifications

**Operating Voltage** ..... 24 Vac  $\pm$ 20%  
**Frequency** ..... 50/60 Hz  
**Power Consumption**  
 SKD82.50U ..... 13 VA (8 W)  
 SKD82.51U ..... 18 VA (11 W)  
 Control Signal ..... 3 Position (Floating)  
**Function**  
 Nominal Stroke ..... 3/4" (20 mm)  
 Run Time with Control Operation (Full Stroke)  
 Power Stroke, 0 to 100% @ 60 Hz ..... 120 sec.  
 Return Stroke, 100 to 0% @ 60 Hz ..... 120 sec.  
 Spring Return (SKD 82.51U Only) ..... 8 sec.

**Nominal Force**  
 NC and 3-way Upper  
 Stroke ..... 0%  
 Force ..... 225 lbs. (1000 N)  
 NO and 3-way By Pass  
 Stroke ..... 100%  
 Force ..... 258 lbs. (1150 N)  
**Agency Approvals** ..... UL873, CSA C22.2 No. 24-93  
**Operating**  
 Ambient Temperature ..... 5° to 130°F (-15° to 55°C)  
 Media Temperature ..... 14° to 300°F (-10° to 150°C)  
**Conduit Opening** ..... 1/2" NPSM  
**Mounting Location** ..... NEMA 1 (Interior Only)

## Product Ordering

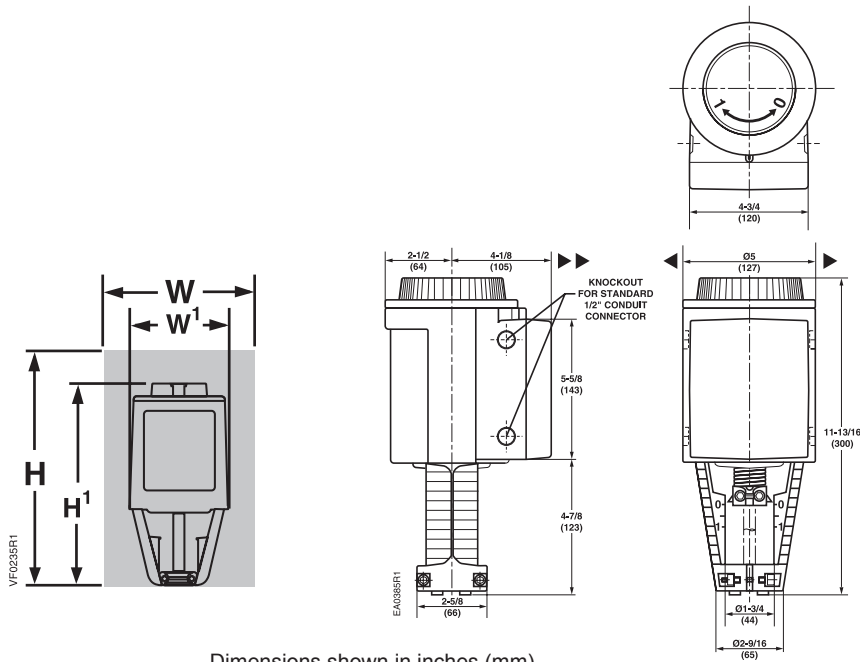
Description	Part No.	Actuator Prefix Code
Spring Return	<b>SKD82.51U</b>	—*
Non-Spring Return	<b>SKD82.50U</b>	—*

\*Not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

A-208

Valves

## Dimensions



Dimensions shown in inches (mm).

Height of Actuator H <sup>1</sup>	Service Height H	Width/Diameter of Actuator W <sup>1</sup>	Service Width W
11-13/16" (300 mm)	19-3/4" (430 mm)	6-5/8" (170 mm) Width	14-1/2" (360 mm)

### Table Notes:

Service height and width are the recommended dimensions to allow access to the product.

Accessories & Service Kits

A-317

## SKB/SKC Valve Actuator

24 Vac, Proportional Control

0 to 10 Vdc or 4 to 20 mA

Spring Return



Flowrite SKB/SKC Valve Actuator.

### Description

Designed for use with Flowrite and other standard valves with a 3/4-inch and 1-1/2-inch (20 and 40 mm) strokes, the Flowrite SKB/SKC Electronic Valve Actuator receives a 0 to 10 Vdc or 4 to 20 mA control signal to proportionally control the valve. The actuators are available with standard or advanced functionality.

### Features

#### Standard Models

Part nos. with U suffix have these standard features:

- Direct-coupled installation requires no special tools or adjustments
- Visual and electronic stroke indication
- Die-cast aluminum housing
- Highest close-off in the industry
- 3/4-inch stroke (SKB)
- 1-1/2-inch stroke (SKC)
- 1000 lb. (4400 N) nominal force
- Manual override
- Spring return to fail safe position
- Maintenance-free

#### Advanced Feature Models

Part nos. with UA suffix have standard features, plus these advanced features:

- Adjustable start and span
- Stroke limit control
- Selectable operation direction (direct or reverse acting)
- Choice of linear or equal percentage flow characteristics
- Designed to be used with other manufacturer's valves with the appropriate Universal Valve Retrofit Kit

### Applications

The Flowrite SKB/SKC Electronic Valve Actuator with proportional control is designed to be used with Flowrite and other standard valves with a 3/4-inch and 1-1/2-inch (20 and 40 mm) strokes in liquid and steam service applications.

A-209

Valves

# Specifications

<b>Nominal Stroke</b>	
SKB62U/UA.....	3/4" (20 mm)
SKC62U/UA.....	1-1/2" (40 mm)
<b>Operating Voltage</b> ..... 24 Vac ±20%	
<b>Frequency</b> ..... 50/60 Hz	
<b>Power Consumption</b>	
SKB62U/UA.....	17 VA (12 W)
SKC62U/UA.....	28 VA (20 W)
<b>Control Signals</b>	
Control Input (Y)	
Signal.....	0 to 10 Vdc or 4-20 mA
Max Impedance	
0 to 10 Vdc.....	100K Ohm
4 to 20 mA.....	250 Ohm
Control Input (Z)	
Resistance.....	0 to 1000 Ohms
Voltage.....	0 to 1.6 V

<b>Feedback Output (U)</b>	
Signal.....	0 to 10 Vdc or 4 to 20 mA
<b>Local Impedance</b>	
0 to 10 Vdc.....	>500K Ohm
4 to 20 mA.....	<500 Ohm
<b>Run Time with Control Operation (full stroke)</b>	
Pushing.....	120 sec.
<b>Pulling with Spring</b>	
SKB62U.....	10 sec.
SKC62U.....	20 sec.
<b>Conduit Opening</b> .....	1/2" NPSM

<b>Nominal Force</b>	
NC and 3-way Upper	
Stroke.....	0%
Force.....	640 lbs. (2800 N)
NO and 3-way By Pass	
Stroke.....	100%
Force.....	1000 lbs. (4400 N)

**Agency Approvals** ..... UL873, cUL, CSA C22.2 No. 24-93, CE N474

**Enclosure** ..... NEMA 1 (Interior Only)

<b>Operating</b>	
Ambient Temperature.....	5° to 130°F (-15° to 55°C)
Media Temperature.....	14° to 428°F (-10° to 220°C)
<b>Mounting Location</b> ..... NEMA 1 (Interior Only)	

## Product Ordering

Description	Part No.	Actuator Prefix Code
<b>3/4" Stroke</b>		
Standard Features	SKB62U	291
Advanced Features	SKB62UA	—
<b>1-1/2" Stroke</b>		
Standard Features	SKC62U	294
Advanced Features	SKC62UA	—

### Ordering Note:

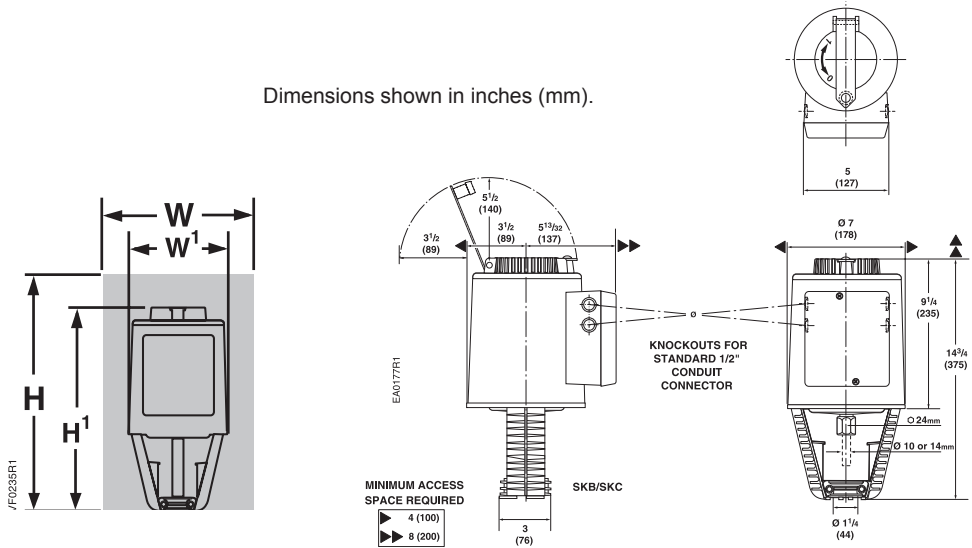
The SKB/UA can be used with other manufacturer's valves with the appropriate Universal Valve Linkage Kit.

A-210

Valves

## Dimensions

Dimensions shown in inches (mm).



Height of Actuator H <sup>1</sup>	Service Height H	Width/Diameter of Actuator W <sup>1</sup>	Service Width W
14-3/4" (375 mm)	22-3/4" (578 mm)	7" (178 mm) Width x 8-15/16" (226 mm) Depth	25" (635 mm)

### Table Notes:

Service height and width are the recommended dimensions to allow access to the product.

## SKB/SKC Valve Actuator

24 Vac, Floating Control  
Spring Return or Non-Spring Return



Flowrite SKB/SKC Valve Actuator.

### Description

Designed for use with Flowrite and other standard valves with 3/4-inch and 1-1/2-inch (20 mm and 40 mm) strokes, the Flowrite SKB/C Electronic Valve Actuator requires a 24 Vac supply to provide floating control of a valve.

### Features

- Direct-coupled installation requires no special tools or adjustments
- Visual stroke indication
- Die-cast aluminum housing
- Manual override
- Spring return or non-spring return
- Maintenance-free
- 1000 lb. (4400 N) nominal force

### Applications

The Flowrite SKB/SKC Electronic Valve Actuator with floating control is to be used with Flowrite and other standard valves with a 3/4-inch and 1-1/2-inch (20 mm and 40 mm) strokes in liquid and steam service applications.

A-211

Valves

# Specifications

Operating Voltage .....	24 Vac ±20%
Frequency .....	50/60 Hz
<b>Power Consumption</b>	
SKB82.51U.....	18 VA (11W)
SKC82.60U.....	19 VA (16W)
SKC82.61U.....	24 VA (18W)
<b>Control Signal</b> .....	Floating
<b>Nominal Stroke</b>	
SKB.....	3/4" (20 mm)
SKC.....	1-1/2" (40 mm)

<b>Run Time with Control Operation (full stroke)</b> .....	120 sec. Pushing and Pulling
<b>Spring Return Time (on power failure)</b>	
SKB82.51U.....	10 sec.
SKC82.61U.....	18 sec.

<b>Nominal Force</b>	
NC and 3-way Upper Stroke .....	0%
Force .....	610 lbs. (2684 N)
NO and 3-way By Pass Stroke .....	100%
Force .....	1000 lbs. (4400 N)

**Agency Approvals** ..... UL873, CSA C22.2 No. 24-93

**Enclosure** ..... NEMA 1 (Interior Only)

<b>Operating</b>	
Ambient Temperature .....	5° to 130°F (-15° to 55°C)
Media Temperature .....	14° to 300°F (-10° to 150°C)

**Mounting Location** ..... NEMA 1 (Interior Only)

## Product Ordering

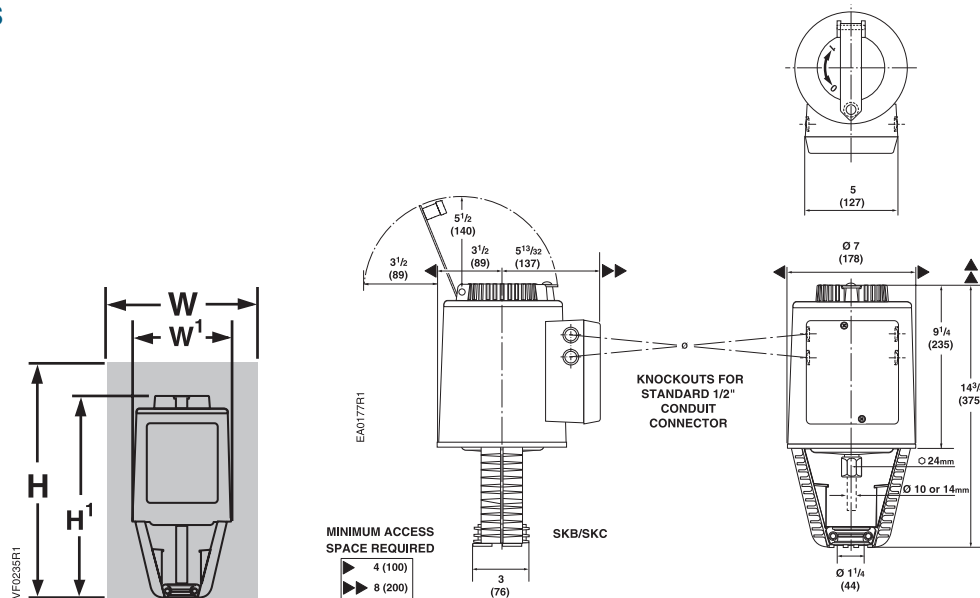
Stroke	Part No.	Actuator Prefix Code
<b>Spring Return</b>		
3/4" (20 mm)	<b>SKB82.51U</b>	—*
1-1/2" (40 mm)	<b>SKC82.61U</b>	—*
<b>Non-Spring Return</b>		
1-1/2" (40 mm)	<b>SKC82.60U</b>	—*

\*Not available as an assembly. Valve and actuator sold separately and will have to be assembled in the field.

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## Dimensions

Valves



Dimensions shown in inches (mm).

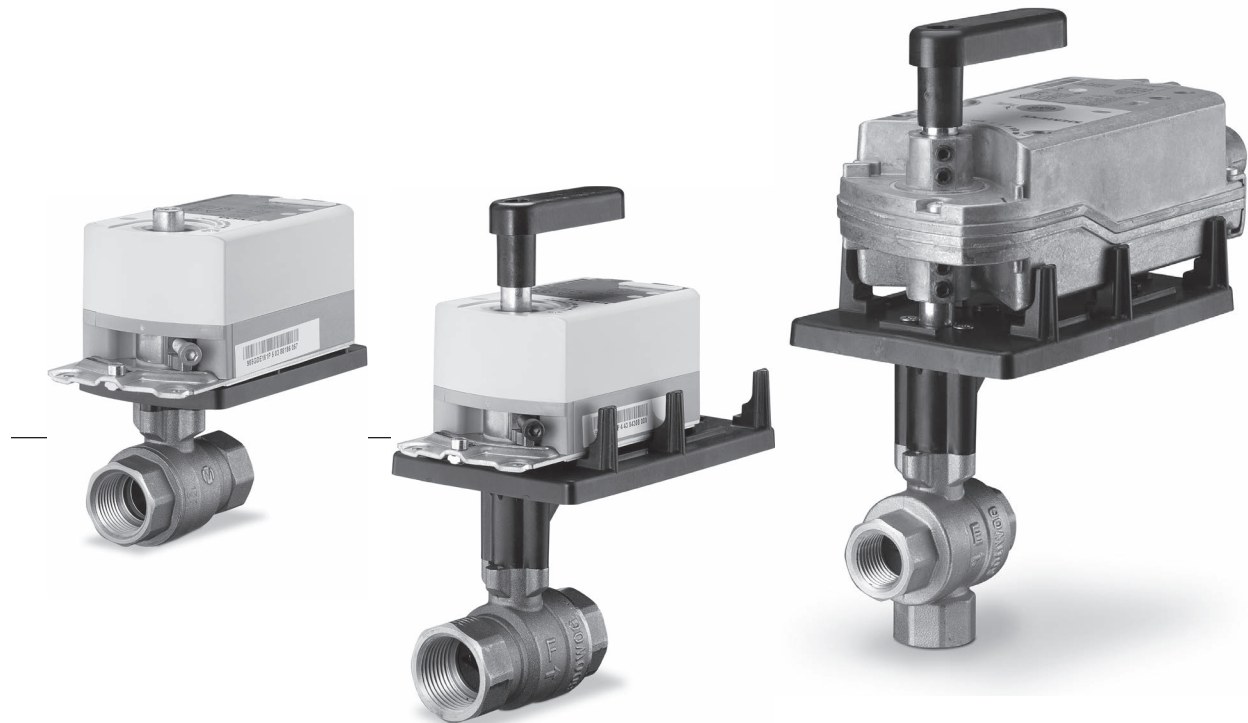
Height of Actuator H <sup>1</sup>	Service Height H	Width/Diameter of Actuator W <sup>1</sup>	Service Width W
14-3/4" (375 mm)	22-3/4" (578 mm)	7" (178 mm) Width x 8-15/16" (226 mm) Depth	25" (635 mm)

**Table Notes:**

Service height and width are the recommended dimensions to allow access to the product.



## 599 Series Two-Way and Three-Way Ball Valves



A-213

Valves

Siemens 599 Series characterized ball valves and valve actuators deliver comprehensive control solutions. Available in spring return, non-spring return, 2-position, floating, and proportional control to suit a wide variety of control specifications and strategies, Siemens OpenAir™ electronic actuators are known for their reliability. They require no special programming or tools, saving on installation time and delivering immediate results.

### Designed to provide excellent equal percentage flow control and so much more:

- Two- and three-way valves available with chrome-plated brass ball and brass stem or stainless steel ball and stem to withstand harsh conditions
- Equal percentage flow characteristic
- 0.4 to 160 Cv range enables better sizing of valves to the job requirements
- 200 psi close-off
- Low ANSI Class IV leakage (0.01% of Cv) at rated close-off pressure reduces energy consumption
- 600 WOG/ANSI 250 pressure rating meets the specifications of more applications
- Blow-out proof stem withstands high pressure
- Double o-ring stem packing prevents leaking and ensures long-lasting performance
- Universal actuator mounting bracket with standoffs provides a thermal barrier between the actuator and the mounting plate
- For tight spaces, a low profile bracket holds an OpenAir® GDE/GLB Series Non-Spring Return Actuator or GQD Series Spring Return Actuator to a 1/2- or 3/4-inch Two-Way Ball Valve

For more information on OpenAir Electronic Damper Actuators, refer to Section B.



Siemens offers a 5-year warranty on valves and actuators



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**SIEMENS**

## Two-Way Ball Valves

24 Vac, On/Off, Floating or Proportional Control

1/2 to 2-inch

Chrome-plated Ball & Brass Stem or Stainless Steel Ball & Stem

Spring Return or Non-Spring Return



2-Way Ball Valve and Actuator with Low Profile Bracket.



2-Way Ball Valve and Actuator with Standard Bracket.

### Description

Designed to provide excellent equal percentage flow control, two-way Ball Valves are available in 1/2 to 2-inch line sizes and are 1/4-turn rotary control valves. These ball valves are designed to couple with an OpenAir actuator.

### Features

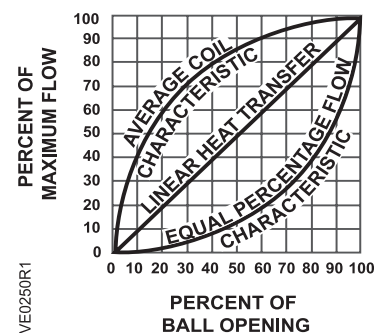
- Universal mounting plate accommodates different actuator sizes
- Variety of ball sizes and flow coefficients minimizes the need for downsizing pipes and accurately controls fluid through coils
- Industry leading close-off
- Actuator and plate can be rotated to facilitate installation and wiring
- Standoffs and mounting plate provide a thermal barrier between the actuator and valve
- Low profile bracket holds a GQD Series Spring Return or GDE/GLB Series Non-Spring Return Actuator to a 1/2- or 3/4-inch Two-Way Ball Valve in tight spaces
- Plastic mounting plate, extensions, and handle do not condensate in chilled or hot water applications
- Operating handle can manually operate valve in the event of a power failure
- Available as on/off (2P), floating (3P), or proportional control
- Spring return or non-spring return
- On/off with dual auxiliary switches available on full port valves with stainless steel ball and stem

### Applications

Ball Valves can control hot or chilled water and up to 50% glycol solution in convectors, fan coil units, unit conditioners, radiation, and reheat coils.

### Application Drawings

The parabolic shape of the flow optimizer orifice allows a slow opening valve. Equal movements of the valve stem at any point of the flow range changes the existing flow an equal percentage regardless of the existing flow. The ball valve equal percentage flow characteristic mirrors the flow characteristic of a coil, resulting in linear heat transfer.



Ball Valve Equal Percentage Flow Control.

# Specifications

**Pressure Class** .....ANSI 250 (600 WOG)  
**Static Pressure/Temp.** ..... 360 psig/250°F  
**Controlled Medium** ..... Water, Glycol Solutions up to 50%  
**Media Temperature** ..... 0° to 250°F (-18° to 121°C)  
**Materials**  
 Body ..... Forged Brass ASTM B283, C37700  
 Ball ..... Chrome-plated Brass or Stainless Steel  
 Ball Seals ..... Glass-filled PTFE with EPDM O-Rings  
 Flow Optimizer ..... Glass-filled PTFE  
 Stem ..... Brass or Stainless Steel  
 Stem Seals ..... EPDM O-rings  
**End Connections** ..... NPT Female  
**Angle of Rotation** ..... 0 to 90 Degrees

## Two-Way Ball Valve Body Product Ordering

Valve Size in. (mm)	Flow Rate Cv (Kvs)	Chrome-Plated Brass Ball and Stem Part No.	Stainless Steel Ball and Stem Part No.
1/2 (15)	0.4 (0.34)	599-10300	599-10300S
	0.63 (0.54)	599-10301	599-10301S
	1.0 (0.9)	599-10302	599-10302S
	1.6 (1.4)	599-10303	599-10303S
	2.5 (2.2)	599-10304	599-10304S
	4 (3.4)	599-10305	599-10305S
	6.3 (5.4)	599-10306	599-10306S
	10 (8.6)	599-10307*	599-10307S*
3/4 (20)	6.3 (5.4)	599-10308	599-10308S
	10 (8.6)	599-10309	599-10309S
	16 (14)	599-10310	599-10310S
	25 (22)	599-10311*	599-10311S*
1 (25)	10 (8.6)	599-10312	599-10312S
	16 (14)	599-10313	599-10313S
	25 (22)	599-10314	599-10314S
	40 (34)	599-10315	599-10315S
	63 (54)	599-10316*	599-10316S*
1-1/4 (32)	16 (14)	599-10317	599-10317S
	25 (22)	599-10318	599-10318S
	40 (34)	599-10319	599-10319S
	63 (54)	599-10320	599-10320S
	100 (90)	599-10321*	599-10321S*
1-1/2 (40)	25 (22)	599-10322	599-10322S
	40 (34)	599-10323	599-10323S
	63 (54)	599-10324	599-10324S
	100 (90)	599-10325	599-10325S
	160 (140)	599-10326*	599-10326S*
2 (50)	40 (34)	599-10327	599-10327S
	63 (54)	599-10328	599-10328S
	100 (90)	599-10329*	599-10329S*
	160 (140)	599-10330*	599-10330S*

**Ordering Notes:**

\*Denotes a full-port valve with no flow optimizer insert.

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Valves

## Two-Way Ball Valve Actuator Product Ordering

Description		Part No.	Actuator Prefix Code	
	Electronic	Floating, Fail-in-place	<b>GDE131.1P</b>	<b>171A</b>
		Floating, Fail-in-place	<b>GLB131.1P</b>	<b>171B</b>
		0 to 10 Vdc, Fail-in-place	<b>GDE161.1P</b>	<b>171C</b>
		0 to 10 Vdc, Fail-in-place	<b>GLB161.1P</b>	<b>171D</b>
	Electronic	2-Position, Fail-safe, Normally Open	<b>GMA121.1P</b>	<b>171E</b>
		Floating, Fail-safe, Normally Open	<b>GMA131.1P</b>	<b>171F</b>
		0 to 10 Vdc, Fail-safe, Normally Open	<b>GMA161.1P</b>	<b>171G</b>
	Electronic	2-Position, Fail-safe, Normally Open	<b>GQD121.1P</b>	<b>171H</b>
		Floating, Fail-safe, Normally Open	<b>GQD131.1P</b>	<b>171J</b>
		2 to 10 Vdc, Fail-safe, Normally Open	<b>GQD151.1P</b>	<b>171K</b>
		120V, 2-Position, Fail-safe, Normally Open	<b>GQD221.1U</b>	<b>171L</b>
	Electronic	120V, 2-Position, Fail-safe, Normally Open	<b>GMA221.1U</b>	<b>171M</b>
	Electronic	2-Position, Fail-safe, Normally Open, Dual Auxiliary Switches	<b>GQD126.1P</b>	<b>171N</b>
	Electronic	2-Position, Fail-safe, Normally Open, Dual Auxiliary Switches	<b>GMA126.1P</b>	<b>171P</b>
		2-Position, Fail-safe, Normally Closed	<b>GMA121.1P</b>	<b>172E</b>
		0 to 10 Vdc, Fail-safe, Normally Closed	<b>GMA161.1P</b>	<b>172G</b>
	Electronic	2-position, Fail-safe, Normally Closed	<b>GQD121.1P</b>	<b>172H</b>
		Floating, Fail-safe, Normally Closed	<b>GQD131.1P</b>	<b>172J</b>
		2 to 10 Vdc, Fail-safe, Normally Closed	<b>GQD151.1P</b>	<b>172K</b>
		120V, 2-Position, Fail-safe, Normally Closed	<b>GQD221.1U</b>	<b>172L</b>
	Electronic	120V, 2-Position, Fail-safe, Normally Closed	<b>GMA221.1U</b>	<b>172M</b>
	Electronic	2-position, Fail-Safe, Normally Closed, Dual Auxiliary Switches	<b>GQD126.1P</b>	<b>172N</b>
	Electronic	2-position, Fail-Safe, Normally Closed, Dual Auxiliary Switches	<b>GMA126.1P</b>	<b>172P</b>

### Ordering Notes:

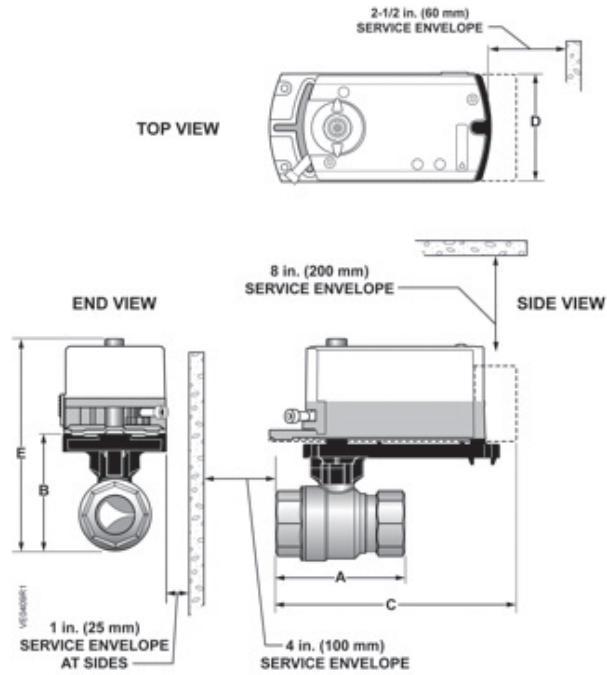
\*When ordered as an assembly, the actuator is provided with 3-foot (.9 m) wires.  
Actuator used in assemblies having prefix 171A-D is provided with conduit adapter

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Valves

# Dimensions and Weights

## 1/2 & 3/4-inch Two-Way Ball Valves Dimensions with Service Envelope



Dimensions shown in inches (mm).

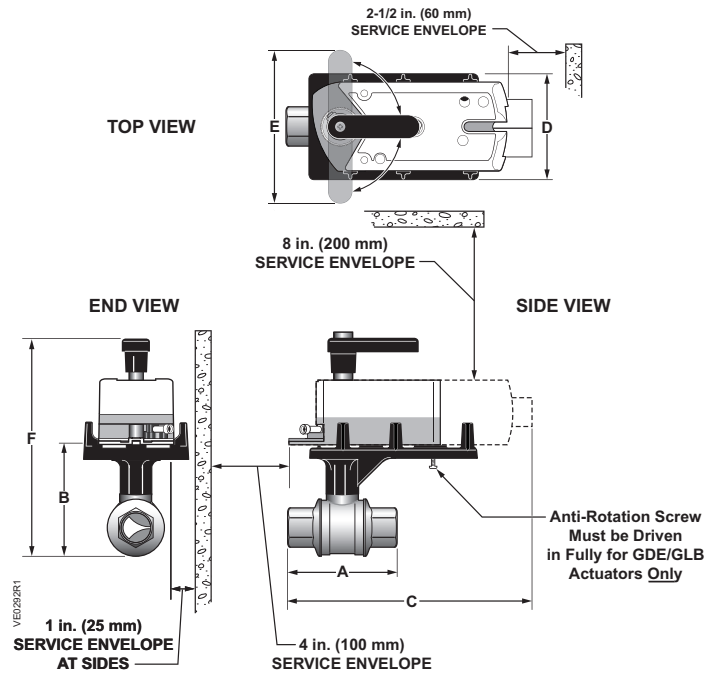
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Valves

Line Size in. (mm)	Cv Range	A Length	B Height	C Length Actuator Codes		D Width	E Height	Valve and Bracket Weight lbs (kg)
				GDE	GQD			
				171A-D	171H, J, K, L, N			
1/2 (15)	0.4 to 10	2-7/16 (61)	2-1/4 (57)	5-3/4 (146)	5-1/4 (133)	2-3/4 (70)	4-13/16 (123)	1 (0.45)
3/4 (20)	6.3 to 25	2-3/4 (70)	2-5/8 (67)	6 (153)	5-3/8 (136)		5-1/4 (133)	1.3 (0.60)

# Dimensions and Weights

## 1 to 2-inch Two-Way Ball Valves Dimensions with Service Envelope



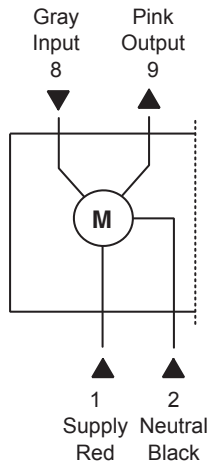
Dimensions shown in inches (mm).

Line Size in. (mm)	Cv Range	A Length	C Length * Actuator Codes			F Height	Valve and Bracket Weight lbs (kg)
			171A-D	171H, J, K, L, N	171E, G, M, P 172E, G, M, P Fail-Safe		
			GDE/GLB	GQD	GMA		
1 (25)	10	3 (77)	6-11/16 (170)	—	8 (203)	8 (203)	1.6 (0.73)
	16, 40, 63	3-1/4 (82)	6-11/16 (170)	—	8-3/8 (213)	8-5/16 (212)	1.8 (0.82)
	25	3-7/8 (98)	7 (178)	—	8-11/16 (221)	8-13/16 (223)	1.8 (0.82)
1-1/4 (32)	16	3-3/8 (86)	6-11/16 (170)	—	8-7/16 (214)	8-3/8 (213)	2.0 (0.91)
	25 to 100	3-11/16 (94)	6-15/16 (176)	—	8-11/16 (221)	8-13/16 (223)	2.5 (1.1)
1-1/2 (40)	25, 63	3-5/8 (92)	6-15/16 (176)	—	8-7/16 (214)	8-13/16 (223)	1.8 (0.82)
	40, 100, 160	3-15/16 (100)	7-1/16 (180)	—	8-3/4 (223)	9-1/4 (235)	3.3 (1.50)
2 (50)	40, 100	4 (102)	7-1/16 (180)	—	8-3/4 (223)	9-3/8 (238)	3.1 (1.41)
	63	4-5/8 (118)	7-1/2 (190)	—	9-1/8 (223)	10-1/16 (255)	5.25 (2.38)
	160	4-5/8 (118)	7-1/2 (190)	—	9-1/8 (223)	10-1/16 (255)	5.3 (2.40)

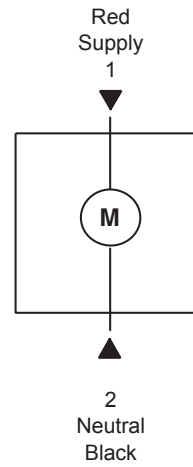
**Table Notes:**

\*Dimension "C" is maximum length, measured from the actuator, end fitting, or mounting plate, whichever extends the furthest.

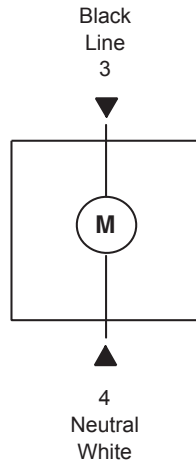
# Wiring Diagrams



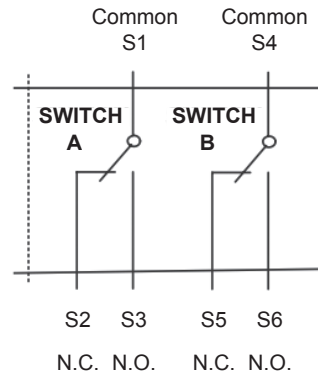
**Modulating (0 to 10 Vdc), 24 Vac**  
(Applies to all)



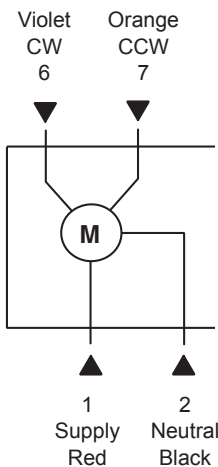
**2-position, 24 Vac**  
(GMA, QQD 2-position)



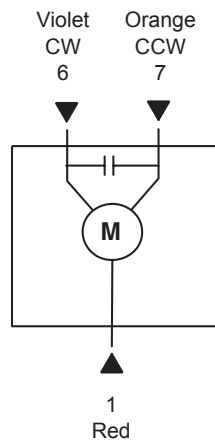
**2-position, 120 Vac**  
(GMA, QQD)



**Dual Auxiliary Switches**  
(QQDxx6)



**3-position, 24 Vac-SR**  
(GMA, QQD)



**3-position, 24 Vac-NSR**  
(GDE/GLB)

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Valves



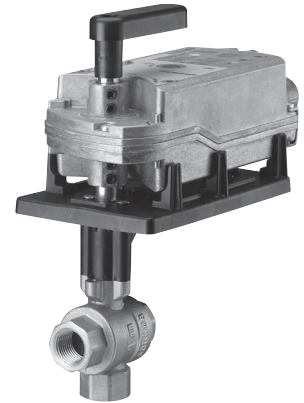
## Three-Way Ball Valves

24 Vac, On/Off, Floating or Proportional Control

1/2 to 2-inch

Chrome-plated Ball & Brass Stem or Stainless Steel Ball & Stem

Spring Return or Non-Spring Return



3-Way Ball Valve and Actuator.

### Description

Designed to provide excellent equal percentage flow control, Three-way Ball Valves are available in 1/2 to 2-inch line sizes and are 1/4-turn rotary control valves. These ball valves are designed to couple with an OpenAir actuator.

### Features

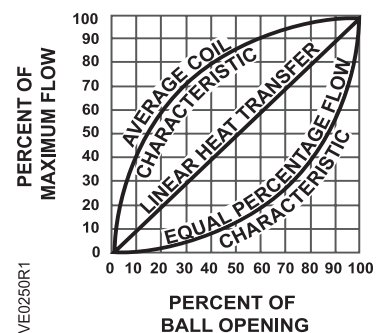
- Universal mounting plate accommodates different actuator sizes
- Variety of ball sizes and flow coefficients minimizes the need for downsizing pipes and accurately controls fluid through coils
- Industry leading close-off
- Actuator and plate can be rotated to facilitate installation and wiring
- Standoffs and mounting plate provide a thermal barrier between the actuator and valve
- Plastic mounting plate, extensions, and handle do not condensate in chilled or hot water applications
- Operating handle can manually operate valve in the event of a power failure
- Available as on/off (2P), floating (3P), or proportional control
- Spring return or non-spring return

### Applications

Ball Valves can control hot or chilled water and up to 50% glycol solution in convectors, fan coil units, unit conditioners, radiation, and reheat coils.

### Application Drawings

The parabolic shape of the flow optimizer orifice allows a slow opening valve. Equal movements of the valve stem at any point of the flow range changes the existing flow an equal percentage regardless of the existing flow. The ball valve equal percentage flow characteristic mirrors the flow characteristic of a coil, resulting in linear heat transfer.



Ball Valve Equal Percentage Flow Control.

# Specifications

**Pressure Class** ..... ANSI 250 (600 WOG)  
**Static Pressure/Temp.** ..... 360 psig/250°F  
**Controlled Medium** ..... Water, Glycol Solutions up to 50%  
**Media Temperature**  
 1/2 to 1-1/4" ..... 0° to 250°F (-18° to 121°C)  
 1-1/2 to 2" ..... 0° to 230°F (-18° to 110°C)  
**Materials**  
 Body ..... Forged Brass ASTM B283, C37700  
 Ball ..... Chrome-plated Brass or Stainless Steel  
 Ball Seals ..... Glass-filled PTFE with EPDM O-Rings  
 Flow Optimizer ..... Glass-filled PTFE  
 Stem ..... Brass or Stainless Steel  
 Stem Seals ..... EPDM O-rings

**End Connections** ..... NPT Female  
**Angle of Rotation** ..... 0 to 90 Degrees  
**Maximum Operating Differential Pressure**  
 1/2 to 1-1/2" ..... 60 psi  
 2" ..... 35 psi  
**Close-off Ratings (per ANSI/FCI 70-2)**  
 For A → AB ..... ANSI Class IV (0.01%)  
 For B → AB ..... ANSI Class III (0.1%)

## Three-Way Ball Valve Body Product Ordering

Valve Size in. (mm)	Flow Rate Cv (Kvs)	Chrome-Plated Brass Ball and Stem Part No.	Stainless Steel Ball and Stem Part No.
1/2 (15)	0.4 (0.34)	599-10350	599-10350S
	0.63 (0.54)	599-10351	599-10351S
	1.0 (0.9)	599-10352	599-10352S
	1.6 (1.4)	599-10353	599-10353S
	2.5 (2.2)	599-10354	599-10354S
	4 (3.4)	599-10355	599-10355S
	6.3 (5.4)	599-10356	599-10356S
10 (8.6)	599-10357*	599-10357S*	
3/4 (20)	6.3 (5.4)	599-10358	599-10358S
	10 (8.6)	599-10359	599-10359S
	16 (14)	599-10360*	599-10360S*
1 (25)	10 (8.6)	599-10361	599-10361S
	16 (14)	599-10362	599-10362S
	25 (22)	599-10363*	599-10363S*
1-1/4 (32)	16 (14)	599-10364	599-10364S
	25 (22)	599-10365	599-10365S
	40 (34)	599-10366	599-10366S
1-1/2 (40)	25 (22)	599-10367	599-10367S
	40 (34)	599-10368	599-10368S
	63 (54)	599-10369	599-10369S
2 (50)	40 (34)	599-10370	599-10370S
	63 (54)	599-10371	599-10371S
	100 (90)	599-10372*	599-10372S*



**Ordering Notes:**

\*Denotes a full-port valve with no flow optimizer insert.

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Valves

## Three-Way Ball Valve Actuator Product Ordering

		Description	Part No.	Actuator Prefix Code
	Electronic	3-Position, Fail-in-place	<b>GDE131.1P</b>	<b>171A</b>
		3-Position, Fail-in-place	<b>GLB131.1P</b>	<b>171B</b>
		0 to 10 Vdc, Fail-in-place	<b>GDE161.1P</b>	<b>171C</b>
		0 to 10 Vdc, Fail-in-place	<b>GLB161.1P</b>	<b>171D</b>
	Electronic	2-Position, Fail-safe, Normally Open	<b>GMA121.1P**</b>	<b>171E</b>
		3-Position, Fail-safe, Normally Open	<b>GMA131.1P**</b>	<b>171F</b>
		0 to 10 Vdc, Fail-safe, Normally Open	<b>GMA161.1P**</b>	<b>171G</b>

### Ordering Notes:

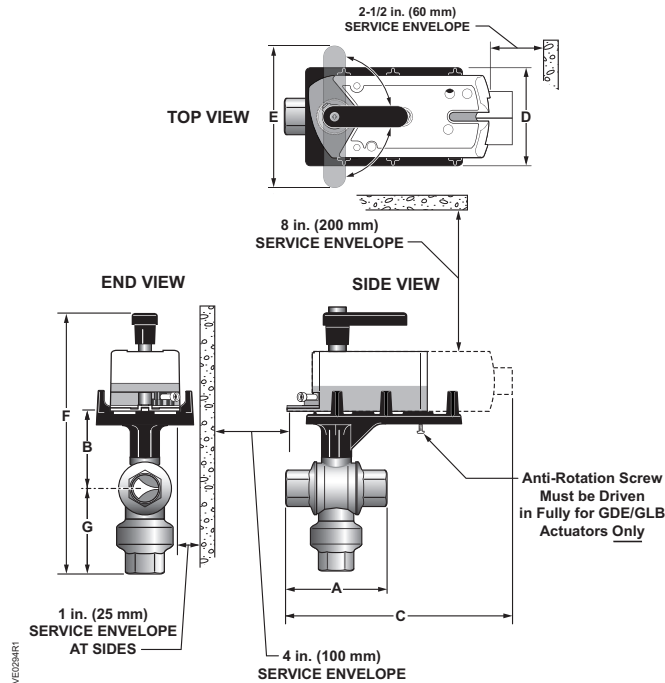
When ordered as an assembly, the actuator is provided with 3-foot (.9m) wires.

\*\* Fails with A→AB open.

Actuator used in assemblies having prefix 171A-D is provided with conduit adapter

# Dimensions and Weights

## Three-Way Ball Valves with Actuator Dimensions and Service Envelope



Dimensions shown in inches (mm).

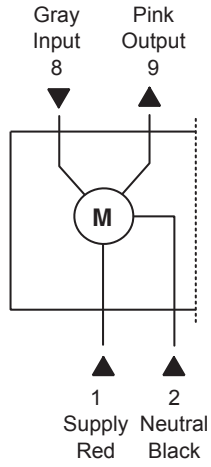
Line Size in. (mm)	A	C	C	B	G	F	Weight lbs (kg)
	Length	Length* Actuator Codes 171A-D, 173A-D	Length* Actuator Codes 171E-G	Height	Height	Height	
1/2 (15)	2-9/16 (65)	6-11/16 (170)	8-3/8 (213)	3-1/4 (83)	1-3/8 (35)	8-5/8 (219)	1.50 (0.68)
3/4 (20)	2-3/4 (70)	6-11/16 (170)	8-3/8 (213)	3-1/4 (83)	1-3/8 (35)	8-5/8 (219)	1.60 (0.73)
	3-1/8 (79)	6-11/16 (170)	8-3/8 (213)	3-1/4 (83)	1-11/16 (43)	8-5/8 (219)	2.20 (1.00)
1 (25)	3-1/4 (83)	6-11/16 (170)	8-3/8 (213)	3-3/4 (95)	1-11/16 (43)	9-1/8 (232)	2.37 (1.08)
	3-13/16 (77)	6-15/16 (176)	8-5/8 (219)	4 (102)	2 (51)	9-5/8 (244)	2.74 (1.24)
1-1/4 (32)	3-5/8 (92)	6-7/8 (174)	8-9/16 (217)	4 (102)	2-1/8 (54)	9-3/4 (248)	2.85 (1.29)
	3-15/16 (100)	7 (178)	8-11/16 (221)	4 (102)	2-5/16 (59)	10-1/4 (260)	4.30 (1.95)
1-1/2 (40)	3-15/16 (100)	7 (178)	8-11/16 (221)	4 (102)	2-5/16 (59)	10-1/4 (260)	3.90 (1.61)
	4-5/8 (117)	7-1/4 (184)	7-7/8 (200)	4-1/2 (114)	2-13/16 (71)	11 (279)	7.83 (17.16)
2 (50)	4-5/8 (117)	7-1/4 (184)	8-11/16 (221)	4-1/2 (114)	2-7/8 (73)	10-3/8 (264)	6.70 (3.04)
	4-5/8 (117)	7-1/4 (184)	9-1/16 (230)	5-3/4 (146)	2-7/8 (73)	11-3/16 (284)	6.70 (3.04)

**Table Notes:**

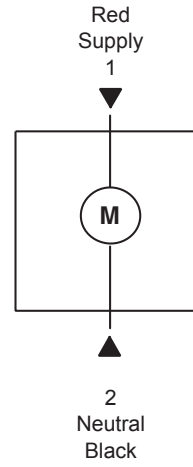
\*Dimension "C" is maximum length, measured from the actuator, end fitting, or mounting plate, whichever extends the furthest.

1. All dimensions are in inches (mm) and weights are in pounds (kg).
2. Dimension "D", Depth, is 3 inches (76 mm).
3. Dimension "E", Handle, is 4 inches (102 mm).

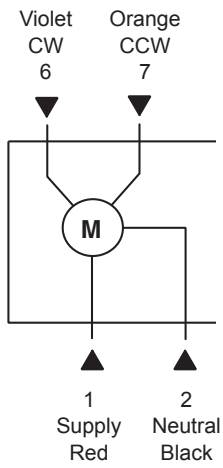
# Wiring Diagrams



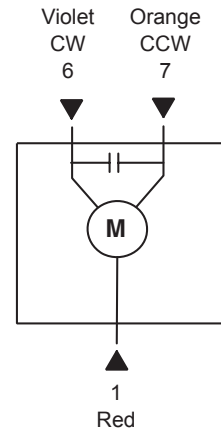
**Modulating (0 to 10 Vdc), 24 Vac  
(Applies to all)**



**2-position, 24 Vac  
(GMA)**



**3-position, 24 Vac-SR  
(GMA)**



**3-position, 24 Vac-NSR  
(GDE/GLB)**



A-226

# EngineeringAdvantage Program Webinar Series

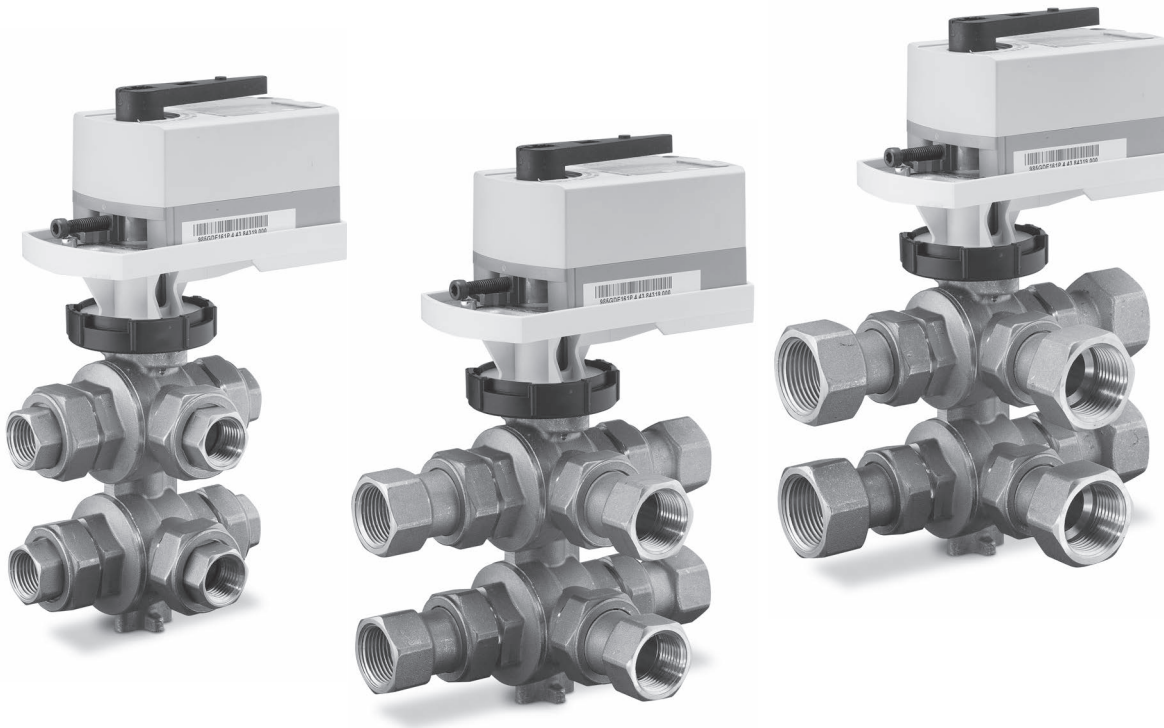
Buildings are becoming more and more complex. Structures that used to be passive now have to meet higher demands for efficiency, safety, sustainability and comfort. While digitization enables new ways of connecting and operating buildings, cost and time pressures create resistance for the adoption of these new technologies. We experience the same challenges as you and would like to help you overcome them.

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**SIEMENS**

## 599 Series Six-Way Ball Valves



A-227

Valves

Because of its special design, a single 6-way ball valve and actuator switches between, and controls, both heating and cooling to a single coil or heated/chilled beam, when a four-pipe system is used. A modulating actuator controls heating in one half of the rotation and cooling in the other half, with the valve closing off both heating and cooling at mid stroke. The heating and cooling supplies are isolated from each other, without mixing in the valve. The valve can be ordered with different Cv for heating and cooling to maximize both heating and cooling transfer capabilities of the coil.

Less effort for installation, commissioning and cabling, as well as decreased space requirements, reduce the complexity of the plant and result in lower costs. Using a single valve, actuator and coil for both heating and cooling reduces equipment and installation costs, simplifies control, and reduces data points in the building automation system.



A-228

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**SIEMENS**



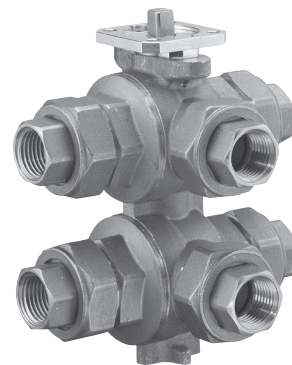
## Six-Way Ball Valves

*24 Vac, Floating Control*

*1/2 to 1-inch*

*Chrome-plated Balls and Stainless Steel Stem*

*Non-Spring Return Actuator*



1/2-inch Six-Way Ball Valve.

### Description

The 599 Series 6-Way Ball Valves couple with the GDE161.1P OpenAir™ actuator to provide single valve and actuator changeover and control of hot and chilled water for heated/chilled beam applications or any four-pipe system.

### Features

- Control two media sources (hot and chilled water) to a single coil with a one valve and actuator
- Large Cv range (0.3 to 4.7 Cv) for each media source
- 1/2", 3/4" and 1" line size connections
- Built in pressure compensation function
- 0% leakage for no mixing of hot and chilled water
- 232 psi (16 bar) pressure rating
- 50 psi (3.5 bar) close-off
- Chrome plated brass balls and stainless steel stem
- Blow-out proof stem
- Actuator and mounting bracket can easily be rotated (90 degree increments)
- Operating handle for manual operation

### Applications

The 6-way ball valves changeover and control hot and chilled water (both similarly treated) in heated/chilled beams and any other four-pipe system utilizing the same coil to heat and cool.

A-229

Valves

# Six-Way Ball Valve Specifications

## Materials

Body .....	Hot-pressed brass CW617N
Balls .....	Chrome-plated brass
Stem .....	Stainless steel
Calibrated washers .....	Stainless Steel
Stem seals .....	EPDM o-rings
Ball Seals .....	Low friction PTFE

## Operating

Valve body rating.....	232 psi (16 bar)
Media temperature.....	41° to 194°F (5° to 90°C)
Controlled medium.....	Water, water/glycol solutions up to 50%
Angle of rotation.....	0° to 90°
Maximum recommended differential pressure.....	29 psi (2 bar)
Close-off .....	50 psi (3.5 bar)
Leakage .....	0%
Flow characteristic .....	Linear
Line size.....	1/2-inch to 1-inch (15 mm to 25 mm)
Connection.....	NPT union, female

## Actuator Specifications

Operating voltage.....	24 Vac
Signal .....	0-10 Vdc
Failure mode .....	Non-spring return (fail-n-place)
Manual override .....	Yes
Run time.....	90 sec
Power consumption .....	2 to 3 VA

## Miscellaneous

Mounting location.....	NEMA 1 (interior only)
------------------------	------------------------

## Valve Body Product Ordering

Select from any combination of Source A and B Cv value range. The valve product number consists of a 599 valve prefix code, a hyphen, a 5-digit valve body code, a hyphen, the source A Cv value, a hyphen, and the source B Cv value.

Valve Size in. (mm)	Source A and B Cv Value Range	Valve Body Part No.
1/2 (15)	0.3 to 1.9 for 1/2 inch	<b>599-10600-0.3-0.3 – 599-10600-1.9-1.9</b>
3/4 (20)	0.8 to 4.7 for 3/4 inch	<b>599-10601-0.8-0.8 – 599-10601-4.7-4.7</b>
1 (25)	1.9 to 4.7 for 1 inch	<b>599-10602-1.9-1.9 – 599-10602-4.7-4.7</b>

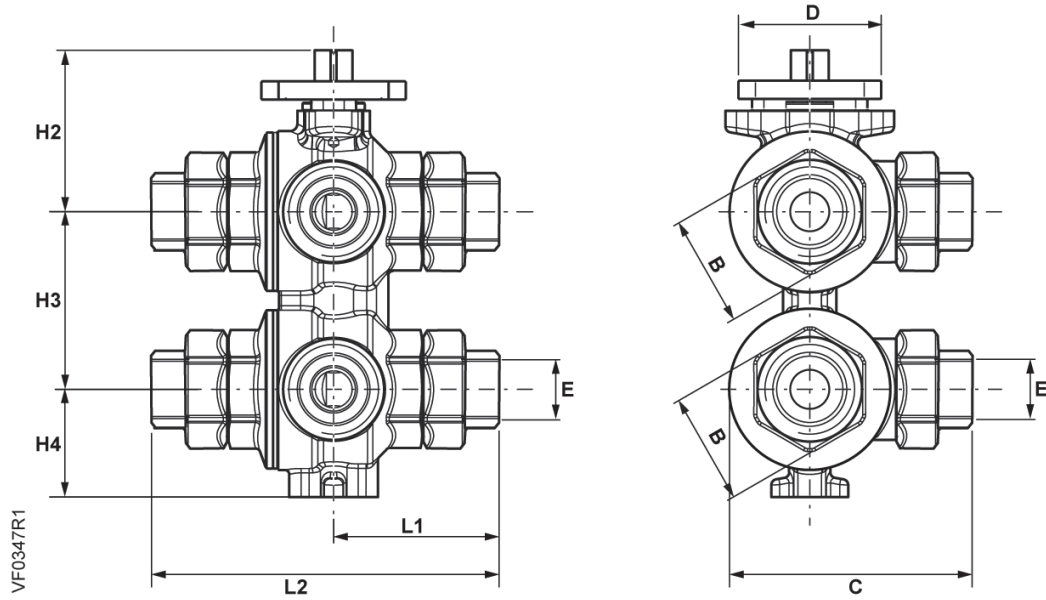
## Actuator Product Ordering

Description		Part No.	Actuator Prefix Code
	Electronic Rotary	0-10V, Non-Spring Return	<b>GDE161.1P</b>
			<b>171C</b>

A-230

Valves

## Dimensions and Weights



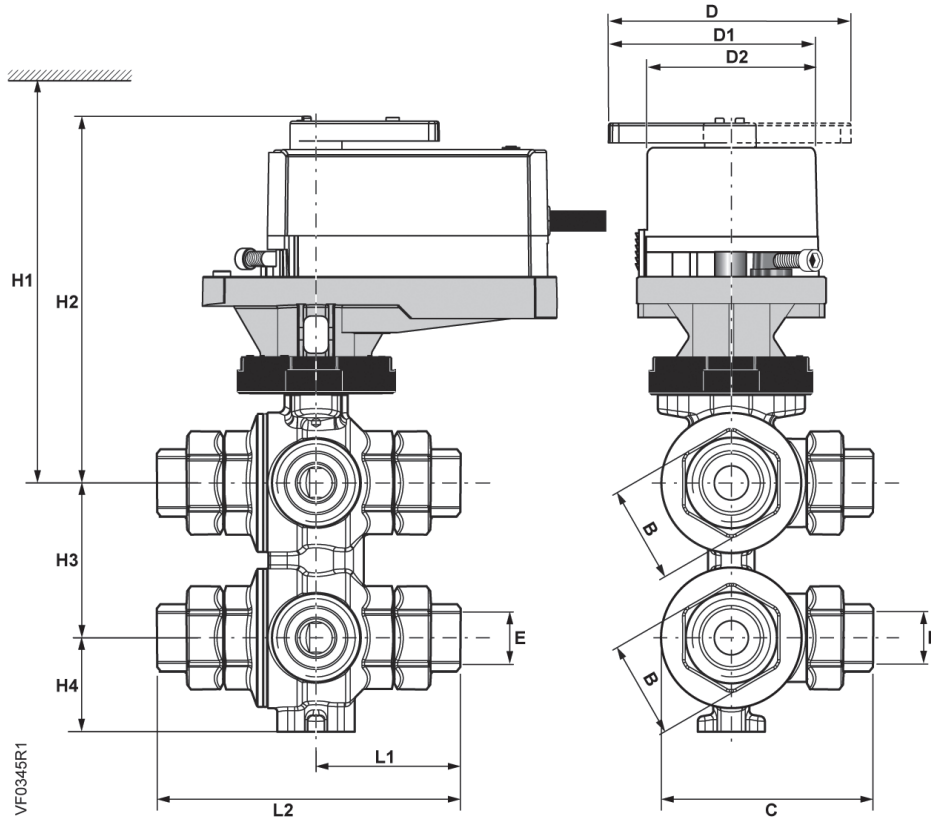
Dimensions shown in inches (mm).

A-231

Valves

Line Size in. (mm)	B	C	D	E	L1	L2	H2	H3	H4	Weight lb (kg)
1/2 (15)		3-3/8 (86)		1/2 (15)	2-3/8 (60)	4-3/4 (121)				5.2 (2.36)
3/4 (20)	1-1/2 (38)	4-1/4 (108)	1.65 (42)	3/4 (20)	3-5/16 (84)	6-5/8 (168)	2.0 (50)	2.36 (60)	1.42 (36)	6 (2.72)
1 (25)		4-1/2 (114)		1 (25)	3-1/2 (89)	7 (178)				6.8 (3.08)

# Dimensions and Weights



Dimensions shown in inches (mm).

A-232

Valves

Line Size in. (mm)	B	C	D	D1	D2	E	H1	H2	H3	H4	L1	L2	Weight lb (kg)
1/2 (15)		3-3/8 (86)				1/2 (15)					2-3/8 (60)	4-3/4 (121)	6.8 (3.08)
3/4 (20)	1-1/2 (38)	4-1/4 (108)	3.98 (101.2)	3.44 (87.5)	2.91 (73.8)	3/4 (20)	13-3/4 (349)	5-3/4 (146)	2.36 (60)	1.42 (36)	3-5/16 (84)	6-5/8 (168)	7.6 (3.45)
1 (25)		4-1/2 (114)				1 (25)					3-1/2 (89)	7 (178)	8.4 (3.81)

## Magnetic Valves



A-233

Valves

Magnetic Valves use magnetic actuation to enhance response time and provide stability. Large signal changes switch the actuator to the large signal band, allowing high-gain response to quickly position the valve element. Small signal changes switch the actuator to the small signal band to provide loop stability and precise positioning.

**Note:** To use any current magnetic valve with phase cut control signal use SEZ91.6 signal converter.

A photograph of two young girls sitting at a desk in a classroom, looking at a tablet together. The girl on the left has blonde hair in a bun and is wearing a pink patterned shirt. The girl on the right has dark hair and is wearing a light blue shirt. They are both smiling and looking at the tablet. The background is a blurred classroom setting with blue chairs and a chalkboard.

A-234

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**SIEMENS**

# Control Valves for Hot and Chilled Water



MXG461...U  
Magnetic Control Valve.

## Description

The Magnetic MX.. Mixing Valve uses magnetic actuation to enhance response time and provide stability. Large signal changes switch the actuator to the large signal band, allowing high-gain response to quickly position the valve element. Small signal changes switch the actuator to the small signal band to provide loop stability and precise positioning.

## Features

- Fast positioning time (< 2 seconds)
- 1000:1 resolution
- Magnetic actuation
- No maintenance
- Manual override
- Auto calibration
- Dip switch selectable signal input (0 to 10 V or 4 to 20 mA)
- Dip switch selectable flow characteristic
- Built-in position feedback

## Applications

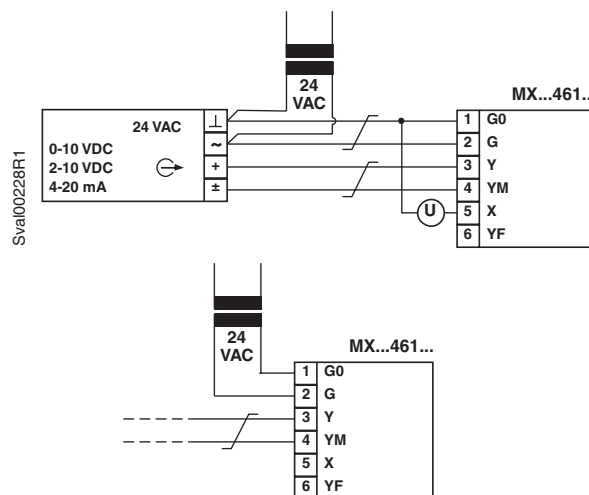
The Magnetic MX.. Mixing Valve is designed for modulating control of chilled water and hot water and is well suited for HVAC systems.

The valves can be configured for straight-through or 3-way applications and can be used in closed loop applications. Valves are shipped with NPT screwed fittings. A flanged version is also available in the 2-1/2" line size.

A-235

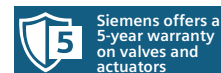
Valves

## Wiring Diagram



Connection to Controller with Four-wire Output.

Ⓢ = Indication of valve position (only where required).  
0 to 10 Vdc → 0 to 100% volumetric flow



# Specifications

**Operating Voltage** ..... 24 Vac +20%, -15%  
**Typical Power Consumption**  
 1/2 - 1-1/4" ..... 5w  
 1-1/2 - 2-1/2" ..... 6w  
**Frequency** ..... 45-65 Hz  
**Control Signals** ..... 0 to 10 Vdc, 2 to 10 Vdc, or 4 to 20 mA  
**Position Feedback Signal** ..... 0 to 10 Vdc; Load Resistance > 500 Ω  
**Materials**  
 Body ..... Cast Iron  
 Plug ..... CrNi Steel  
 Seat ..... Brass  
 Bellows ..... Tombac, Bronze, CrNi Steel

**Packing**  
 Normal Duty ..... EDPM (O-ring)  
**Max. Differential Pressure** ..... 44 psi  
**Temperature of Medium** ..... 34° to 266°F (1° to 130°C)  
**Resolution** ..... 1000:1  
**Position with Actuator De-energized** ..... A → AB Closed  
**Positioning Time** ..... <2 Seconds  
**Agency Approvals** ..... UL873, cUL, CSA C22.2 No. 24  
**Flow Characteristic (Selectable)** ..... Equal Percentage or Linear  
**Environmental Protection** ..... NEMA Type 1

# Sizing

Part No.	Line Size (in.)	Cv	Max. Close-off Pressure (psi)	Power for Transformer Sizing (VA)	Power Consumption (W)	Fuse Required (A)	Wire Gauge			
							18	16	14	12
							Max. Cable Length (ft.)			
MXG461.15-0.6U	1/2	0.7	44	29	5	3.15	108	213	361	525
MXG461.15-1.5U	1/2	1.7	44	29	5	3.15	108	213	361	525
MXG461.15-3.0U	1/2	3.5	44	29	5	3.15	108	213	361	525
MXG461.20-5.0U	3/4	5.8	44	29	5	3.15	108	213	361	525
MXG461.25-8.0U	1	9.3	44	29	5	3.15	108	213	361	525
MXG461.32-12U	1-1/4	14	44	29	5	3.15	108	213	361	525
MXG461.40-20U	1-1/2	23	44	44	6	4.00	66	118	197	328
MXG461.50-30U	2	35	44	44	6	4.00	66	118	197	328
MXF461.65-50U	2-1/2	58	44	46	6	5.00	49	98	164	262

**Table Notes:**

\*All data relates to a supply of 24 Vac.

# Product Ordering

Valve Size	Cv	Part No.
<b>NPT Union</b>		
1/2"	0.7	MXG461.15-0.6U
1/2"	1.7	MXG461.15-1.5U
1/2"	3.5	MXG461.15-3.0U
3/4"	5.8	MXG461.20-5.0U
1"	9.3	MXG461.25-8.0U
1-1/4"	14	MXG461.32-12U
1-1/2"	23	MXG461.40-20U
2"	35	MXG461.50-30U
<b>Flanged</b>		
2-1/2"	58	MXF461.65-50U*

**Table Notes:**

\*No blanking flange

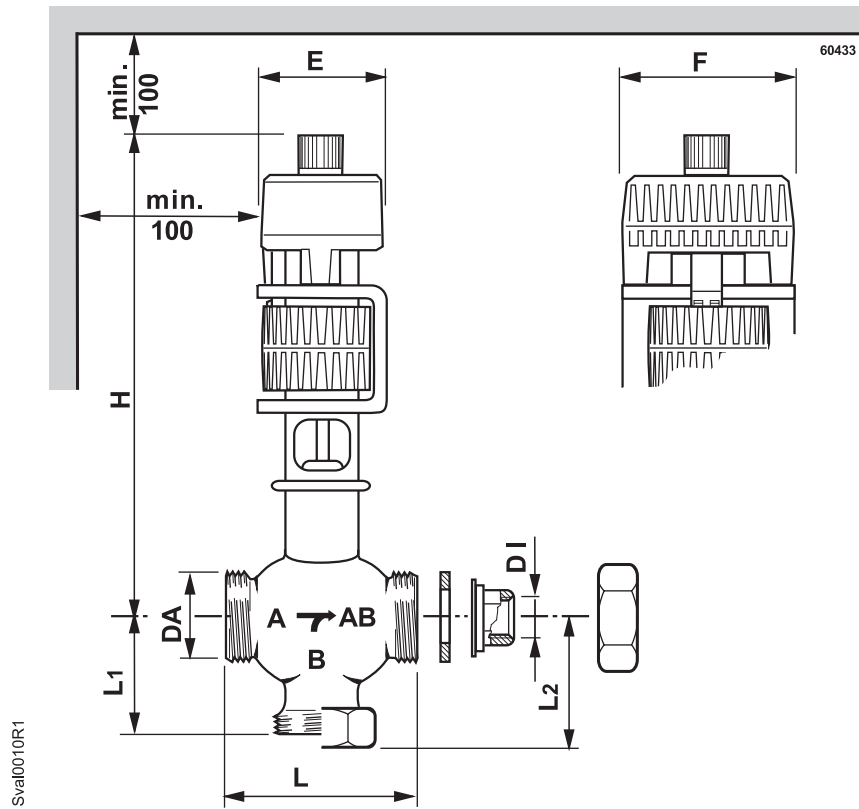
A-236

Valves



# Dimensions and Weights

## MX.461...U Valves with Electronics Module



Dimensions shown in inches (mm).

Part No.	DI	DA	L	L1	L2*	H	E	F	Weight lb. (kg)
MXG461.15-0.6U	1/2	1	3.15 (80)	1.67 (42.5)	2.01 (51)	9.45 (240)	3.15 (80)	3.94 (100)	8.4 (3.8)
MXG461.15-1.5U	1/2	1	3.15 (80)	1.67 (42.5)	2.01 (51)	9.45 (240)	3.15 (80)	3.94 (100)	8.4 (3.8)
MXG461.15-3.0U	1/2	1	3.15 (80)	1.67 (42.5)	2.01 (51)	9.45 (240)	3.15 (80)	3.94 (100)	8.4 (3.8)
MXG461.20-5.0U	3/4	1-1/4	3.74 (95)	2.07 (52.5)	2.40 (51)	10.24 (260)	3.15 (80)	3.94 (100)	9.3 (4.2)
MXG461.25-8.0U	1	1-1/2	4.33 (110)	2.22 (56.5)	2.56 (65)	10.63 (270)	3.15 (80)	3.94 (100)	10.4 (4.7)
MXG461.32-12U	1-1/4	2	4.92 (125)	2.66 (67.5)	2.99 (76)	11.22 (285)	3.15 (80)	3.94 (100)	12.3 (5.6)
MXG461.40-20U	1-1/2	2-1/4	5.51 (140)	3.17 (80.5)	3.70 (94)	12.60 (320)	3.94 (100)	4.72 (120)	20.5 (9.3)
MXG461.50-30U	2	2-3/4	6.69 (170)	3.68 (93.5)	4.29 (109)	13.39 (340)	3.94 (100)	4.72 (120)	26.2 (11.9)

**Table Notes:**

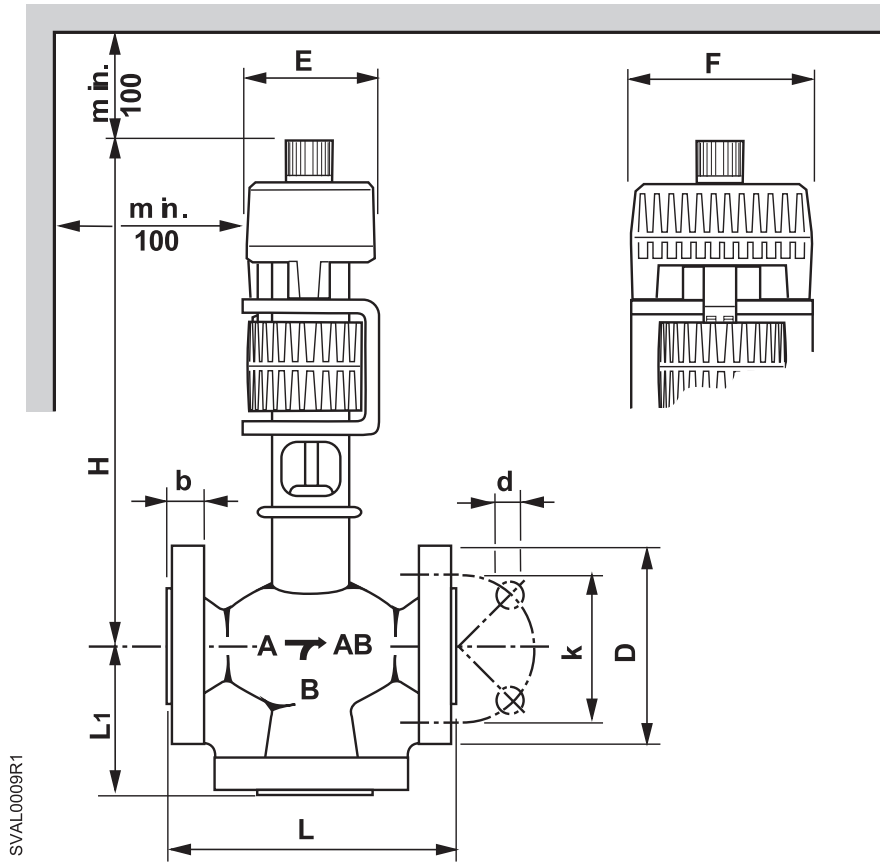
\*When used as a straight-through valve

# Dimensions and Weights

## MX.461...U Flanged Valves with Electronics Module

A-238

Valves



Dimensions shown in inches (mm).

Part No.	L	L1	D	b	k	d 4X	H	E	F	Weight lb. (kg)
MXF461.65-50U	11.42 (290)	4.92 (125)	7.00 (177.8)	0.88 (22.4)	5.50 (139.7)	0.75 (19.05)	15.43 (392)	3.15 (80)	3.94 (100)	63.1 (28.6)

## Control Valves for Hot and Chilled Water with ZM Signal Module



Magnetic M3P...FY  
Mixing Valve with Actuator.

### Description

The Magnetic M3P...FY valve uses a magnetic actuator to positively position with extremely high speed and accuracy. The combination of >1000:1 resolution and full range positioning in less than one second allows exceptional loop stability and reaction time.

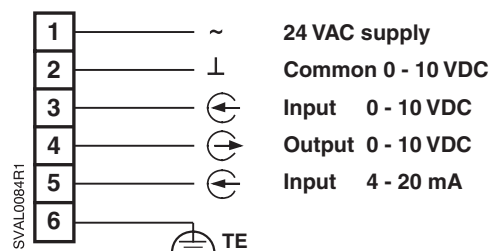
### Features

- Fast positioning time (< 1 second)
- >1000:1 resolution
- Magnetic actuation
- No periodic maintenance
- Manual override
- Built-in position control and feedback
- Low friction, heavy-duty and maintenance free

### Applications

The Magnetic M3P...FY Mixing Valve is designed for modulating control of chilled water and hot water, especially in HVAC systems. The valves are also configured for straight-through applications. The valves may be shipped with flanged fittings: 2BN is two-way with Companion Flange Kit, and 3BN is three-way with Companion Flange Kit. The valves are used in closed loop applications.

### Wiring Diagram



A-239

Valves

## Specifications

Operating Voltage ..... 24 Vac

Nominal Power  
 3" ..... 80 VA (20w)  
 4" ..... 120 VA (30w)

Frequency ..... 50/60 Hz +15/-10%

Control Signals ..... 0 to 10 Vdc or 4 to 20 mA

Position Feedback Signal ..... 0 to 10 Vdc

Materials  
 Body ..... Cast Iron  
 Plug ..... CrNi Steel  
 Seat ..... Brass

Packing  
 Normal Duty ..... EDPM (O-ring)

Max. Differential Pressure ..... 44 psi (3 in.)  
 29 psi (4 in.)

Water Temperature ..... 35° to 248°F (2° to 120°C)

Ambient Temperature ..... 35° to 122°F (2° to 50°C)

Resolution ..... >1000:1

Position with Actuator De-energized ..... A → AB Closed

Positioning Time ..... <1 Second

Agency Approvals ..... UL873, cUL, CSA C22.2 No. 24

Flow Characteristic ..... Linear

Environmental Protection ..... NEMA Type 1

## Sizing

Part No.	Valve Size (in.)	Cv	Max. Differential Pressure and Close-off		Power for Transformer Sizing (VA)	Power Consumption (W)	Wire Gauge (AWG)		
			(psi)	(bar)			16	14	12
							Max. Wiring Length (ft.)		
M3P80FY	3	93	44	3	80	20	33	52	89
M3P100FY	4	152	29	2	120	30	20	33	56

## Product Ordering

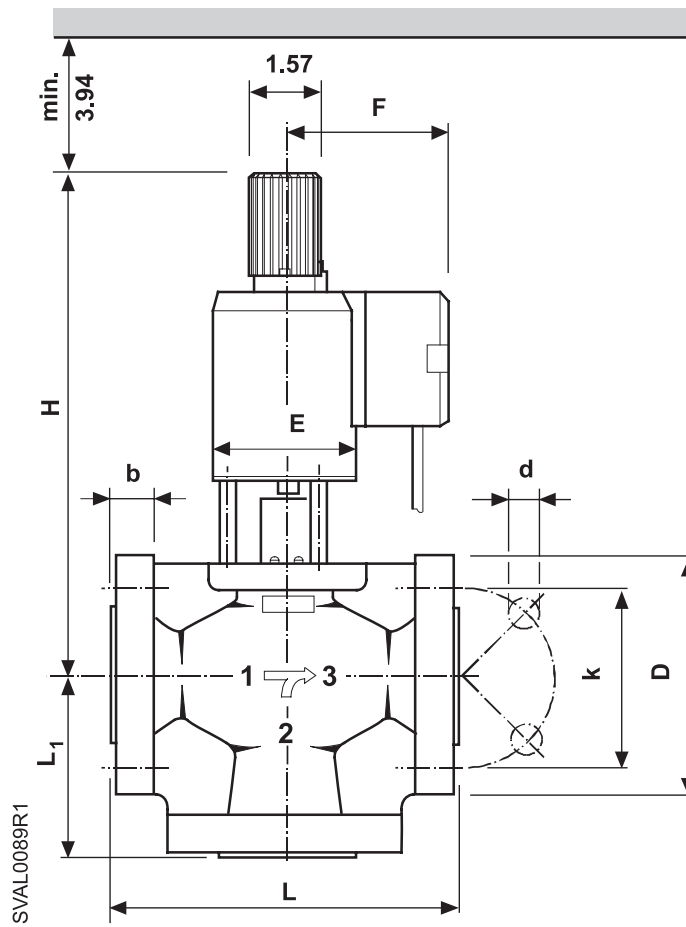
Description	Cv	Part No.
3" 3-way	93	M3P80FY
4" 3-way	152	M3P100FY

A-240

Valves

# Dimensions and Weights

## M3P...FY Control Valve



Dimensions shown in inches (mm).

Part No.	L	L1	D	b	k	d	H	E	F	Weight lb. (kg)
M3P80FY	12.20 (310)	5.51 (140)	7.87 (200)	0.87 (22)	6.30 (160)	8x 0.71 (8x18)	20.00 (508)	5.71 (145)	4.88 (124)	100.0 (45.5)
M3P100FY	13.78 (350)	6.30 (160)	8.66 (220)	0.94 (24)	7.09 (180)	8x 0.71 (8x18)	22.44 (570)	5.71 (145)	4.88 (124)	130.0 (59.0)

### Table Notes:

Counter flanges are not supplied. Flange dimensions to DIN2533, PN16

A-241

Valves



A-242

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**SIEMENS**

## Modulating Control Valves

*with Magnetic Actuators, Positioning Control and Position Feedback for Hot Water and Steam*



MVF461H Series Magnetic Control Valve.

### Description

MVF461H Series Modulating Control Valves are control valves with magnetic actuators, for modulating control of hot water, high temperature hot water, and steam.

### Features

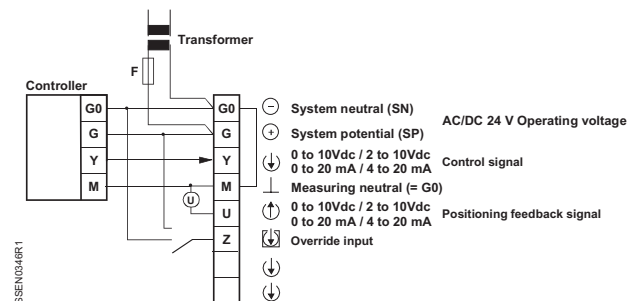
- Fast positioning time (< 2 seconds)
- Selectable valve characteristic: Equal percentage or linear
- Selectable standard interface: 0/2 to 10 Vdc or 0/4 to 20 mA
- High resolution (>1000:1)
- High rangeability
- Wear-free inductive stroke measurement
- Spring return fails closed when de-energized
- Positioning control and position feedback signal
- Low-friction, heavy-duty and maintenance-free

### Applications

The MVF461H... Control Valves are through-port valves with magnetic actuators. The actuator is equipped with an electronics module for positioning control and position feedback. If the power is off, the valve fails closed.

The short positioning time, high resolution and high rangeability make these valves ideal for proportional control of district heating stations, and heating applications using high temperature hot water and steam.

### Wiring Diagram



# Specifications

## Electrical

Low-voltage Use Only ..... Class 2 (SELV, PELV)

## 24 Vac

Operating Voltage ..... 24 Vac +20/-15%  
 Frequency ..... 45 to 65 Hz  
 Typical Power Consumption ..... See Sizing Table  
 Standby ..... <1 W (Valve Fully Closed)  
 Nominal Apparent Power ..... See Sizing Table  
 Suitable Fuse ..... Slow

## 24 Vdc

Operating Voltage ..... 20 to 30 Vdc

## Functional Data of Actuator

### Input

Positioning Signal Y ..... 0/2 to 10 Vdc, 0/4 to 20mA  
 Impedance  
 0/2 to 10 Vdc ..... 100 kΩ/5nF  
 0/4 to 20 mA ..... 240 Ω/5nF

### Forced Control

Impedance ..... 22 kΩ  
 Closing the Valve (Z Connected to G0) ..... <1 Vac; <0.8 Vdc  
 Opening the valve (Z Connected to G0) ..... >6 Vac; >5 Vdc  
 No Function (Z Not Wired) ..... Positioning Signal Y Active

### Output

Position Feedback Signal Voltage ..... 0/2 to 10 Vdc;  
 Load Resistance > 500Ω  
 Current ..... 0/4 to 20 mA;  
 Load Resistance < 500Ω  
 Stroke Measurement ..... Inductive  
 Nonlinearity ..... ±3% of End Value

## Functional Data of Valve

Nominal Pressure ..... ANSI 125 (PN 16)  
 Perm. Operating Pressure<sup>1</sup> ..... Water up to 248°F (120°C)  
 232 psig (16 bar)  
 Water Above 248°F (120°C):  
 188 psig (13 bar)  
 Saturated Steam: 130 psig (9 bar)

Pressure Differential  $\Delta p_{max}$  /  $\Delta ps$  ..... 145 psi (10 bar)

## Materials

Body ..... Nodular Cast Iron  
 Cover Flange ..... Nodular Cast Iron  
 Seat/Inner Valve ..... Stainless Steel

## Packing

Normal Duty ..... EDPM (O-ring)

## Electrical Connections

Cable Entries ..... 3 x M20 x 1.5 or PG13.5/G1/2  
 Connection Terminals ..... Screw Terminals for up to 12 AWG Wires  
 (0.75 mm<sup>2</sup> Min. Cross-sectional Area<sup>3</sup>)

## Max. Pressure

Max. Differential Pressure ..... 145 psi

## Media Temperature

..... 34° to 356°F (1° to 180°C)

## Ambient Conditions

Temperature  
 Operation and Storage ..... 23° to 113°F (-5° to 45°C)  
 Transport ..... -13° to 158°F (-25° to 70°C)  
 Humidity ..... 5 to 95% rh (Non-condensing)

## Resolution

..... 1000:1

## Position with Actuator De-energized

..... Closed

## Positioning Time

..... <2 Seconds

## Approvals

..... IP31 to IEC 529

..... Conforms to CE Requirements, UL 873,

..... Certified to Canadian Standard C22.2, No. 24, C-Tick N-474,

..... PED 97/23/EC: Pressure-carrying Parts

..... Par. 1, Section. 2.1.4 / Par. 3, Section 3 Fluid Group 2

## Flow Characteristic

..... Equal Percentage or Linear<sup>2</sup>

## Environmental Protection

..... NEMA Type 1

## Notes:

<sup>1</sup>Tested at 1.5 x PN (24 bar), similar to DIN 3230-3

<sup>2</sup>Can be selected via DIP switch.

<sup>3</sup>In case of strong vibrations, use high-flex stranded wires.

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Valves

# Sizing

Part No.	Line Size (in.)	Cv	Max. Differential Pressure and Close-off (psi)	Power for Transformer Sizing (VA)	Power Consumption (W)	Slow Fuse	Wire Gauge (AWG)		
							16	14	12
							Max. Wiring Length (ft.)		
MVF461H15-0.6	1/2	0.7	145	33	15	3.15	130	215	360
MVF461H15-1.5	1/2	1.8	145	33	15	3.15	130	215	360
MVF461H15-3	1/2	3.5	145	33	15	3.15	130	215	360
MVF461H20-5	3/4	5.9	145	33	15	3.15	130	215	360
MVF461H25-8	1	9.4	145	33	15	3.15	130	215	360
MVF461H32-12	1-1/4	14.0	145	43	20	4	100	165	260
MVF461H40-20	1-1/2	23.3	145	65	20	6.3	100	165	260
MVF461H50-30	2	35.0	145	65	26	6.3	65	100	165



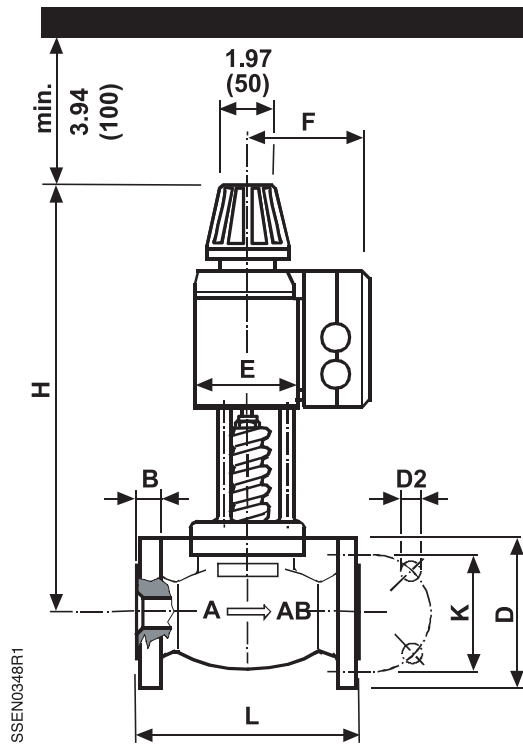
## Product Ordering

Valve Size (in)	Cv	Part No.
<b>ISO Flanges Without Adapters</b>		
1/2	0.7	<b>MVF461H15-0.6</b>
1/2	1.8	<b>MVF461H15-1.5</b>
1/2	3.5	<b>MVF461H15-3</b>
3/4	5.9	<b>MVF461H20-5</b>
1	9.4	<b>MVF461H25-8</b>
1-1/4	14.0	<b>MVF461H32-12</b>
1-1/2	23.3	<b>MVF461H40-20</b>
2	35.0	<b>MVF461H50-30</b>

### Ordering Notes:

- When placing an order, specify the quantity, product number and description.
- The valve body and magnetic actuator assemblies cannot be separated.

# Dimensions and Weights



Dimensions shown in inches (mm).

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Valves

Part No.	DN	L	D	D2	B	K	H	E	F	Weight lb. (kg)
MVF461H.15-0.6	15	5.12 (130)	3.74 (95)	4 x 0.55 (4x14)	0.55 (14)	2.56 (65)	13.4 (340)	3.15 (80)	4.53 (115)	18.3 (8.3)
MVF461H.15-1.5	15	5.12 (130)	3.74 (95)	4 x 0.55 (4x14)	0.55 (14)	2.56 (65)	13.4 (340)	3.15 (80)	4.53 (115)	18.3 (8.3)
MVF461H15-0.6	15	5.12 (130)	3.74 (95)	4 x 0.55 (4x14)	0.55 (14)	2.56 (65)	13.4 (340)	3.15 (80)	4.53 (115)	18.3 (8.3)
MVF461H15-1.5	15	5.12 (130)	3.74 (95)	4 x 0.55 (4x14)	0.55 (14)	2.56 (65)	13.4 (340)	3.15 (80)	4.53 (115)	18.3 (8.3)
MVF461H15-3	15	5.12 (130)	3.74 (95)	4 x 0.55 (4x14)	0.55 (14)	2.56 (65)	13.4 (340)	3.15 (80)	4.53 (115)	18.3 (8.3)
MVF461H20-5	20	5.91 (150)	4.13 (105)	4 x 0.55 (4x14)	0.63 (16)	2.95 (75)	13.3 (339)	3.15 (80)	4.53 (115)	19.6 (8.9)
MVF461H25-8	25	6.30 (160)	4.53 (115)	4 x 0.55 (4x14)	0.63 (16)	3.35 (85)	13.6 (346)	3.15 (80)	4.53 (115)	22.1 (10.0)
MVF461H32-12	32	7.09 (180)	5.51 (140)	4 x 0.71 (4x18)	0.71 (18)	3.94 (100)	15.12 (384)	3.94 (100)	4.92 (125)	34.6 (15.7)
MVF461H40-20	40	7.87 (200)	5.91 (150)	4 x 0.71 (4x18)	0.71 (18)	4.33 (110)	15.79 (401)	3.94 (100)	4.92 (125)	39.2 (17.8)
MVF461H50-30	50	9.05 (230)	6.50 (165)	4 x 0.71 (4x18)	0.79 (20)	4.92 (125)	17.58 (449)	4.92 (125)	5.43 (138)	60.0 (27.2)

Table expressed in inches (mm).

## Modulating Control Valves

with Magnetic Actuators, Positioning Control and Position Feedback for Domestic Water



MXG461B Series Modulating Control Valve.

### Description

The MXG461B Modulating Control Valve is a control valve with magnetic actuator, for modulating control of domestic water, cold water and hot water systems.

### Features

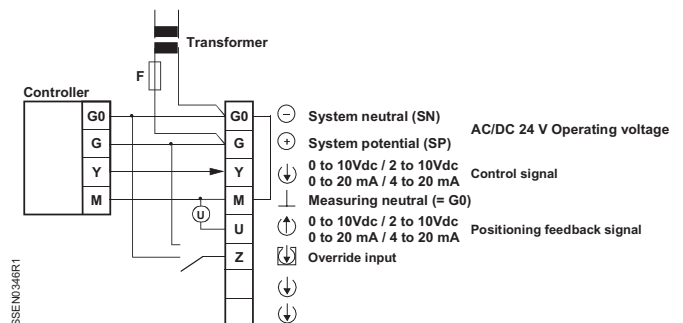
- Fast positioning time (< 2 seconds)
- Selectable valve characteristic: Equal percentage or linear
- Selectable control signal: 0/2 to 10 Vdc or 0/4 to 20 mA
- High resolution (>1000:1)
- High rangeability
- Wear-free inductive stroke measurement
- Spring return A → AB closed when de-energized
- Positioning control and position feedback signal
- Low-friction, heavy-duty and maintenance-free

### Applications

The MXG461B... Modulating Control Valves are through-port or mixing valves with magnetic actuators. The actuator is equipped with an electronics module for positioning control and position feedback. If the power is off, the valve control path A → AB is closed.

The short positioning time, high resolution and high rangeability make these valves ideal for modulating control of domestic, hot and cold water systems.

### Wiring Diagram



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Valves

# Specifications

## Electrical

Low-voltage Use Only ..... Class 2 (SELV, PELV)

## 24 Vac

Operating Voltage ..... 24 Vac +20/-15%  
 Frequency ..... 45 to 65 Hz  
 Typical Power Consumption ..... See Table 1  
 Standby ..... <1 W (Valve Fully Closed)  
 Nominal Apparent Power ..... See Sizing Table  
 Suitable Fuse ..... Slow, See Table 1

## 24 Vdc

Operating Voltage ..... 20 to 30 Vdc

## Functional Data of Actuator

### Input

Positioning Signal Y ..... 0/2 to 10 Vdc or 0/4 to 20mA  
 Impedance  
 0/2 to 10Vdc ..... 100 kΩ//5nF  
 0/4 to 20 mA ..... 240 Ω//5nF

### Forced Control

Impedance ..... 22 kΩ  
 Closing the Valve (Z Connected to G0) ..... <1 Vac; <0.8 Vdc  
 Opening the Valve (Z Connected to G0) ..... >6 Vac; >5 Vdc  
 No Function (Z Not Wired) ..... Positioning Signal Y Active

### Output

Position Feedback Signal Voltage ..... 0/2 to 10 Vdc;  
 Load Resistance > 500Ω  
 Current ..... 0/4 to 20 mA;  
 Load Resistance < 500Ω  
 Stroke Measurement ..... Inductive  
 Nonlinearity ..... ±3% of End Value

## Functional Data of Valve

Nominal Pressure ..... ANSI 125 (PN 16)  
 Operating Pressure  $p_{o,max}^1$  ..... 232 psi (16 bar)  
 Pressure Differential  $Dp_{v,max}$  ..... See Sizing Table.  
 Leakage ..... A → AB Maximum 0.05% Cv  
 B → AB Depends on Application Data  
 (0.2% Cv)  
 Water Temperature<sup>2</sup> ..... -4° to 266°F (-20° to 130°C)  
 Valve Characteristic<sup>3</sup> ..... Equal Percentage or Linear, Optimized  
 Near the Closing Point

Resolution ..... 1:1000

Type of Operation ..... Modulating

Position De-energized ..... A → AB Closed

Orientation ..... Upright to Horizontal

Positioning Time ..... < 2 Seconds

## Materials

Body ..... Red Bronze  
 Cover Flange ..... Red Bronze  
 Seat/Inner Valve ..... Stainless Steel

## Packing

Normal Duty ..... EPDM (O-ring)

Pipe Connections ..... Screwed Fittings, Bronze/Brass

## Electrical Connections

Cable Entries ..... 3 x M20 x1.5 or PG13.5/G1/2  
 Connection Terminals ..... Screw Terminals for 12 AWG Wires  
 Min. Cross-sectional Area<sup>4</sup> ..... 18 ga. AWG  
 Max. Cable Length ..... Refer to Sizing Table.

## Ambient Conditions

Temperature  
 Operation and Storage ..... 23° to 113°F (-5° to 45°C)  
 Transport ..... -13° to 158°F (-25° to 70°C)  
 Humidity ..... 5 to 95% rh

## Agency Approvals

IP31 to IEC 529  
 Conforms to CE Requirements, UL 873,  
 Certified to Canadian Standard C22.2 No. 24, C-Tick N-474,  
 PED 97/23/EC: Pressure-carrying Parts,  
 Par. 1, Section. 2.1.4 / Par. 3, Section 3, Fluid Group 2

## Flow Characteristics

Equal Percentage or Linear

## Notes:

- Tested at 1.5 x PN (24 bar), similar to DIN 3230-3
- For medium temperatures <32°F (0°C), the Z366 stem heating element is required.
- Can be selected via DIP switch.
- In case of strong vibrations, use high-flex stranded wires.

# Sizing

Part No.	Valve Size (in.)	Cv	Max. Close-off Pressure (psi)	Power for Transformer Sizing (VA)	Power Consumption (W)	Slow Fuse	Wire Gauge (AWG)		
							16	14	12
MXG461B15-0.6	1/2	0.7	145	33	15	3.15	130	215	360
MXG461B15-1.5	1/2	1.8	145	33	15	3.15	130	215	360
MXG461B15-3	1/2	3.5	145	33	15	3.15	130	215	360
MXG461B20-5	3/4	5.8	116	33	15	3.15	130	215	360
MXG461B25-8	1	9.3	102	33	15	3.15	130	215	360
MXG461B32-12	1-1/4	14	87	43	20	4	100	165	260
MXG461B40-20	1-1/2	23	87	43	20	4	100	165	260
MXG461B50-30	2	35	87	65	22	6.3	65	100	185

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Valves

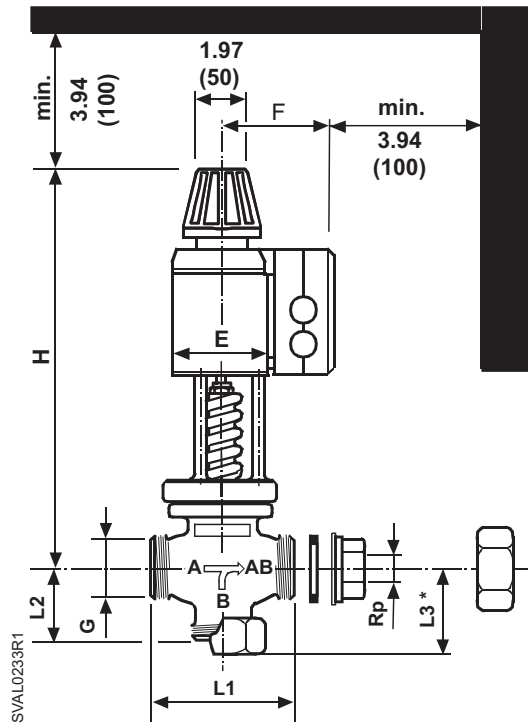
## Product Ordering

Valve Size (in)	Cv	Part No.
1/2	0.7	<b>MXG461B15-0.6</b>
1/2	1.8	<b>MXG461B15-1.5</b>
1/2	3.5	<b>MXG461B15-3</b>
3/4	5.8	<b>MXG461B20-5</b>
1	9.3	<b>MXG461B25-8</b>
1-1/4	14	<b>MXG461B32-12</b>
1-1/2	23	<b>MXG461B40-20</b>
2	35	<b>MXG461B50-30</b>

### Ordering Notes:

- The valve body and magnetic actuator assemblies cannot be separated.
- The screwed fittings and gaskets are supplied with these valves.

# Dimensions and Weights



Dimensions shown in inches (mm).

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Valves

Part No.	Line Size In. (mm)	RP	G (in)	L1	L2	L3	H	E	F	Weight lb. (kg)
MXG461B15-0.6	1/2 (15)	1/2	G1B	3.15 (80)	1.67 (42.5)	1.97 (50)	13.4 (340)	3.15 (80)	4.53 (115)	15.65 (7.1)
BXG461B15-1.5	1/2 (15)	1/2	G1B	3.15 (80)	1.67 (42.5)	1.97 (50)	13.4 (340)	3.15 (80)	4.53 (115)	15.65 (7.1)
MXG461B15-0.6	1/2 (15)	1/2	G1B	3.15 (80)	1.67 (42.5)	1.97 (50)	13.4 (340)	3.15 (80)	4.53 (115)	15.65 (7.1)
MXG461B15-1.5	1/2 (15)	1/2	G1B	3.15 (80)	1.67 (42.5)	1.97 (50)	13.4 (340)	3.15 (80)	4.53 (115)	16.09 (7.3)
MXG461B15-3	1/2 (15)	1/2	G1B	3.15 (80)	1.67 (42.5)	1.97 (50)	13.4 (340)	3.15 (80)	4.53 (115)	16.09 (7.3)
MXG461B20-5	3/4 (20)	3/4	G1-1/4B	3.74 (95)	2.07 (52.5)	2.36 (60)	13.3 (339)	3.15 (80)	4.53 (115)	16.97 (7.7)
MXG461B25-8	1 (25)	1	G1-1/2B	4.33 (110)	2.22 (56.5)	2.52 (64)	13.6 (346)	3.15 (80)	4.53 (115)	18.73 (8.5)
MXG461B32-12	1-1/4 (32)	1-1/4	G2B	4.92 (125)	2.66 (67.5)	2.95 (75)	15.12 (384)	3.94 (100)	4.92 (125)	28.22 (12.8)
MXG461B40-20	1-1/2 (40)	1-1/2	G2-1/4B	5.51 (140)	3.17 (80.5)	3.66 (93)	15.79 (401)	3.94 (100)	4.92 (125)	32.19 (14.6)
MXG461B50-30	2 (50)	2	G2-3/4B	6.69 (170)	3.68 (93.5)	4.2 (108)	17.58 (449)	3.94 (100)	4.92 (125)	41.00 (18.6)

**Table Notes:**

Table expressed in inches (mm).

- A: External thread G...B to ISO228/1
- DN: Internal thread Rp to ISO7/1
- Fittings to ISO 49/DIN 2950 (supplied complete with flange gaskets)

## Refrigeration Valves



A-251

Valves

For over 30 years, Siemens has been developing and producing refrigerant valves with magnetic actuators. Siemens refrigerant valves offer precise control and optimum energy efficiency in refrigeration systems. The one thing they all have in common is the actuator technology: the ultra precise, permanent DC magnetic actuation.

The Siemens refrigeration valve range offers diverting and 2-port valves for refrigeration applications. These include refrigerant valves for expansion, hot gas bypass (indirect or direct) and suction throttle applications. The high maximum permissible differential pressure and maximum permissible operating pressure allow the use of many types of refrigerants and can be used in applications with high pressures in the system.

The valves are not only simple to install and maintenance-free, but also safe for the environment.

### Features

- Hermetically sealed for a high degree of environmental compatibility
- High stroke resolution
- Positioning time < 1 second
- Vibration-free operation
- Ease of service and installation

### Refrigerants

- Ammonia (M2FP, MVS661)
- CO<sub>2</sub> (MVL661, MVS661)
- Commonly used safety refrigerants

### Applications

- Expansion
- Hot Gas Bypass (direct and indirect)
- Suction Throttle
- Diverting or straight through
- Can be used for chillers, heat pumps, air conditioning, supermarket refrigeration systems, air handling plants, etc.
- Modulating pilot valve with magnetic actuator (M2FP03GX) is available as the controlling element for 2 to 5-inch main valves.



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# Building Technology Webinars

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## PolyCool Superheat Controller



### Description

The PolyCool™ Superheat is successful in areas where energy savings and optimization is a priority. This package further offers functionality for capacity control. As a result, the package can replace, the normal thermostatic expansion valves (TEV) and the magnetic shutoff valve in refrigeration applications. Finally, the package controls the refrigeration capacity via an external signal or connection with a Ni1000 standard sensor.

### Features

- Integrated user interface
- Hermetically sealed valve
- Precise and fast control components
- Real superheat control through pressure and temperature measurements
- Electronic expansion valve provides a high degree of precision
- Safety shutoff for compressors
- MOP (maximum operating pressure)
- Control algorithms for minimum superheating
- 1 or 2 independent superheating control circuits
- 30 refrigerants (including R717 (NH3), R744 (CO2) and R723)
- Adjustable valve Start-up behavior (time and opening degree)

### Applications

The PolyCool Superheat was developed especially for controlling superheating of evaporators with dry expansion:

- PolyCool RWR462.10 can be employed with chillers, in particular, refrigeration machines with plate heat exchangers.
- PolyCool RWR462.10 for DX evaporators in air handling units and other applications such as evaporators in grocery stores, warehouses, computer rooms, etc.

The PolyCool Superheat is successful in areas where energy savings and optimization is a priority. This package further offers functionality for capacity control. As a result, the package can replace, the normal thermostatic expansion valves (TEV) and the magnetic shutoff valve in refrigeration applications. Finally, the package controls the refrigeration capacity via an external signal or connection with a Ni1000 standard sensor.

# Specifications

## Logistics

**ASN** .....RWR462.10  
**ASN Set** .....CPS40.040, CPS40.100, CPS40.250, CPS40.630  
**Standard pressure sensor** ..... QBE9101-P10U -1...-9 bar, 4...20 mA

## Hardware

**Power supply** .....AC/DC 24V  
**Communication** .....Modbus slave (Version 2) LCD-Symbol

## Configuration

**Pressure sensor** ..... QBE2001-P10U -1...-9 bar, DC 0...10 V  
 QBE2001-P25U -1...-24 bar, DC 0...10 V  
 QBE2001-P60U -1...-59 bar, DC 0...10 V  
 QBE9101-P10U -1...-9 bar, 4...20 mA  
 QBE9101-P30U -1...-29 bar, 4...20 mA  
 QBE9101-P60U -1...-59 bar, 4...20 mA

**Refrigerants** .....30  
 (R22, R23, R134a, R152a, R170, R290, R401a, R401b, R401c, R402a, R402b, R402c, R404a, R406a, R407a, R407b, R407c, R408a, R409a, R410a, R410b, R417a, R502, R507, R717, R723, R744, R1270, R600a, R600)

**Refrigerants circuits**.....2

## Parameter settings

**Min. operating Temperature** ..... -50°C  
**Feedback of valve in running mode** ..... Yes  
**Sensor failure alarm** ..... Yes  
**Min Superheat range** ..... Adjustable 0..4K  
**Superheat set point range** ..... 0...16K  
**Valve start up sequence**..... Yes (Time and opening degree)  
**Compressor alarm start up delay** ..... Yes  
**Mode of operation with Ext. Capacity Control Signal**.....Reversible  
 10 V = min or max Qo

# Product Ordering

Description	Part No.
Superheat controller for 1 or 2 refrigeration circuits	<b>RWR462.10</b>
Superheat control set consisting of controller (RWR462.10), valve (MVL661...- ...), pressure sensor (QBE9101-P10U), temperature sensor (QAZ21.682/101) and an installation and user's guide.	<b>CPS40.040</b> <b>CPS40.100</b> <b>CPS40.250</b> <b>CPS40.630</b>

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Valves

## Modulating Refrigerant Valves with Magnetic Actuators



MVL661... Series Refrigerant Valve.

### Description

Control valves with magnetic actuator for modulating control of refrigerant circuits using CO<sub>2</sub> and commonly used safety refrigerants.

### Features

- One valve type for expansion, hot-gas and suction throttle applications
- Hermetically sealed towards outside
- Selectable standard interface 0 to 10 Vdc, 2 to 10 Vdc, 0 to 20 mA or 4 to 20 mA
- High resolution and control accuracy
- Precise positioning control and position feedback signal
- Short positioning time (<1 second)
- Closed when de-energized
- Robust and maintenance-free
- Five valve sizes with Cv (kvs) values from 0.29 to 13.9 psi (0.25 to 12)
- 4 selectable standard signals for setpoint and measured value
- DIP switch to reduce the Cv (kvs) value to 63% of the nominal value
- Potentiometer for adjustment of minimum stroke for suction throttle applications
- Automatic stroke calibration
- Forced control input for "Valve closed" or "Valve fully open"
- LED for indicating the operating state

### Applications

The MVL661...Series refrigerant valves are designed for modulating control of refrigerant circuits including chillers and heat pumps. They can be used in expansion, hot-gas and suction throttle applications as well as with all commonly used safety refrigerants (R22, R134a, R227ea, R404A, R407C, R410A, and so on) and R744 (CO<sub>2</sub>). They are not suitable for flammable refrigerants.

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Valves



# Specifications

## Operating Voltage

24 Vac ..... 24 Vac ± 20%  
 Frequency ..... 45 to 65 Hz  
 Typical Power Consumption

$P_{med}$  ..... 12W  
 Standby ..... <1 W (valve fully closed)

Apparent Power,  $S_{NA}$  ..... 22 VA (for selecting the transformer)  
 Required Fuse ..... Slow, 1.6 to 4A  
 24 Vdc ..... 20 to 30 Vdc  
 Current draw ..... 0.5A/2A (maximum)

## Control Signal Y

..... 2 to 10 Vdc, 4 to 20 mA,  
 Impedance

0/2 to 10 Vdc ..... 100K ohm/5nF  
 0/4 to 20 mA ..... 240 ohm/5nF

### Forced control ZC

Input impedance ..... 22K ohm  
 Closing the valve (ZC connected to G0) ..... <1 Vac; <0.8 Vdc  
 Opening the valve (ZC connected to G) ..... >6 Vac; >5 Vdc  
 No function (ZC not wired) ..... Positioning signal Y active

## Position Feedback Signal U

Voltage ..... 2 to 10 Vdc; load resistance ≥ 500 Ω  
 Current ..... 4 to 20 mA; load resistance ≤ 500 Ω  
 Stroke Detection ..... Inductive  
 Nonlinearity ..... Accuracy ±3% full scale

## Positioning Time

..... < 1 second

## Electrical Connections

Cable Entry Glands ..... 3 × ø × 17 mm (for M16)  
 Min. Wire Size ..... 20 AWG (0.75 mm<sup>2</sup>)  
 Max. Cable Length ..... See Wiring

## Nominal Pressure

..... 232 psi (PN 16)

## Permissible Operating Pressure <sup>1)</sup>

..... max. 652 psi (45 bar)

## Max. Differential Pressure $\Delta p_{max}$

..... 363 psi (25 bar)  
 1-1/4-inch (DN32): 29 psi (2 bar)

## Valve Characteristic (stroke vs $C_v$ or $k_v$ )

..... Linear (to VDI/VDE2173)

## Leakage Rate (Internally Across Seat)

..... Max. 0.002%  $C_v$  (Kv) or  
 Max. 1 NI/h gas at  $\Delta p = 58$  psi (4 bar)  
 Shut/off function, like solenoid  
 normally closed (NC) function

## External Seal

..... Hermetically sealed (fully welded,  
 no static or dynamic seals)

## Permissible Media

..... Commonly used safety refrigerants  
 (R22, R134a, R227ea, R404A, R407C, R410A,  
 R422D, and so on) and R744 (CO<sub>2</sub>)  
 Not suitable for flammable refrigerants  
 Not suitable for ammonia (R717).  
 For refrigerants belonging to Fluid group 1,  
 please contact your local Siemens representative.

## Media Temperature

..... -40° to 248°F (-40° to 120°C),  
 Max. 284°F (140°C) for 10 min.

## Stroke Resolution $\Delta H/H100$

..... 1:1000 (H = Stroke)

## Hysteresis

..... Typically 3%

## Mode of Operation

..... Modulating

## Position when de-energized

..... Control path A → AB closed

## Orientation

..... Upright to horizontal

## Valve Body and Parts

..... Steel/crNi Steel

## Seat/Piston

..... CrNi Steel/Brass

## Sealing Disk

..... PTFE

## Sleeves

..... Internally soldered, CrNi steel

## Temperature

Operation ..... -13° to 131°F (-25° to 55°C)  
 Transport ..... -13° to 158°F (-25° to 70°C)  
 Storage ..... 23° to 113°F (-5° to 45°C)

## Humidity

Operation ..... 10 to 100% rh  
 Transport ..... < 95% rh  
 Storage ..... 5 to 95%

## Notes:

$S_{NA}$  = Nominal apparent power for selecting the transformer

$P_{med}$  = Typical power consumption

$I_F$  = Required slow fuse

L = Max. cable length; with 4-wire connections, the max. permissible length of the separate 14 AWG (1.5 mm<sup>2</sup>) copper positioning signal wire is 656 ft (200 m)

1) All information at 24 Vac

2) With 10 AWG (4 mm<sup>2</sup>) electrical wiring reduce wiring cross-section for connection inside valve to 12 AWG (2.5 mm<sup>2</sup>).

# Wiring

Part No.	Connection Type	(VA)	(W)	(A)	Wire Gauge (AWG)		
					14	12	10
					Max. Cable Length ft (m)		
MVL661.....	4 wire (preferred)	22	12	1.6 to 4A	213 (65)	361 (110)	525 (160)
	3 wire	22	12	1.6 to 4A	65 (20)	115 (35)	164 (50)

## Sizing

Part No.	Valve Size (in.)	Cv	Cv Reduced <sup>1</sup>	$\Delta p_{max}$ psi	$Q_0 E$ (kW)	$Q_0 H$ (kW)	$Q_0 D$ (kW)
MVL661.15-0.4	1/2	0.46	—	363	47	9.2	1.7
		—	0.29		29	5.7	1.0
MVL661.15-1.0	1/2	1.2	—	363	117	23	4.2
		—	0.73		74	14	2.6
MVL661.20-2.5	3/4	2.9	—	363	293	57	10
		—	1.8		187	37	6.6
MVL661.25-6.3	1	7.3	—	363	737	144	26
		—	4.6	—	468	92	17
MVL661.32-12	1-1/4	13.9	—	29	*	*	50
		—	9.2	—	*	*	33

### Table Notes:

<sup>1</sup>63% of Cv ( $k_{vs}$ ), see Cv ( $k_{vs}$ ) DIP switch setting.

\* MVL661.32-12.0 is only approved for suction throttle applications

Cv Nominal flow rate, in gpm, of refrigerant through the fully open valve (H100) at a differential pressure of 1 psi.

$\Delta p_{max}$  Maximum permissible differential pressure across the control path of the valve, valid for the entire actuating range of the motorized valve.

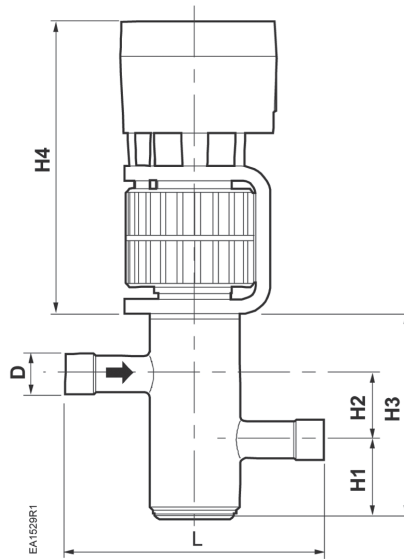
$Q_0 E$  Refrigeration capacity in expansion applications

$Q_0 H$  Refrigeration capacity in hot-gas bypass applications

$Q_0 D$  Refrigeration capacity in suction throttle applications and  $\Delta p = 7.25$  psi (0.5 bar)

$Q_0$  With R407C at  $t_0 = 32^\circ\text{F}$  ( $0^\circ\text{C}$ ),  $t_c = 4^\circ\text{F}$  ( $40^\circ\text{C}$ ).

# Dimensions and Weights



Dimensions shown in inches (mm).

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Valves

Line Size (in.)	D	L	H1	H2	H3	H4	Depth	Weight lb (kg)
1/2	5/8	5.51 (140)	1.73 (44)	1.42 (36)	4.45 (113)	6.30 (160)	4.05 (103)	9.7 (4.4)
3/4	7/8	5.90 (150)	1.61 (41)	1.61 (41)	4.69 (119)	6.30 (160)	4.05 (103)	9.9 (4.5)
1	1-1/8	6.30 (160)	1.57 (40)	1.85 (47)	4.96 (126)	6.30 (160)	4.05 (103)	10.1 (4.6)
1-1/2	1-3/8	7.5 (190)	1.69 (43)	2.13 (54)	5.59 (142)	6.30 (160)	4.05 (103)	13.4 (6.1)

**Table Notes:**

D Pipe connections (inch), internal dimension

## Modulating Refrigerant Valves for Ammonia and Safety Refrigerants with Magnetic Actuators



MVS661...N Series Refrigerant Valve.

### Description

The MVS661...N refrigerant valve can be driven by Siemens or third-party controllers that deliver a 0/2...10 Vdc or 0/4...20 mA output signal. The valve stroke is proportional to the control signal. Can be used with ammonia, CO<sub>2</sub> and commonly used safety refrigerants.

### Features

- One valve type for expansion, hot-gas and suction throttle applications
- Hermetically sealed
- Selectable standard control signals 0/2 to 10 Vdc or 4 to 20 mA
- High resolution and control accuracy
- Precise positioning control and position feedback signal
- Short positioning time (<1 second)
- Closed when de-energized
- Robust and maintenance-free
- 1-in. (DN 25) with Cv (kvs) values from 0.12 to 7.28 (0.10 to 6.3 m<sup>3</sup>/h)
- 4 selectable standard signals for setpoint and measured value
- DIP switch to reduce the Cv (kvs) value to 63% of the nominal value
- Potentiometer for adjustment of minimum stroke for suction throttle applications
- Automatic stroke calibration
- Forced control input for "Valve closed" or "Valve fully open"
- LED for indicating the operating state

### Applications

The MVS661...N refrigerant valve is designed for modulating control of refrigerant circuits including chillers and heat pumps. It is suitable for use in expansion, hot-gas and suction throttle applications. In addition to ammonia (R717), the valve can handle all standard safety refrigerants, noncorrosive gases / liquids and CO<sub>2</sub> (R744). It is not suited for use with inflammable refrigerants.

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Valves

# Specifications

## Operating Voltage

24 Vac.....	24 V ± 20%
Frequency .....	45 to 65 Hz
Typical Power Consumption	
P <sub>med</sub> .....	12W
Standby .....	<1 W (valve fully closed)
Apparent Power, S <sub>NA</sub> .....	22 VA (for selecting the transformer)
Required Fuse.....	Slow, 1.6 to 4A
24 Vdc .....	20 to 30 Vdc
Current draw.....	0.5A/2A (maximum)

## Signal Inputs

Positioning Signal Y .....	0/2 to 10 Vdc, 4 to 20 mA
Impedance	
0/2 to 10 Vdc .....	100K ohm/5nF
0/4 to 20 mA .....	240 ohm/5nF
Forced control ZC	
Input impedance .....	22K ohm
Closing the valve (ZC connected to G0).....	<1 Vac; <0.8 Vdc
Opening the valve (ZC connected to G).....	>6 Vac; >5 Vdc
No function (ZC not wired).....	Positioning signal Y active

## Signal Outputs

Position Feedback U	
Voltage.....	0/2 to 10 Vdc; load resistance > 500 Ω
Current.....	0/4 to 20 mA; load resistance < 500 Ω
Stroke Detection.....	Inductive
Nonlinearity .....	Accuracy +3% of end value

Positioning Time ..... <1 second

## Electrical Connections

Connection Terminals..... Screw terminals for 12 AWG wire

## Functional Valve Data

Permissible Operating Pressure 1) .....	max. 914 psi (63 bar)
Max. Differential Pressure Δp <sub>max</sub> .....	363 psi (25 bar)
Valve Characteristic.....	Linear
Leakage Rate (Internally Across Seat).....	Max. 0.002% CV (KV) or
	Max. 1 NI/h gas at Δp = 58 psi (4 bar)
	Shut/off function, like solenoid normally closed (NC) function
External Seal .....	Hermetically sealed
Permissible Media .....	Ammonia (R717), CO <sub>2</sub> (R744) and all safety refrigerants (R22, R134a, R404A, R407C, R507, etc);
	Not suited for use with inflammable refrigerants
Media Temperature .....	-40° to 248°F (-40° to 120°C),
	Max. 284°F (140°C) for 10 min.
Stroke Resolution ΔH/H100.....	1:1000 (H = Stroke)
Hysteresis.....	Typically 3%
Mode of Operation.....	Modulating
Position when De-energized .....	Closed
Mounting Position.....	Upright to horizontal

## Materials

Valve Body and Parts .....	Steel/CrNi Steel
Seat/Piston.....	CrNi Steel

Sealing Disk/O-Rings ..... PTFE/ CR (chloroprene)

## Environmental Compatibility

Environment .....	ISO 14001
Quality .....	ISO 9001
Environmentally Compatible Products .....	SN 36350
RoHS.....	RL 2002/95/EG

## Notes:

- S<sub>NA</sub> = Nominal apparent power for selecting the transformer
  - P<sub>med</sub> = Typical power consumption
  - I<sub>F</sub> = Required slow fuse
  - L = Max. cable length; with 4-wire connections, the max. permissible length of the separate 14 AWG (1.5 mm<sup>2</sup>) copper positioning signal wire is 656 ft (200 m)
- 1) All information at 24 Vac
  - 2) With 10 AWG (4 mm<sup>2</sup>) electrical wiring reduce wiring cross-section for connection inside valve to 12 AWG (2.5 mm<sup>2</sup>).

# Wiring

Part No.	Connection Type	(VA)	(W)	(A)	Wire Gauge (AWG)		
					14	12	10
					Max. Cable Length ft (m)		
MVS661...N	4-wire (preferred)	22	12	1.6 to 4A	213 (65)	361 (110)	525 (160)
	3-wire	22	12	1.6 to 4A	65 (20)	115 (35)	164 (50)



## Sizing

Part No.	Valve Size (in.)	Cv	Cv Reduced <sup>1</sup>	$\Delta p_{max}$ psi	$Q_0 E$ (kW)	$Q_0 H$ (kW)	$Q_0 D$ (kW)	$S_{NA}$ (VA)	$P_{med}$ (W)
MVS661.25-016N	1	0.18	0.12	363	95	10	2	22	12
MVS661.25-0.4N	1	0.46	0.29	363	245	26	5	22	12
MVS661.25-1.0N	1	1.16	0.73	363	610	64	12	22	12
MVS661.25-2.5N	1	2.89	1.85	363	1530	159	29	22	12
MVS661.25-6.3N	1	7.28	4.62	363	3850	402	74	22	12

### Table Notes:

<sup>1</sup>63% of Cv ( $k_{vs}$ ), see Cv ( $k_{vs}$ ) DIP switch setting.

Cv Nominal flow rate, in gpm, of refrigerant through the fully open valve (H100) at a differential pressure of 1 psi.

$\Delta p_{max}$  Maximum permissible differential pressure across the control path of the valve, valid for the entire actuating range of the motorized valve.

$Q_0 E$  Refrigeration capacity in expansion applications.

$Q_0 H$  Refrigeration capacity in hot-gas bypass applications.

$Q_0 D$  Refrigeration capacity in suction throttle applications and  $\Delta p = 7.25$  psi (0.5 bar).

$Q_0$  With R407C at  $t_0 = 32^\circ\text{F}$  ( $0^\circ\text{C}$ ),  $t_c = 4^\circ\text{F}$  ( $40^\circ\text{C}$ ).

$Q_0$  With R407C at  $t_0 = 32^\circ\text{F}$  ( $0^\circ\text{C}$ ),  $t_c = 4^\circ\text{F}$  ( $40^\circ\text{C}$ ).

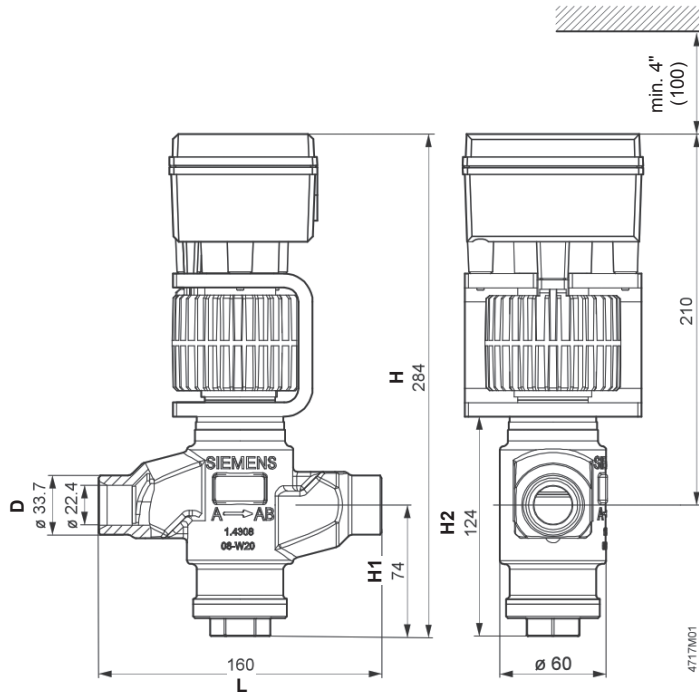
$S_{NA}$  Nominal apparent power for selecting the transformer.

$P_{med}$  Typical power consumption.

# Dimensions and Weights

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Valves



Dimensions shown in inches (mm).

Line Size (in.)	D	L	H1	H2	H	Depth	Weight lb (kg)
1	7/8	6.30 (160)	2.91 (74)	4.88 (124)	6.30 (160)	4.05 (103)	10.1 (4.6)

**Table Notes:**

D Pipe connections (inch), internal dimension

## Modulating Control Valve for Hot Gas Control with Magnetic Actuators



M3FB... LX Series 3-Port Valve with Magnetic Actuator.

### Description

The M3FB... LX control valve with magnetic actuator is used for modulating capacity control of refrigeration units and heat recovery systems in hot gas applications. For commonly used safety refrigerants.

### Features

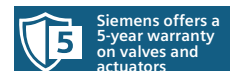
- For organic safety refrigerants
- 24 Vac operating voltage or power signal; 0 to 20 Vdc Phs (phase cut)
- Selectable electrical interface ZM.. with 0 to 10 Vdc, 4 to 20 mA or 0 to 20 Vdc phase-cut positioning signal
- High stroke resolution (>1:2000) and control accuracy
- Short positioning time (< 1 s)
- Port AB → A closed when de-energized
- Heavy-duty and maintenance-free
- 1/2 to 1-1/4 in. line size (15 to 32 DN) with Cv (kvs) values from 0.7 to 14.0 (0.6 to 12.0 m<sup>3</sup>/h)

### Applications

The M3FB... LX 3-port and 2-port valves with magnetic actuators may be used as hot gas diverting or 2-port valves. Suitable for organic safety refrigerants such as R22, R134a, R404A, R407C, R507, etc. Not suitable for flammable refrigerants or ammonia (R717).

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Valves



# Specifications

## Operating Voltage

24 Vac .....	24 V +15%/-10%
Frequency .....	50 to 60 Hz
Required Fuse .....	Slow, 1.6 to 2.5A

## Signal Inputs

Positioning Signal	
ZM101/A .....	0 to 10 Vdc or 0 to 20 V phase cut
ZM121/A .....	4 to 20 mA or 0 to 20 V phase cut
ZM111 .....	0 to 20 Vdc phase cut
Input Resistance .....	0 to 10 Vdc >100K Ω; 4 to 20 mA ,150K Ω

Positioning Time ..... < 1 second

## Electrical Connections

Connection Terminals .....Screw terminals for 12 AWG wire

## Functional Valve Data

Permissible Operating Pressure.....	Max. 623 psi (63 bar)*
Max. Differential Pressure Δpmax	
AB → B .....	116 psi (8 bar)
Leakage Rate Δp = 0.1 MPa (1 bar)	
AB → A .....	Max. 0.05 % of $k_{vs}$ -value
AB → B .....	Max. 0.5 % $k_{vs}$
Valve Characteristic.....	Linear (to VDI / VDE 2173), optimized in low opening range
Permissible Media .....	For organic safety refrigerants (R22, R134a, R404A, R407C, R410A, R507 etc.).
	Not suitable for ammonia (R717) or flammable refrigerants
Media Temperature .....	-40° to 248°F (-40° to 120°C), Max. 284°F (140°C) for 10 min.
Stroke Resolution ΔH/H100.....	>1:200 (H = Stroke)
Mode of Operation.....	Modulating
Position when De-energized .....	AB → A Closed

## Materials

Housing Components.....	Steel/CrNi Steel
Seat/Inner Valve .....	Brass/CrNi Steel
Pipe Connections .....	PTFE/ CR (chloroprene)

## Environmental Compatibility

Environment .....	ISO 14001
Quality .....	ISO 9001
Environmentally Compatible Products .....	SN 36350
RoHS.....	RL 2002/95/EC

\* To EN 12284, checked with 1.43 x operating pressure at 62 bar

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Valves

# Sizing

Part No.	Line Size (in.)	Cv AB → A gpm	ΔPmax AB → A psi	S <sub>NA</sub> (VA)	P <sub>med</sub> (W)
M3FB15LX06/A	1/2	0.7	319	26	6
M3FB15LX15/A	1/2	1.8	319	26	6
M3FB15LX/A	1/2	3.5	319	26	6
M3FB20LX/A	3/4	5.9	261	26	6
M3FB25LX/A	1	9.4	174	40	10
M3FB32LX	1-1/4	14.0	116	40	10

### Table Notes:

- Cv Flow rate tolerance ±10%.
- Δpmax Maximum permissible differential pressure across the control path of the valve, valid for the entire actuating range of the motorized valve.
- S<sub>NA</sub> Nominal apparent power for selecting the transformer.
- P<sub>med</sub> Typical power consumption.

## ZM... Terminal Housing

Part No.	Operating Voltage	Positioning Signal	Working Range
ZM101/A	24 Vac	0 to 10 Vdc	4 to 8 Vdc
ZM121/A	24 Vac	4 to 20 mA	8 to 16 mA
ZM111	—	0 to 20 V Phase Cut	0 to 15 V Phase Cut

## Product Ordering Example

Part No.	Description
M3FB...	Modulating Refrigerant Valve with Magnetic Actuator
ZM121/A	24 Vac

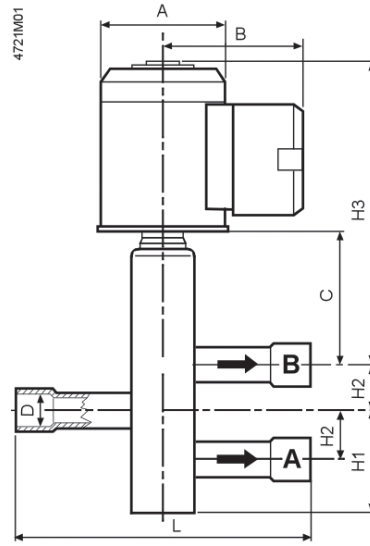
**Table Notes:**

Valve body and magnetic actuator form one integrated unit and cannot be separated.

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Valves

## Dimensions and Weights



Dimensions shown in inches (mm).

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Valves

## Product Ordering

Line Size (in.)	ø D (in.)	L	H1	H2	H3	A	B	C	Weight lb. (kg)
1/2	5/8	5.9 (150)	2.6 (65)	1 (25)	7.2 (184)	3.1 (80)	3.3 (84)	2.6 (67)	9.5 (4.3)
3/4	7/8	6.7 (170)	2.7 (69)	1.2 (30)	9.4 (238)	4 (100)	3.7 (94)	3.3 (84)	19.6 (8.9)
1	1-1/8	7.9 (200)	2.8 (72)	1.4 (36)	9.8 (248)	4 (100)	3.7 (94)	3.7 (94)	20.9 (9.5)
1-1/4	1-3/8	9.8 (250)	3.6 (91)	1.7 (43)	9.6 (245)	4 (100)	3.7 (94)	3.9 (98)	25.1 (11.4)

## Modulating Pilot Valve with Magnetic Actuator



M2FP03GX Pilot Valve  
with Magnetic Actuator.

### Description

The M2FP03GX pilot valve with magnetic actuator is used as the controlling element for 2 to 5 in. main valves for modulating control of chillers, or for direct control of low Cv (kvs) values.

### Features

- Short positioning time (approx 1 second)
- High resolution
- Hermetically sealed
- Versatile electrical interface with terminal housing ZM..
- Friction free
- Robust and maintenance-free
- Values from 0.7 to 14.0 (0.6 to 12.0 m<sup>3</sup>/h)

### Applications

Suitable for use with safety refrigerants such as R22, R134a, R404A, R407C, R507 and for ammonia R717. Not suitable for applications with gas/liquid mixtures.

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Valves

# Specifications

## Operating Voltage

24 Vac .....	24 V +15%/-10%
Frequency .....	50 to 60 Hz
Typical power consumption P <sub>med</sub> .....	5 W
Rated apparent power S <sub>NA</sub> .....	13 VA
Required Fuse.....	Slow, 1A

## Signal Inputs

Positioning Signal	
ZM101/A .....	0 to 10 Vdc or 0 to 20 V phase cut
ZM121/A .....	4 to 20 mA or 0 to 20 V phase cut
ZM111 .....	0 to 20 Vdc phase cut
Input Resistance.....	0 to 10 Vdc >100K Ω; 4 to 20 mA, <150 Ω

**Positioning Time** ..... < 1 second

## Electrical Connections

Connection Terminals.....Screw terminals for 12 AWG wire

## Functional Valve Data

Permissible Operating Pressure.....	464 psi (32 bar)
Max. Differential Pressure Δp <sub>max</sub>	
1 → 3 .....	261 psi (18 bar)
Leakage Rate Δp = 15 psi (1 bar)	
1 → 3 .....	Approx. 0.25% C <sub>v</sub>
Valve Characteristic.....	Linear
Permissible Media .....	For organic safety refrigerants (R22, R134a, R404A, R407C, R410A, R507 etc.) or ammonia (R717)
Media Temperature .....	-40° to 212°F (-40° to 100°C)
Mode of Operation.....	Modulating
Position when De-energized .....	Valve stem retracted (valve control path closed)

## Materials

Body .....	Steel
Seat/Inner Valve .....	CrNi Steel

## Environmental Compatibility

Environment .....	ISO 14001
Quality .....	ISO 9001
Environmentally Compatible Products .....	SN 36350
RoHS.....	RL 2002/95/EC

**Weight**.....3.6 lb. (1.64 kg)

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Valves

# Sizing

Part No.	Main Valve Line Size (in.)	C <sub>v</sub>	Δp <sub>max</sub> psi
M2FP03GX	2 - 5	0.35	261

### Table Notes:

- C<sub>v</sub> Nominal flow rate, in gpm, of cold water through the fully open valve (H100) at a differential pressure of 1 psi.
- Δp<sub>max</sub> Maximum permissible differential pressure across the control path of the valve, valid for the entire actuating range of the motorized valve.



## ZM... Terminal Housing

Part No.	Operating Voltage	Positioning Signal	Working Range
ZM101/A	24 Vac	0 to 10 Vdc	4 to 8 Vdc
ZM121/A	24 Vac	4 to 20 mA	8 to 16 mA
ZM111	—	0 to 20 V Phase Cut	0 to 15 V Phase Cut

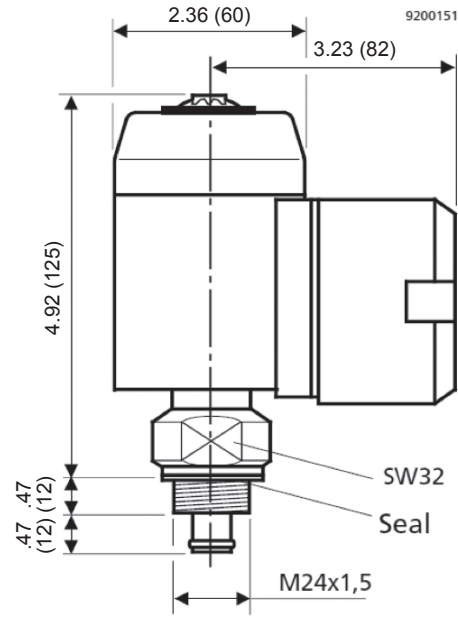
## Product Ordering Example

Part No.	Description
M2FP03GX	Pilot Valve
ZM121/A	Terminal Housing 24 Vac

**Table Notes:**

Valve body and magnetic actuator form one integrated unit and cannot be separated.

# Dimensions and Weights



Dimensions shown in inches (mm).

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Valves

## Angle/Flared/Sequence/Changeover Service Valves



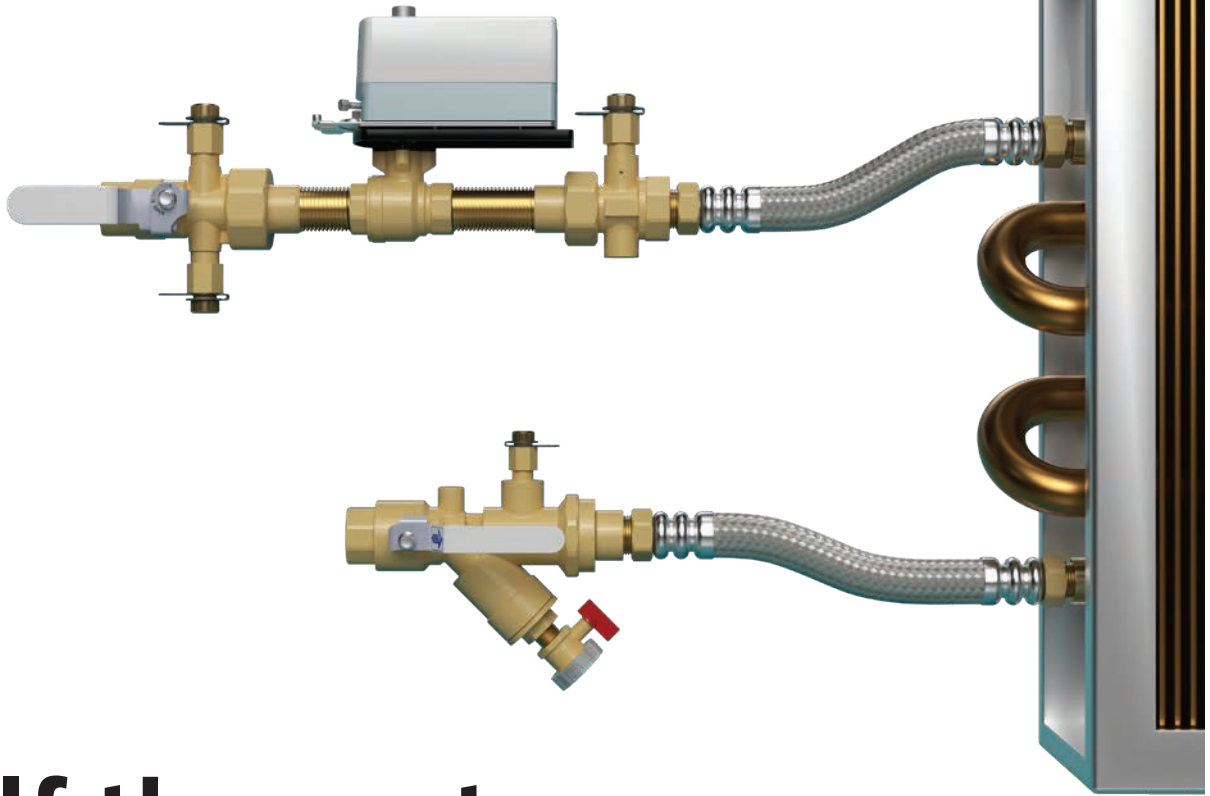
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Valves

In this section, you will find flared, angled, sequence and changeover valves with pneumatic actuators for use in service applications.



Siemens offers a 5-year warranty on valves and actuators.



A-272

# Half the cost, Half the time, Fast and easy selection

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**75+ Years**  
Innovating control valves

# SIEMENS

## Two-Way Valves

1/2" Flared Type  
Normally Open or Normally Closed



656 Powermite  
Two-Way Normally Open Valve.



656 Powermite  
Two-Way Normally Closed Valve.

### Description

Designed to control the flow of both water and steam, the Powermite 656 Series Powermite Two-way Valves are available with normally open or normally closed action.

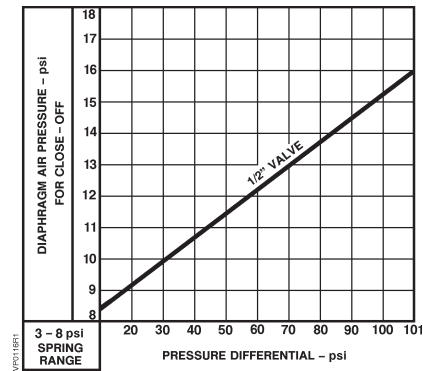
### Features

- Modified equal percentage throttling characteristics
- Replaceable disc for tight shutoff
- Dual sealing feature for the valve stem
- Disassembly of the valve top, inspection, and upper packing replacement without system shutdown or valve body removal
- Actuator can be rotated to facilitate piping control air from different directions

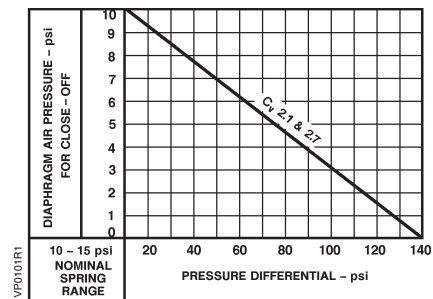
### Applications

The Powermite 656 Series Valves are recommended for use with hot or chilled water and steam for control of convectors, fan coil units, radiation, reheat coils, and similar terminal unit applications. The dual sealing packed design is excellent for applications for higher-pressure systems encountered in high rise buildings. The compact size is excellent for use when space is limited.

### Nominal Close-off Ratings



Normally Open.



Normally Closed.

# Specifications

Valve Size .....	1/2" (15 mm)
Valve Body Style .....	Flared End
Valve Action .....	NO (Direct Action)/NC(Direct Action)
Stem Travel .....	1/4" (6 mm)
Valve Body Rating .....	ANSI Class 250
<b>Actuator Standard Spring Ranges with 10 psi (69 kPa) <math>\Delta P</math></b>	
Differential Pressure .....	10 to 15 psi (69 to 103 kPa) NC 3 to 8 psi (21 to 55 kPa) NO
Nominal Spring Span .....	5 psi (35 kPa)
Effective Diaphragm Area .....	3.4 in. <sup>2</sup> (22 cm <sup>2</sup> )

<b>Max. Diaphragm Pressure</b> .....	30 psi (207 kPa)
<b>Air Connection</b> .....	1/8" NPT
<b>Controlled Medium</b> .....	Water, Steam, Glycol Solution
<b>Maximum Medium Temperature</b> .....	250° F (121° C)
<b>Maximum Inlet Pressures</b>	
Water.....	Refer to Reference Section
Steam.....	15 psi (103 kPa)
<b>Maximum Differential Pressure for Modulating Service</b>	
Water.....	20 psi (138 kPa)
Steam.....	15 psi (103 kPa)

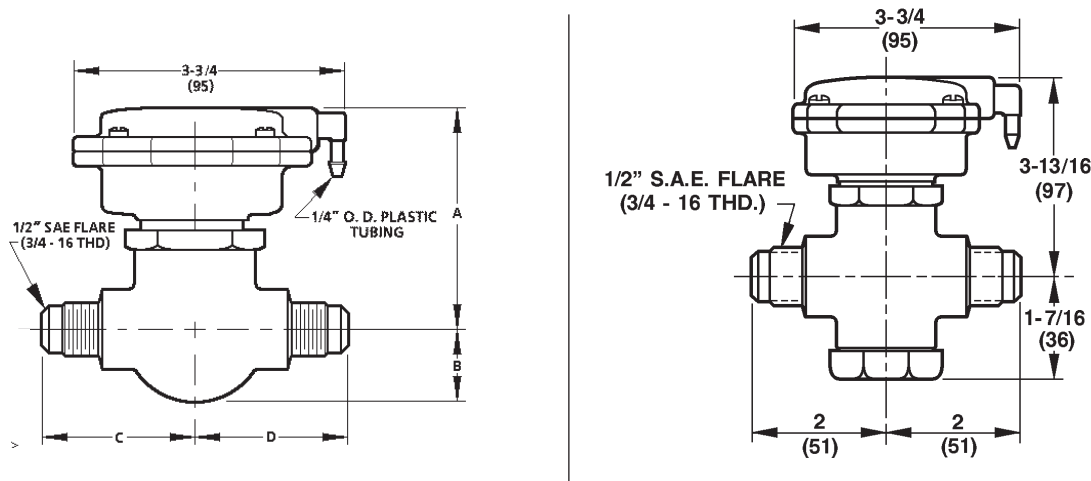
# Product Ordering

Valve Size	Cv	Close-offs	Spring Range	Part No.
<b>Normally Open</b>				
1/2" (15 mm)	0.9	95 psi (655 kPa)	3 to 8 psi (21 to 55 kPa)	<b>656-0004</b>
1/2" (15 mm)	2.1	95 psi (655 kPa)	3 to 8 psi (21 to 55 kPa)	<b>656-0002</b>
<b>Normally Closed</b>				
1/2" (15 mm)	2.1	140 psi (965 kPa)	10 to 15 psi (69 to 103 kPa)	<b>656-0012</b>

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Valves

# Dimensions and Weights



Dimensions shown in inches (mm).

Valve Size	Valve Action	Dimensions				Weight
		A	B	C	D	
1/2"	Normally Open	3-3/16" (81 mm)	1" (25 mm)	2" (51 mm)	2" (51 mm)	2.2 lb.(1.0 kg)
1/2"	Normally Closed	3-13/16" (97 mm)	1-7/16" (36 mm)	2" (51 mm)	2" (51 mm)	2.2 lb.(1.0 kg)

Accessories & Service Kits

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## Three-Way Water Mixing Valves

1/2" Flared Type  
Mixing



656 Powermite  
Three-Way Water Mixing Valve.

### Description

Designed for water mixing applications, the 656 Powermite Three-way Mixing Valve is a high-grade bronze body forged with connections for 1/2-inch OD SAE flare fittings.

### Features

- Enclosed actuator protects spring, diaphragm
- Compact size
- Actuator can be rotated to facilitate air connection
- Modified equal percentage NO port characteristic
- Dual valve stem packing allows upper packing ring replacement without system shutdown

### Applications

The 656 Powermite Three-way Water Mix Valve are recommended for mixing of hot or chilled water for convectors, fan coil units, radiation, reheat coils and similar terminal units which require water mixing. The dual sealing packed design is excellent for applications for higher-pressure systems encountered in high rise buildings. The compact size is excellent for use when space is limited.

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Valves

# Specifications

Valve Size .....	1/2" (15 mm)	Effective Diaphragm Area .....	3.4 in. <sup>2</sup> (22 cm <sup>2</sup> )
Valve Body Style .....	Flared End	Max. Diaphragm Pressure .....	30 psi (207 kPa)
Valve Action .....	Upper Seat NC/Lower Seat NO	Air Connection .....	1/8" NPT
Stem Travel .....	3/8" (10 mm)	Controlled Medium .....	Water, Glycol Solution
Valve Body Material .....	Bronze	Max. Medium Temperature .....	250°F (121°C)
Valve Body Rating .....	ANSI Class 250	Max. Differential Pressure for Modulating Service	
Standard Spring Ranges with 10 psi (69 kPa)		Between Inlets.....	25 psi (172 kPa)
Differential Pressure.....	3 to 8 psi (21 to 55 kPa)	Between Inlet & Outlet.....	25 psi (172 kPa)
	10 to 15 psi (69 to 103 kPa)	Shipping Weight .....	2.0 lb. (0.9 kg)
Nominal Spring Span .....	5 psi (35 kPa)		

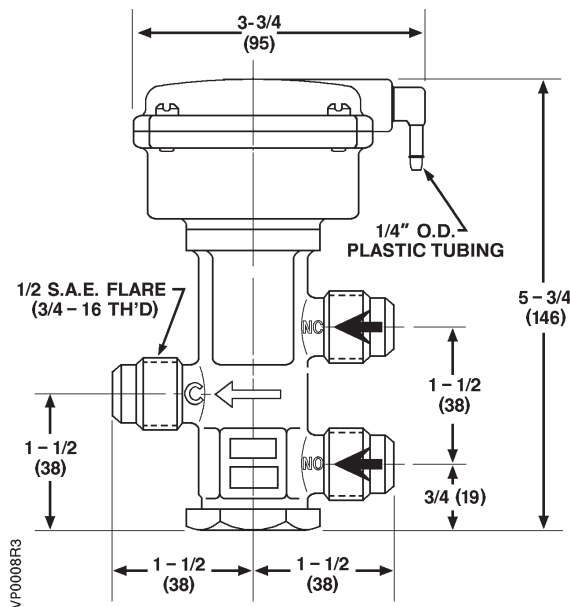
# Product Ordering

Valve Size	Cv	Spring Range	Part No.
1/2" (15 mm)	2.5	10 to 15 lb. (69 to 103 kPa)	656-0009
1/2" (15 mm)	2.5	3 to 8 lb. (21 to 55 kPa)	656-0010
1/2" (15 mm)	1.5	3 to 8 lb. (21 to 55 kPa)	656-0011

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Valves

# Dimensions and Weights



Dimensions shown in inches (mm).



## Two-Way Angle Union Valves

1/2 to 3/4" Angle Female x Union Male  
Normally Open



656 Powermite Two-Way Normally Open Valve with Angle Union Outlet.

### Description

Designed to control the flow of both water and steam, the Powermite 656 Series Two-way Angle Union Valves are available with normally open action.

### Features

- Enclosed actuator housing to protect components
- Small size allows easier installation in tight spaces
- Replaceable soft disc provides tight shut-off
- Dual sealing feature for the valve stem
- Actuator can be rotated to facilitate piping control from different directions
- Stainless steel valve stem to reduce friction and corrosion

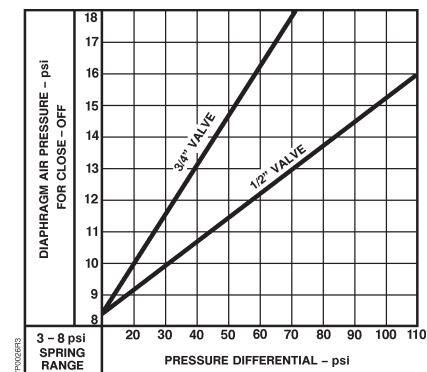
### Applications

The Powermite 656 Series Angle Union Valves are recommended for control of hot or chilled water or steam for controlling convectors, fan coil units, radiation, reheat coils, and similar terminal unit applications. Designed with dual sealing packed construction, this valve can be used in systems having relatively high pressures. Typical uses are sites where efficient economical control is desired. The compact size is excellent where space is limited.

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Valves

### Nominal Close-off Ratings



# Specifications

**Valve Size** ..... 1/2" (15 mm), 3/4" (20 mm)  
**Valve Body Style** ..... Angle Union  
**Valve Action** ..... Normally Open (NO)  
**Valve Stroke** ..... 1/4" (6 mm)  
**Valve Body Rating** ..... ANSI Class 125  
**Diaphragm**  
 Effective Area ..... 3.4 in.<sup>2</sup> (22 cm<sup>2</sup>)  
 Material ..... Silicone Rubber  
 Ambient Temperature Range ..... 30° to 160°F (-1° to 71°C)  
 Maximum Air Pressure ..... 30 psi (207 kPa)

**Maximum Medium Temperature** ..... 250°F (121°C)  
**Controlled Medium** ..... Steam, Water, Ethylene Glycol Solution  
**Maximum Medium Inlet Pressure**  
 Water ..... Refer to Valve Body Rating Table  
 in Reference Section.  
 Saturated Steam ..... 15 psi (103 kPa)  
**Maximum Recommended Differential Pressure  
 for Modulating Service**  
 Water ..... 20 psi (138 kPa)  
 Seam ..... 15 psi (102 kPa)

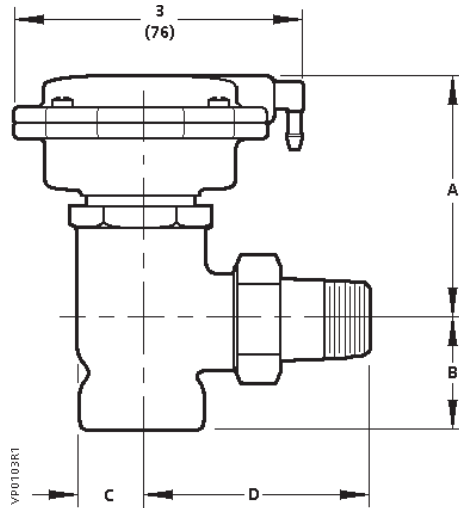
# Product Ordering

Valve Size	Cv	Close-offs	Spring Range	Part No.
1/2" (15 mm)	2.1	95 psi (655 kPa)	3 to 8 psi (21 to 55 kPa)	656-0017
1/2" (15 mm)	2.1	60 psi (414 kPa)	5 to 10 psi (34 to 69 kPa)	656-0019
3/4" (20 mm)	4.6	50 psi (345 kPa)	3 to 8 psi (21 to 55 kPa)	656-0018
3/4" (20 mm)	4.6	35 psi (241 kPa)	5 to 10 psi (34 to 69 kPa)	656-0021

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Valves

# Dimensions and Weights



Dimensions shown in inches (mm).

Valve Size	Dimensions				Weight
	A	B	C	D	
1/2" (15 mm)	2-15/16" (75 mm)	1-1/4" (32 mm)	13/16" (21 mm)	2-5/8" (67 mm)	2.2 lb. (1.0 kg)
3/4" (20 mm)	3-1/16" (78 mm)	1-5/16" (33 mm)	1-1/8" (29 mm)	2-7/8" (73 mm)	2.7 lb. (1.2 kg)

Accessories & Service Kits

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## Two-Way Angle Union Valves

1 to 1-1/4" Angle Female x Union Male  
Normally Open



658 Powertop Two-Way  
Normally Open Valve with Angle Union Outlet.

### Description

Designed to control the flow of steam, water, and ethylene glycol solutions, the Powertop 658 Series Two-way Angle Union Valves are available with normally open action.

### Features

- Replaceable soft disc provides tight shut-off
- Actuator can be rotated to facilitate piping control from different directions
- Stainless steel valve stem to reduce friction and corrosion
- Large diaphragm area for control accuracy and tight close-off
- Equal percentage plugs and long stroke for controllability
- Removable actuator for ease of servicing

### Applications

The Powertop 658 Series Angle Union valves are recommended for control of steam, water and ethylene glycol solutions for controlling unit ventilators, reheat coils, fan coil units, induction units, and duct coils.

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Valves

# Specifications

**Valve Size** ..... 1" (25 mm), 1 1/4" (32 mm)  
**Valve Body Style** ..... Angle Union  
**Valve Action** ..... Normally Open (NO)  
**Valve Stroke** ..... 1/2" (15 mm)  
**Valve Body Rating** ..... ANSI Class 125  
**Diaphragm**  
 Effective Area ..... 11.2 in.<sup>2</sup> (71 cm<sup>2</sup>)  
 Material..... EP Rubber  
 Ambient Temperature Range ..... 35° to 140°F (2° to 60°C)  
 Maximum Air Pressure ..... 30 psi (207 kPa)

**Controlled Medium** ..... Steam, Water, Ethylene Glycol Solution  
**Flow Characterization** ..... Equal Percentage  
**Maximum Medium Temperature** ..... 250°F (121°C)  
**Maximum Medium Inlet Pressure**  
 Water ..... Refer to Valve Body Rating Table  
 in Reference Section.  
 Saturated Steam ..... 15 psi (103 kPa)  
**Maximum Recommended Differential Pressure  
 for Modulating Service**  
 Water..... 25 psi (170 kPa)  
 Steam ..... 15 psi (103 kPa)

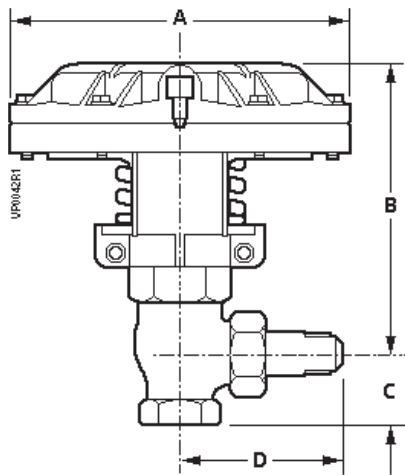
# Product Ordering

Valve Size	Cv	Close-offs	Spring Range	Part No.
<b>Normally Open</b>				
1" (25 mm)	10	100 psi (689 kPa)	2 to 6 psi (14 to 41 kPa)	<b>658-0012</b>
1-1/4" (32 mm)	16	58 psi (400 kPa)	2 to 6 psi (14 to 41 kPa)	<b>658-0014</b>

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Valves

# Dimensions and Weights



Dimensions shown in inches (mm).

Valve Size	Dimensions				Weight
	A	B	C	D	
1" (25 mm)	5-1/2" (140 mm)	4-15/16" (125 mm)	1-3/4" (44 mm)	3-1/8" (79 mm)	5.0 lb. (2.3 kg)
1-1/4" (32 mm)	5-1/2" (140 mm)	5-1/2" (140 mm)	2" (51 mm)	4-3/8" (111 mm)	6.0 lb. (2.7 kg)

Accessories & Service Kits

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## Sequence and Changeover Valves

1/2" Flared Type



658 Powertop Sequence Valve.

### Description

Designed to select and modulate the flow of either hot or chilled water, without mixing, for radiant panel and similar applications, the 658 Powertop Sequence and Changeover Valves are designed with 2 inlets and one outlet for the sequence valve and with one inlet and 2 outlets in the changeover valve.

### Features

- Stainless steel stem for smooth operation and rugged durability
- Large diaphragm area for control accuracy and tight close-off
- Removable actuator for ease of servicing
- Replaceable disc assemblies
- Matched sequencing of control and changeover

### Applications

The 658 Powertop Sequence and Changeover Valves are used for the selection and modulating of hot or chilled water through radiant panels connected to separate hot water and chilled water (4-pipe) systems.

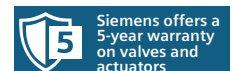
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Valves

### Control Schedule

		NOMINAL CONTROL SCHEDULE						
CONTROL PRESSURE -- psig		2	4	6	8	10	12	14
SEQUENCE VALVE	OPEN	HOT WATER SUPPLY					CHILLED WATER SUPPLY	
	CLOSED							
CHANGEOVER VALVE	OPEN	HOT WATER RETURN					CHILLED WATER RETURN	
	CLOSED							

UP0006951



Siemens offers a 5-year warranty on valves and actuators

# Specifications

**Valve Size** ..... 1/2" (15 mm)

**Valve Body Style** ..... Flared End

**Flow Characteristics**

Sequence ..... Equal Percentage

Changeover ..... Quick-opening

**Valve Type**

Sequence ..... 2 Inlets/1 Outlet

Changeover ..... 1 Inlet/2 Outlets

**Valve Action** ..... NO/Hot to Common

NC/Cold to Common

**Stem Travel** ..... 13/32" (10 mm)

**Valve Body Rating** ..... ANSI Class 250

**Materials**

Valve Body ..... Bronze

Disc ..... Buna-N

Stem ..... Stainless Steel

Packing ..... EP Rubber

**Diaphragm Area** ..... 11 in.<sup>2</sup> (71 cm<sup>2</sup>)

**Max. Diaphragm Pressure** ..... 30 psi (207 kPa)

**Controlled Medium** ..... Water, Glycol Solution

**Max. Medium Temperature** ..... 250°F (121°C)

**Maximum Inlet Pressure** ..... Refer to Reference Section

**Max. Differential Pressure Between Hot and Cold Ports**

Sequence ..... 50 psi (350 kPa)

Changeover ..... 10 psi (69 kPa)

**Max. Differential Pressure for Modulating Service**

Sequence Valve ..... 25 psi (170 kPa)

**Ambient Operating Temperature** ..... 35° to 140°F (2° to 60°C)

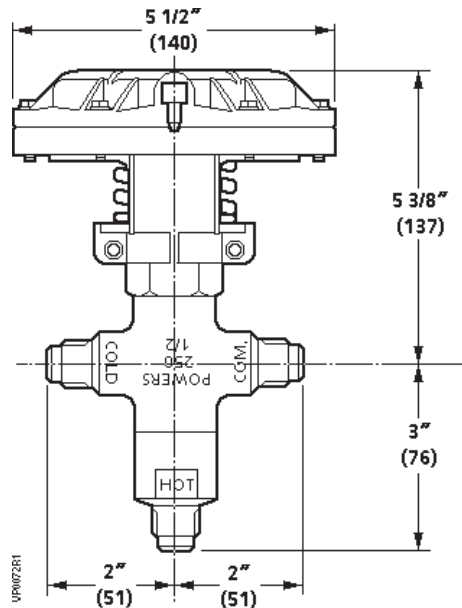
# Product Ordering

Valve Size	Valve Type	Cv	Close-offs	Part No.
1/2" (15 mm)	Sequence	1.5	50 psi (344 kPa)	<b>658-0050</b>
1/2" (15 mm)	Sequence	2.5	50 psi (344 kPa)	<b>658-0051</b>
1/2" (15 mm)	Changeover	2.5	10 psi (68 kPa)	<b>658-0052</b>

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Valves

# Dimensions and Weights



Dimensions shown in inches (mm).

## Resilient Seat Butterfly Valves



Resilient Seat Butterfly Valves are now available in sizes up to 24-inches. Excellent for isolation applications, two-way and three-way Butterfly Valves provide 2-position (On/Off), floating and modulating control. Three-way Butterfly Valves are available in a variety of configurations.

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Valves

Size inches	Close Off Rating (PSI)		Disc Material	Resilient Seat Material	OpenAir Commercial Actuators		Industrial Actuators			
	Full Cut	Under Cut			Spring Return	Non-Spring Return	Non-Spring Return			
							A-Series			
	GCA	GIB			Low-Med Torque	High Torque				
2	175	N/A	316 Stainless Steel	High Purity, Peroxide Cured, High Temp EPDM	●	●	●			
2 1/2	175				●	●	●			
3	175				●	●	●			
4	175				●	●	●			
5	175	50 PSI			Electroless Nickel Plated Ductile Iron			●	●	
6	175							●	●	
8	175							●	●	
10	175								●	
12	175						●			
14	150						●			
16	150							●		
18	150							●		
20	150								●	
24	150									●



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# We're **happy** to assist you

Our customer support team is ready to assist you with general inquiries, ordering, fulfillment, shipping questions, and more.

Call your dedicated support specialist at 800-516-9964 from 6:30 am–5:30 pm Central time Monday–Friday.

Additionally, product information and order support is available online for your convenience at [usa.siemens.com/iMall](https://usa.siemens.com/iMall).

**SIEMENS**



## Two- and Three-Way Resilient Seat Valve Assemblies



Two-Way Butterfly Valve with industrial actuator



Three-Way Butterfly Valve with industrial actuator



Two-Way Butterfly Valve with commercial actuator

### Description

Available in two-way and three-way arrangements for two-position (On/Off), floating and modulating control, Resilient Seat Butterfly Valve Assemblies provide bubble-tight shutoff for the assemblies' full-rated pressure.

### Features

- Molded-in resilient seat provides bubble-tight shutoff up to 175 Psi (Full cut disc) and 50 Psi (under cut disc)
- Suitable for standard temperature (intermittent 250°F) or high temperature applications (continuous 250°F).
- High purity, peroxide cured, high temperature EPDM seats to ensure continuous operation at 250°F (121°C)
- Round, polished disc and hub edge provides 360 degree concentric seating, minimum flow restriction, lower torques and longer seat life
- Thru-stem design provides high strength and positive disc control with standardized end connection for operator interchangeability
- Internal disc-to-stem connection to eliminate leakage through the stem
- Extended neck allows adequate clearance for flanges and insulation
- Heavy-duty corrosion resistant top bushing, absorbs actuator side thrust
- Cast-in top plate is an integral part of the body and is standardized to allow direct mounting of actuators
- Each valve and actuator is 100% tested in the factory
- Available in multiple configurations to match jobsite needs.

### Applications

Butterfly Valve assemblies provide excellent flow control of low pressure steam, hot water, chilled water, condenser water, and thermal storage systems applications. Siemens butterfly valve assemblies are not suitable for dead end service and must be used with upstream and downstream piping.

### Specifications

<b>Valve Size</b> .....	2 to 24" (50 to 610 mm)
<b>Body Style</b> .....	Butterfly
<b>Assembly Type</b> .....	2-Way/3-Way
<b>Materials</b>	
Sizes 2 to 12"	
Body .....	ASTM A126 Class A Cast Iron
Disc .....	316 Stainless Steel
Stem .....	416 Stainless Steel
Seat .....	High purity, peroxide-cured, high temperature EPDM
Bearing .....	Heavy Duty Acetal
Packing .....	NBR
Sizes 14 to 24"	
Body .....	ASTM A126 Class A Cast Iron
Disc .....	Electroless Nickel Plated Ductile Iron
Stem .....	416 Stainless Steel
Seat .....	High purity, peroxide-cured, high temperature EPDM
Bearing .....	Heavy Duty Acetal
Packing .....	NBR
<b>Controlled Medium</b> .....	Hot water, chilled water, condenser water up to 50% Glycol
<b>Temperatures</b> .....	-20°F to continuous 250°F (-28°C to 121°C)
<b>Close-off Ratings</b> .....	175 PSI 2" to 12" full cut disc 150 PSI 14" to 24" full cut disc 50 PSI 2"-24" under cut disc

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Valves

# Part Number Configuration

Use the product numbers in the following table to order a valve or a valve and actuator assembly. The valve product number consists of the type, action, valve size, disc type, and valve configuration.

To order an assembly, add a (-) after the valve product number and then choose the application, actuator, voltage, control signal, end switches followed by a separator (.) and the actuator torque.

**B 2 02 F C - S A 1 2 6 . 600**

<b>Valve Type</b>	Butterfly
<b>Action</b>	2 2-Way 3 3-Way
<b>Valve Size</b>	02=2", 25=2.5", 03=3", 04=4", 05=5", 06=6", 08=8", 10=10", 12=12", 14=14", 16=16", 18=18", 20=20", 24=24"
<b>Disc Type</b>	F Full Cut U Under Cut
<b>Valve Configuration</b>	3-Way A, B, C, D 2-Way O = Normally Open C = Normally Closed M = Valve assembly with manual operator Denotes Assembly
<b>Application</b>	S Standard Temperature – Intermittent 250°F Operation H High Temperature – Continuous 250°F Operation Blank Siemens Commercial Actuator
<b>Actuator</b>	A Industrial Actuator GCA Siemens SR Commercial Actuator GIB Siemens NSR Commercial Actuator
<b>Voltage</b>	1 24V 2 120V
<b>Control Signal</b>	2 2-Position 3 Floating (Commercial Actuators only) 6 Modulating (0-10V)
<b>End Switches</b>	1 No Switches 6 Switches
<b>Separator</b>	
<b>Industrial Actuator Torque (lb-in)</b>	600=600, 1K=1200, 2K=2000, 3K=3000, 5K=5000, 6K=6500, 13K=13000, 18K=18000, 21K=21300, 41K=40680, 3U=Shaft adapter with 3 foot cable (Commercial Actuators only)

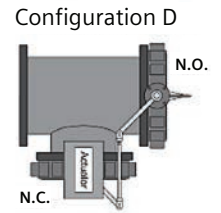
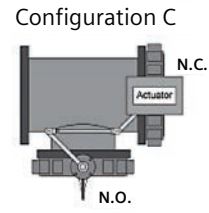
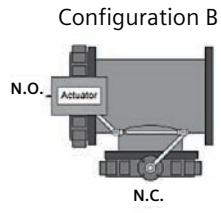
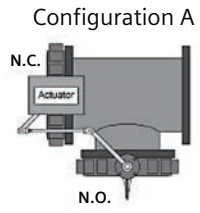
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Valves

# Part Number Configuration

## Three-Way Butterfly Valve Configurations

Typical configurations



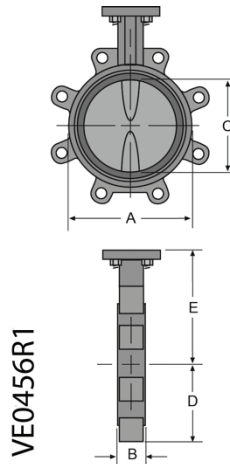
# Dimensions – 2-Way, OpenAir Commercial Electric Actuators

## 2-Way, 2" to 8", Resilient Seat Butterfly Valves

Model No.	Size		CVS		A	B	C	D	E	Lug Bolting Data			Weight <sup>1</sup>	
	In.	mm	90°	60°						BC	Holes	Threads	lbs.	kg
B202	2	50	144	61	3.69	1.62	2	2.3	5.5	4.75	4	5/8"-11	7	3.12
B225	2.5	65	282	107	4.19	1.75	2.5	2.57	6	5.5	4	5/8"-11	8	3.63
B203	3	80	461	154	4.88	1.75	3	2.81	6.25	6	4	5/8"-11	9	4.08
B204	4	100	841	274	6.06	2	4	4.09	7	7.5	8	5/8"-11	15	6.8
B205	5	125	1376	428	7.06	2.12	5	4.61	7.5	8.5	8	3/4"-10	20	9.07
B206	6	150	1850	567	8.12	2.12	5.75	5.06	8	9.5	8	3/4"-10	23	10.43
B208	8	200	3316	1081	10.5	2.5	7.75	6.05	9.56	11.75	8	3/4"-10	42	19.05

**Table Notes:**

1. Weights are for valve bodies only.



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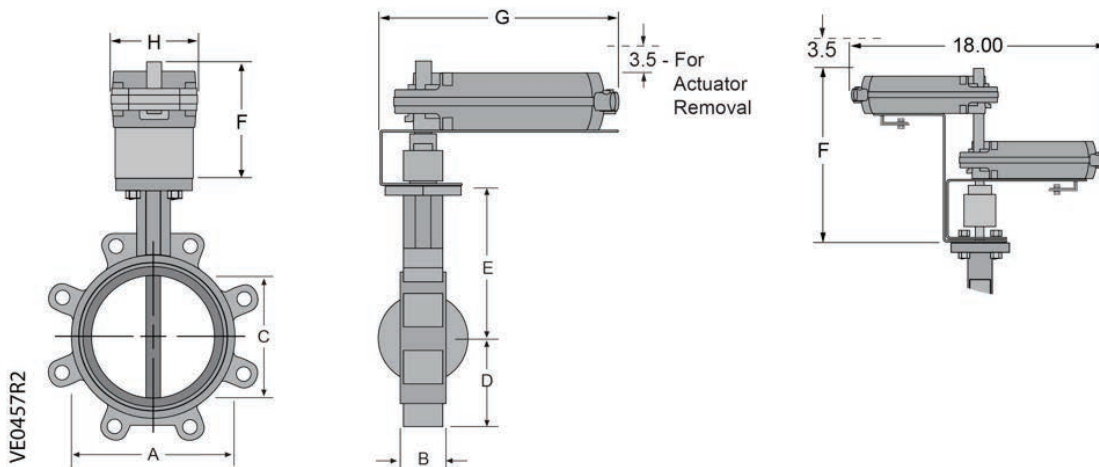
Valves

## Commercial Actuators

Model No.	F	G	H	Weight <sup>1</sup>	
				lbs.	kg
GIB	7.43	10.96	3.95	4.4	2
GCA	7.43	10.96	3.95	4.9	2.2
Dual Actuator	11.75	18	4	12.8	5.8

**Table Notes:**

1. Largest actuator dimension shown.



# Dimensions – 3-Way, OpenAir Commercial Electric Actuators

## 3-Way, 2" to 6", Resilient Seat Butterfly Valves.

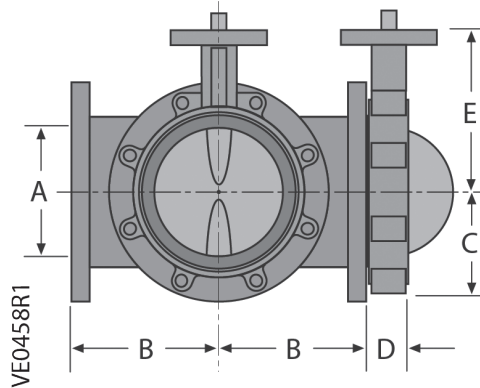
Model No.	Size		CVS							Lug Bolting Data		
	In.	mm	90°	60°	A	B	C	D	E	BC	Holes	Threads
B302	2	50	144	61	2	4.5	2.3	1.62	5.5	4.75	4	5/8"-11
B325	2.5	65	282	107	2.5	5	2.57	1.8	6	5.5	4	5/8"-11
B303	3	80	461	154	3	5.5	2.81	1.8	6.25	6	4	5/8"-11
B304	4	100	841	274	4	6.5	4.09	2	7	7.5	8	5/8"-11
B305	5	125	1376	428	5	7.5	4.61	2.12	7.5	8.5	8	3/4"-10
B306	6	150	1850	567	6	8	5.06	2.12	8	9.5	8	3/4"-10

**Table Notes:**

1. Weights are for valve bodies only.

## 3-Way Tee Weights

Size		Weight <sup>1</sup>	
In.	mm	lbs.	kg
2	50	19	8.6
2.5	65	27	12.2
3	80	39	17.7
4	100	62	28.1
5	125	79	35.8
6	150	96	43.5
8	200	155	70.3
10	250	270	122.5
12	300	380	172.4
14	350	435	197.3
16	400	550	249.5
18	450	665	301.6
20	500	855	387.8
24	609	1330	603.3



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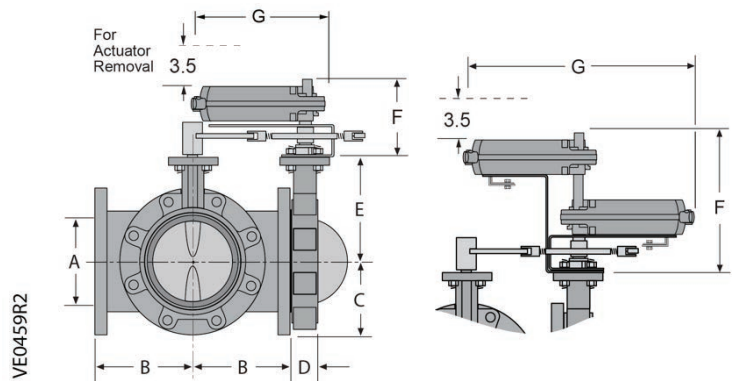
Valves

## Commercial Actuators

Model No.	Weight <sup>1</sup>			
	F	G	lbs.	kg
GIB	7.43	10.96	4.4	2
GCA	7.43	10.96	4.9	2.2
Dual Actuator	11.75	18	12.8	5.8

**Table Notes:**

1. Largest actuator dimension shown.



# Dimensions – 2-Way, Industrial Actuators

## 2-Way, 2" to 24", Resilient Seat Butterfly Valves

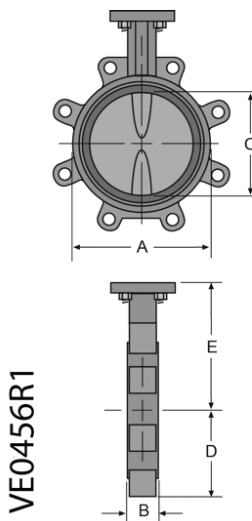
Model No.	Size		CVS		A	B	C	D	E	Lug Bolting Data			Weight <sup>1</sup>	
	In.	mm	90°	60°						BC	Holes	Threads	lbs.	kg
B202	2	50	144	61	3.69	1.62	2	2.3	5.5	4.75	4	5/8"-11	7	3.12
B225	2.5	65	282	107	4.19	1.75	2.5	2.57	6	5.5	4	5/8"-11	8	3.63
B203	3	80	461	154	4.88	1.75	3	2.81	6.25	6	4	5/8"-11	9	4.08
B204	4	100	841	274	6.06	2	4	4.09	7	7.5	8	5/8"-11	15	6.8
B205	5	125	1376	428	7.06	2.12	5	4.61	7.5	8.5	8	3/4"-10	20	9.07
B206	6	150	1850	567	8.12	2.12	5.75	5.06	8	9.5	8	3/4"-10	23	10.43
B208	8	200	3316	1081	10.5	2.5	7.75	6.05	9.56	11.75	8	3/4"-10	42	19.05
B210	10	250	5430	1710	12.75	2.5	9.75	7.69	10.75	14.25	12	7/8"-9	66	29.94
B212	12	300	8077	2563	14.88	3	11.75	9.02	12.25	17	12	7/8"-9	88	39.92
B214	14	350	10538	3384	17.05	3	13.25	9.93	13.62	18.75	12	1"-8	114	51.71
B216	16	400	13966	4483	19.21	4	15.25	11.3	14.75	21.25	16	1"-8	166	75.3
B218	18	450	17214	5736	21.12	4.25	17.25	12.16	16	22.75	16	1-1/8"-7	226	102.51
B220	20	500	22339	7144	23.25	5	19.25	14	17.25	25	20	1-1/8"-7	305	138.35
B224	24	600	33154	11040	33	5.94	23.28	17.56	19.5	29.5	4	1-1/4"-7	500	226.8

**Table Notes:**

1. Weights are for valve bodies only.

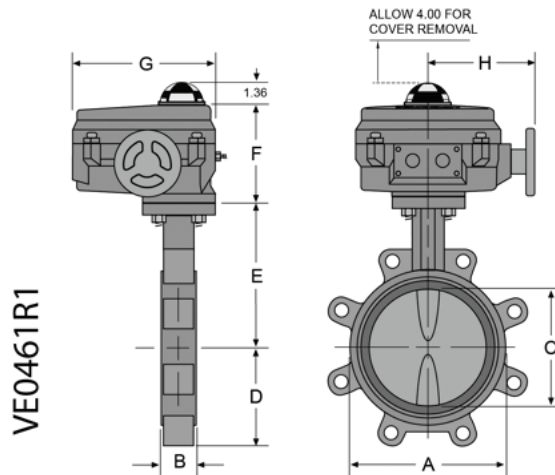
A-290

Valves



**A-Series Actuators**

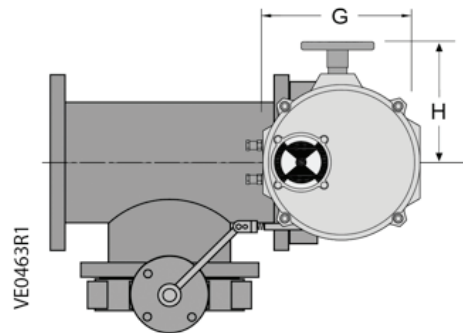
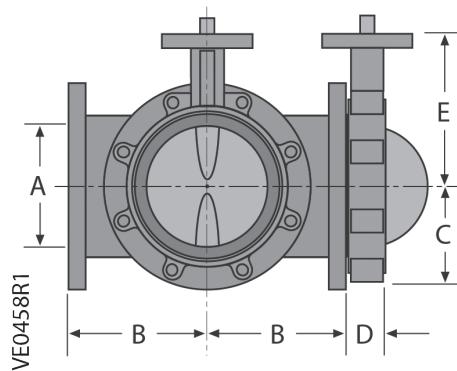
Model No.	F	G	H	Weight	
				lbs.	kg
Axxx.600	7.43	10.96	3.95	4.4	
Axxx.1K/Axxx.2K	7.43	10.96	3.95	4.9	
Axxx.3K/Axxx.5K/ Axxx.6K	7.43	10.96	3.95	4.4	
Axxx.13K/Axxx.18K	7.43	10.96	3.95	4.9	
Axxx.21K	7.43	10.96	3.95	4.4	
Axxx.41K	7.43	10.96	3.95	4.9	



# Dimensions – 3-Way, Industrial Actuators

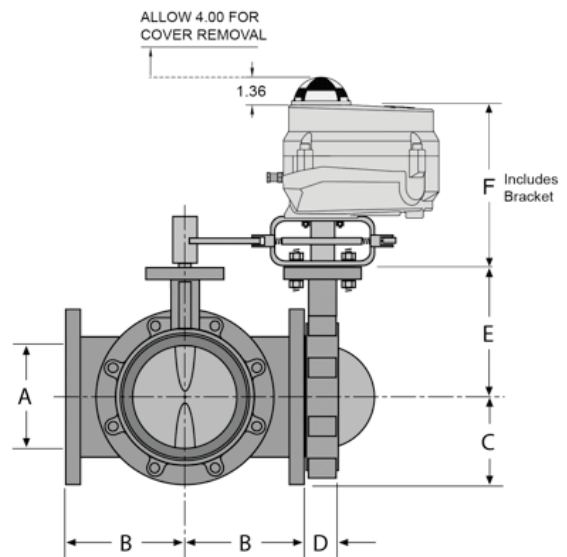
## 3-Way, 2" to 24", Resilient Seat Butterfly Valves

Model No.	Size		CVS		A	B	C	D	E	Lug Bolting Data		
	In.	mm	90°	60°						BC	Holes	Threads
B302	2	50	144	61	2	4.5	2.3	1.62	5.5	4.75	4	5/8"-11
B325	2.5	65	282	107	2.5	5	2.57	1.8	6	5.5	4	5/8"-11
B303	3	80	461	154	3	5.5	2.81	1.8	6.25	6	4	5/8"-11
B304	4	100	841	274	4	6.5	4.09	2	7	7.5	8	5/8"-11
B305	5	125	1376	428	5	7.5	4.61	2.12	7.5	8.5	8	3/4"-10
B306	6	150	1850	567	6	8	5.06	2.12	8	9.5	8	3/4"-10
B308	8	200	3316	1081	8	9	6.05	2.5	9.5	11.75	8	3/4"-10
B310	10	250	5430	1710	10	11	7.69	2.5	10.75	14.25	12	7/8"-9
B312	12	300	8077	2563	12	12	9.02	3	12.25	17	12	7/8"-9
B314	14	350	10538	3384	14	14	9.93	3	13.62	18.75	12	1"-8
B316	16	400	13966	4483	16	15	11.3	4	14.75	21.25	15	1"-8
B318	18	450	17214	5736	18	16.5	12.16	4.26	16	22.75	16	1-1/8"-7
B320	20	500	22339	7144	20	18	14	5	17.25	25	20	1-1/8"-7
B324	24	610	3315	11044	24	22	16	5.94	19.5	29.5	20	1-1/4"-7



## A-Series Actuators

Model No.	F	G	H	Weight	
				lbs.	kg
Axxx.600	8.6	7.5	5.8	12	
Axxx.1K/Axxx.2K	10.73	10.1	7.8	28	
Axxx.3K	11.33	12.1	3.5	48	
Axxx.5K	13.2	12.1	9.5	48	
Axxx.6K	13.2	12.1	9.5	118	
Axxx.13K/Axxx.18K	20.5	12.1	9.5	118	
Axxx.21K	22.3	32.1	28.9	195	
Axxx.41K	22.3	32.1	28.9	195	



## A-Series Industrial Electric Actuator

Low-Medium Torque



A-Series Industrial Actuator - Low to Medium Torque

A-292

Valves

### Description

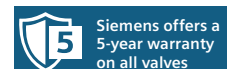
The A-Series quarter-turn industrial electric actuator features a compact, reliable design that mounts directly to Siemens resilient seat butterfly valves without the need for brackets and linkages. Available in torque outputs from 600 to 18,000 lb-in (68 to 2,033 Nm), 24V and 120 Vac, Two-position (On/Off) and Modulating units all in NEMA 4x and IP65-rated housings.

### Features

- Compact, lightweight design and direct mounting
- High visibility Beacon position indicator
- Manual, declutchable override handwheel
- Terminal strip for cable terminations
- Servo NXT option for modulating control
- Travel limit cams adjustable by hand or screwdriver
- UL-approved (120 Vac only)
- On/off or modulating control
- Available in 120, 24 Vac 50/60 Hz, single-phase, 24 Vdc voltages
- Output torque 600 lb-in (68 Nm) to 18,000 lb-in (2,033 Nm)
- ISO 5211 for direct mounting
- All actuators include a heater to prevent condensation build-up
- All modulating units include a feedback potentiometer

### Applications

These actuators are ideal for use on valves for chillers, cooling towers, boilers, heat exchangers and other outdoor applications. The actuators' advanced electronics assure reliable compatibility with virtually any analog control signal used in today's building automation and temperature control systems.





# Specifications

## Operating Conditions

Ambient Temperature ..... -20°F to 150°F (-29°C to 65°C)  
 Fail Position ..... Loss of supply power - fail-in-place  
 Motor Insulation  
 120 Vac: ..... Class F, 311°F (155°C) thermal trip at 275°F (135°C)  
 24 Vac/dc: ..... Class B, Slow Blow Fuse 5A @ 250 Vac

**Power Requirements** ..... 120 Vac 50/60 Hz +/- 10%  
 24 Vac 50/60 Hz +/- 10% 24 Vdc -10%  
 +30% 5 VA average (no load)  
 Fuse: 5A Slow Blow 5 mm x 20 mm

## Input Signal

Control Signal ..... 4 to 20 mA, 0 to 10 Vdc, 0 to 5 Vdc, 2 to 10 Vdc  
 Input Impedance ..... >100 Meg Ohms (0 to 10V, 2 to 10V, 0 to 5V)

## Output Signal

Operating Modes ..... 4 to 20 mA, 0 to 10 Vdc, 0 to 5 Vdc  
 Output Impedance ..... <10 Ohms (0 to 5 Vdc, output, 0 to 10 V output)  
 200 Ohms (4 to 20 mA output mode)  
 Loop Voltage ..... 12 Vdc (4 to 20 mA output mode)

## Resolution

Absolute Position Accuracy ..... <1%  
 Dead Band Adjustment ..... 1% (+/- 0.5%) to 6% (+/-3%) (3% default)  
 1% minimum increment

## Potentiometer Feedback Signal

Supply Voltage ..... 3.3 Vdc  
 External Feedback Potentiometer ..... 1K to 10K Ohms

## Speed Control

Open/Close Speed ..... 0% to 100% (default). Step size: 20%.  
 Actuator open/close speed as a percentage of full speed.  
 (See motor speed specification for maximum 90° run times.)

## Operating Mode

Normal Mode ..... Modulating – follow setpoint  
 Loss of Control Signal ..... Selectable to Open, Close, or Last  
 Loss of Supply Power ..... Fail-in-place  
 Reverse Acting Mode ..... Configurable for inverted input signal  
 Autocalibration ..... Automatic endpoint detection  
 Manual Operation ..... Keypad electrical manual operation of actuator  
 (Open, Stop, Close)

## Torque Protection

Stall Detection ..... Motor detected stationary >2 seconds  
 (600 to 6500 lb-in units only)  
 Torque Limit ..... (Optional) externally connected Open/Close  
 torque limit switch  
 Electronic Torque Limit ..... (Optional) factory-programmable  
 current/torque limit switch

## Environmental

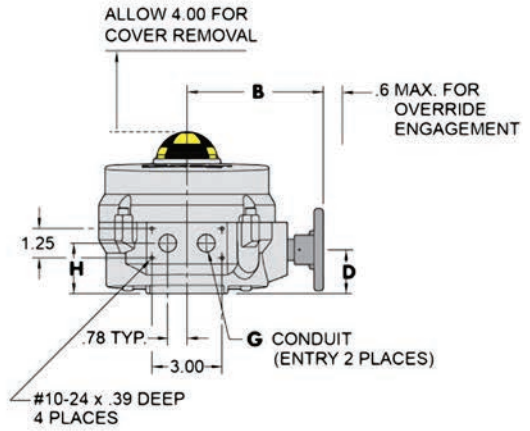
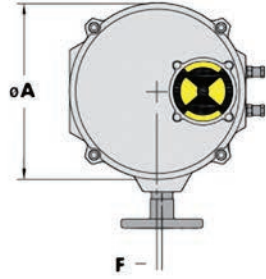
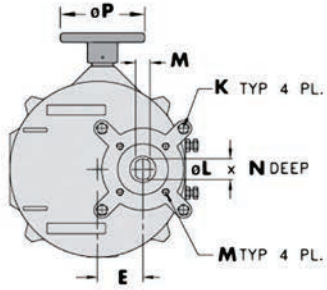
Ambient Temperature ..... -20°F to 150°F (-29°C to 65°C)  
 Compliance ..... 120V units comply with UL, cUL, and CSA.  
 All models are CE certified.

# Product Ordering

Product Number	Operating Mode	Voltage 50/60 Hz	Torque		90° Stroke Time*	Current Draw (Amps)	
			(lb-in)	(Nm)		Full Load	Locked Rotor
A126.600	On/Off	24 Vac/dc	600	68	60 sec. AC 40 sec. DC	1.80	—
A126.2K			2,000	226	60 sec.	2.00	—
A126.5K			5,000	565	60 sec.	3.00	—
A166.600	Modulating	24 Vac	600	68	60 sec.	1.80	—
A166.2K			2,000	226	60 sec.	2.00	—
A166.5K			5,000	565	60 sec.	3.00	—
A226.600	On/Off	120 Vac	600	68	30 sec.	0.80	1.00
A226.1K			1,200	135	30 sec.	0.78	2.10
A226.2K			2,000	226	30 sec.	1.00	2.10
A226.3K			3,000	339	30 sec.	1.20	3.00
A226.5K			5,000	565	30 sec.	1.60	3.00
A226.6K			6,500	734	30 sec.	2.30	3.10
A226.13K			13,000	1,470	110 sec.	2.30	3.10
A226.18K			18,000	2,034	110 sec.	2.50	3.10
A266.600	Modulating	120 Vac	600	68	30 sec.	0.80	1.00
A266.1K			1,200	135	30 sec.	0.78	2.10
A266.2K			2,000	226	30 sec.	1.00	2.10
A266.3K			3,000	339	30 sec.	1.20	3.00
A266.5K			5,000	565	30 sec.	1.60	3.00
A266.6K			6,500	734	30 sec.	2.30	3.10
A266.13K			13,000	1,470	110 sec.	2.30	3.10
A266.18K			18,000	2,034	110 sec.	2.50	3.10

\* Operating times shown are with 60 Hz power supply. Actuators with 50 Hz power supply will be 20% slower.

# Dimensions



**DETAIL A1**  
FOR 3000 & LARGER  
0.47

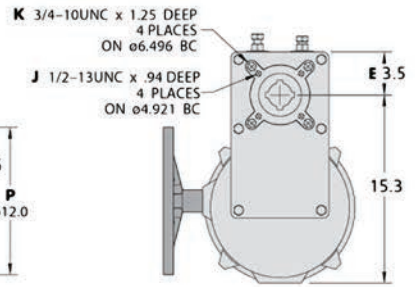
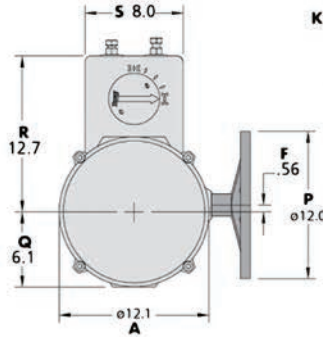
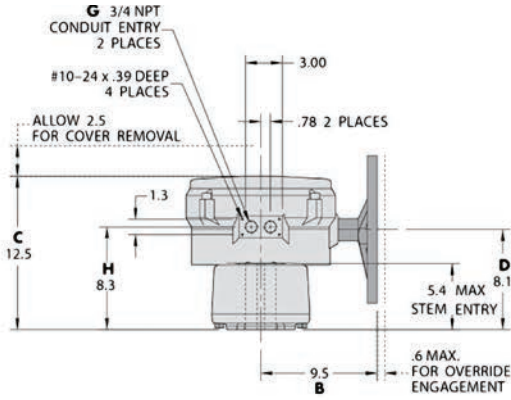


o1.97 x 2.65 DEEP

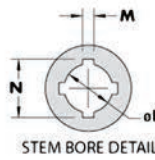
VE0470R2

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Valves



**DETAIL A2**



STEM BORE DETAIL

**STEM BORE DETAIL**

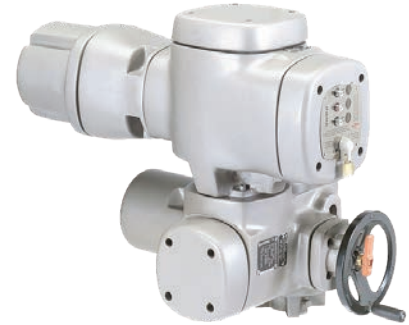
Size	Torque (in-lbs)	Speed (sec)	L	M	N
Axx6.13K	13,000	110	1.97	0.47	2.38
Axx6.18K	18,000	110	1.97	0.47	2.38

VE0471R2

Actuator Model No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Wt lb	kg
Axx6.600	7.5 (191)	5.8 (147)	5.6 (141)	1 (48)	1.94 (49.2)	.19 (4.7)	1/2	2.2 (55)	5/16-18 x Ø 2.76 (F07)	—	L75 (19)	.51 (31)	1.75 (44.5)	3.5 (89)	—	—	—	13 (6)	
Axx6.1K Axx6.2K	10.1 (256)	7.8 (198)	6.6 (168)	2.4 (62)	2.69 (68.3)	.56 (14.3)	3/4	2.6 (66)	5/16-18 x Ø 2.76 (F07)	1/2-13 x Ø 4.92 (F12)	1.18 (30)	.87 (22)	2.22 (56.3)	8.0 (203)	8.0 (203)	8.0 (203)	8.0 (203)	28 (13)	
Axx6.3K Axx6.5K Axx6.6K	12.1 (308)	9.5 (242)	7.2 (183)	2.9 (73)	3.19 (80.9)	.56 (14.3)	3/4	3.1 (78)	1/2-13 x Ø 4.92 (F12)	3/4-10 x Ø 6.50 (F16)	See Detail A1			12 (304.8)	—	—	—	48 (22)	
Axx6.13K Axx6.18K	12.1 (308)	9.5 (242)	12.5 (317)	8.1 (206)	9.2 (234)	.56 (14.2)	3/4	8.3 (211)	1/2-13 x Ø 4.92 (F12)	3/4-10 x Ø 6.50 (F16)	See Detail A1			12 (305)	6.1 (155)	12.7 (323)	8 (203)	118 (54)	

## A-Series Industrial Electric Actuator (AUMA)

High Torque



A-Series Industrial Actuator High Torque

### Description

A-Series Industrial Electric AUMA actuators provide precise, durable control of quarter turn Siemens resilient seat butterfly valves. The compact industrial housing is rated to NEMA 6P (IP 68) standards for outdoor use. All models include integrated controls and a manual override handwheel.

The standard AUMA models are 120V single phase. All AUMA actuators include six auxiliary switches, torque switches, a position indicator and a heater. Modulating units provide position feedback as standard..

### Features

- Compact, lightweight design and direct mounting
- Manual, declutchable override handwheel
- Position and motion indicator lights
- Push button controls
- CE certified
- On/off or modulating control
- Output torque 21,300 lb-in (2,407 Nm) to 40,680 lb-in 4,596 Nm)
- ISO 5210 for direct mounting
- All actuators include a heater to prevent condensation build-up
- All modulating units include a feedback potentiometer

### Applications

These actuators are ideal for use on valves for chillers, cooling towers, boilers, heat exchangers and other outdoor applications. The actuators' advanced electronics assure reliable compatibility with virtually any analog control signal used in today's building automation and temperature control systems.

A-295

Valves

## Specifications

### Operating Conditions

Ambient Temperature ..... -22°F to 158°F (-30°C to 70°C)  
 Fail Position ..... Loss of supply power - fail-in-place  
 Duty Cycle ..... On/Off – 15 min. continuous, max. six starts/minute  
 Modulating – 25% intermittent duty

### Physical Description

Motor ..... 120 Vac, Single-Phase, Reversible,  
 Permanent Split Capacitor Induction Motor  
 Motor Protection ..... 1 Ph-1 thermal switch 284°F (140°C)  
 Class F insulation, tropicalized winding  
 Control Voltage ..... A226.21K and A226.41K: 110 – 120 Vac  
 A266.21K and A266.41K: 24 Vdc  
 Output Aux. Voltage ..... A226.21K and A226.41K: 115 Vac – 30 mA  
 A266.21K and A266.41K: 24 Vdc – 100 mA  
 Feedback Signal ..... 4 to 20 mA  
 Output Contacts ..... 6 Output contacts: 6 NO/NC without common 5A  
 Output Signals ..... Default setting: Fault, End pos. CLOSED  
 End pos. OPEN, Selector sw. REMOTE,  
 Torque fault CLOSE, Torque fault OPEN

### Terminal Strip

Power Terminals ..... 8 to 10 AWG (6 to 10 mm2)  
 Controls Contacts ..... 14 AWG (2.5 mm2)  
 Heater ..... 24V Internal Supply (5 Watt)  
 Weight ..... A2x6.21K – 165 lbs. (75 kg)  
 A2x6.41K – 195 lbs. (88 kg)  
 Enclosure ..... NEMA types 6P (IP68)  
 Corrosion Protection: KS  
 Conduit entries ..... Plug/socket 100 mm, 2 × 3/4" NPT; 1 × 1-1/4" NPT  
 Manual operation ..... To close the valve, turn handwheel clockwise.  
 Drive shaft (valve) turns clockwise in close direction. 52:1 drive ratio  
 Angle of Rotation 92° ..... maximum

### Certifications

CE Certified ..... CSA - Classes C322102 and C3221812  
 (available upon request)

## Product Ordering

Product Number	Operating Mode	Voltage 50/60 Hz	Torque		90° Stroke Time*	Current Draw (Amps)	
			(lb-in)	(Nm)		Full Load	Locked Rotor
A226.21K	On/Off	120 Vac	21,300	2,407	60 sec.	6.5	14
A226.41K			40,680	4,596			
A266.21K	Modulating		21,300	2,407			
A266.41K			40,680	4,596			

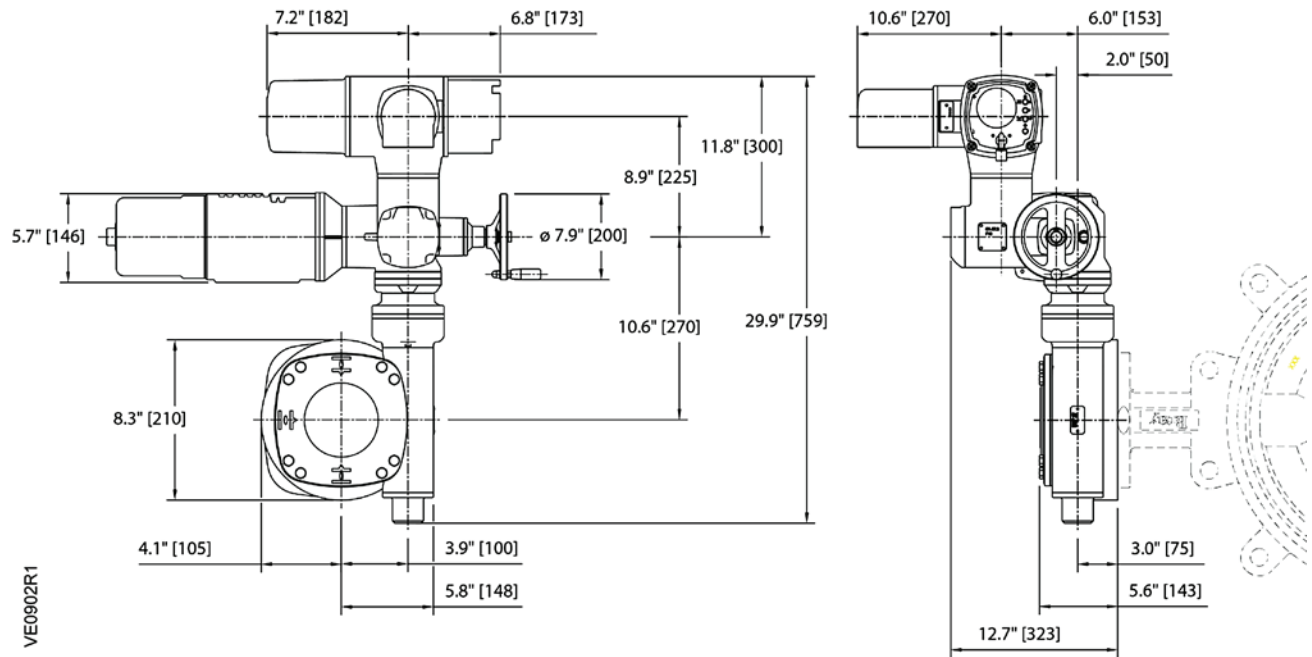
\* Operating times shown are with 60 Hz power supply. Actuators with 50 Hz power supply will be 20% slower

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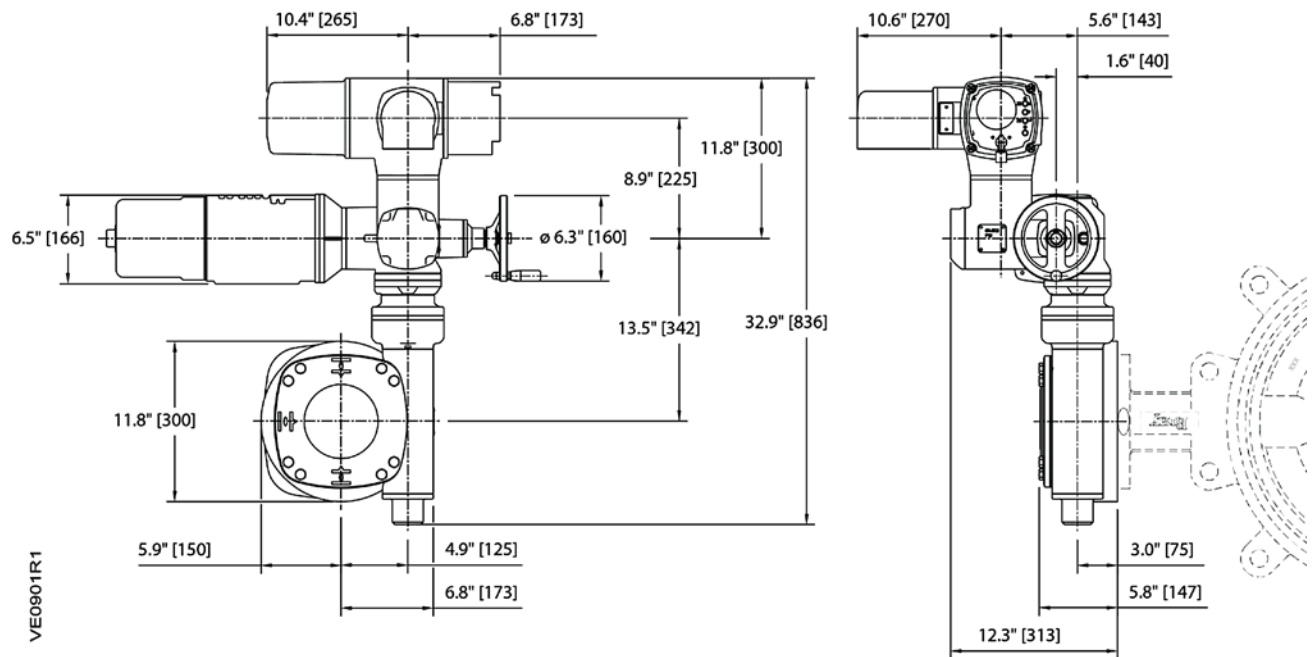
Valves

# Dimensions

## Model A2x6.21K Actuators



## Model A2x6.41K Actuators



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Valves



A-298

# Technical support

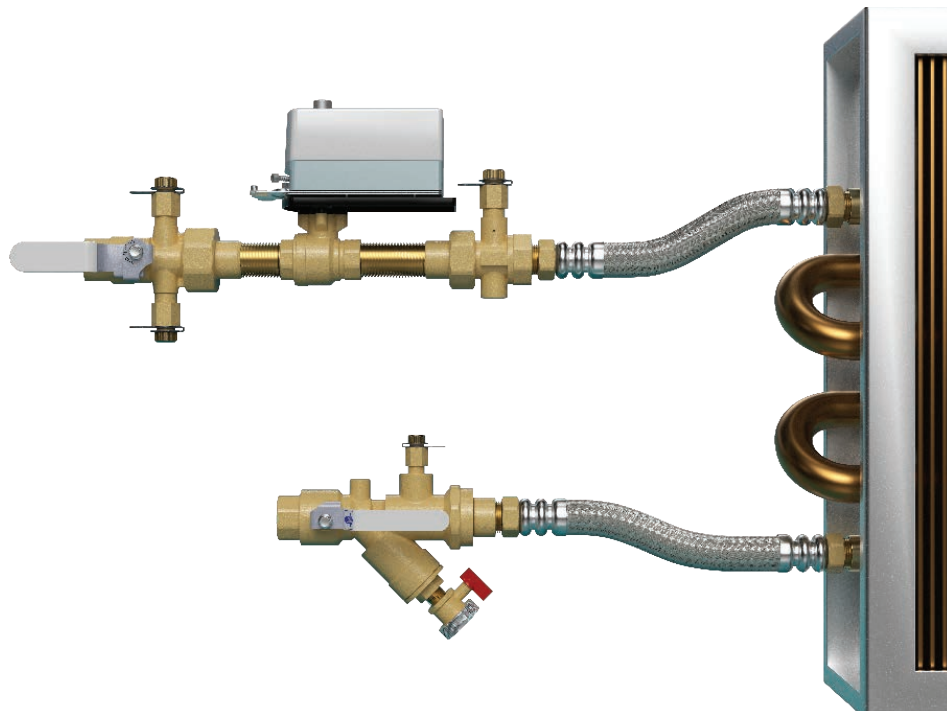
Our Technical Support Center is open 7:00 am–6:00 pm Central time, Monday–Friday. Outside of normal operating hours, we provide an on-call service for emergency support situations via our Dallas Customer Support Center.

When you need assistance

- Call 800-877-7545, option 2
- Email [support.us.i-bt@siemens.com](mailto:support.us.i-bt@siemens.com)
- For Siemens Partners and team members, access support here: [usa.siemens.com/supportrequest](https://usa.siemens.com/supportrequest)

**SIEMENS**

## Siemens Piping Packages



A-299

Valves

### Description

Piping packages are a streamlined solution that reduces several connections throughout the piping system resulting in less chance for error, ease of installation for the installer and simplifies commissioning. Labor costs are also reduced, which makes product distribution at the job site easier and less expensive.

### Applications

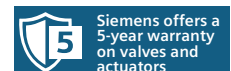
Piping packages make it easy to connect your HVAC system piping to typical terminal applications such as:

- VAV reheat
- Fan coil units
- Unit ventilator
- Cabinet unit heater
- Reheat coils
- Air handling units

### Components

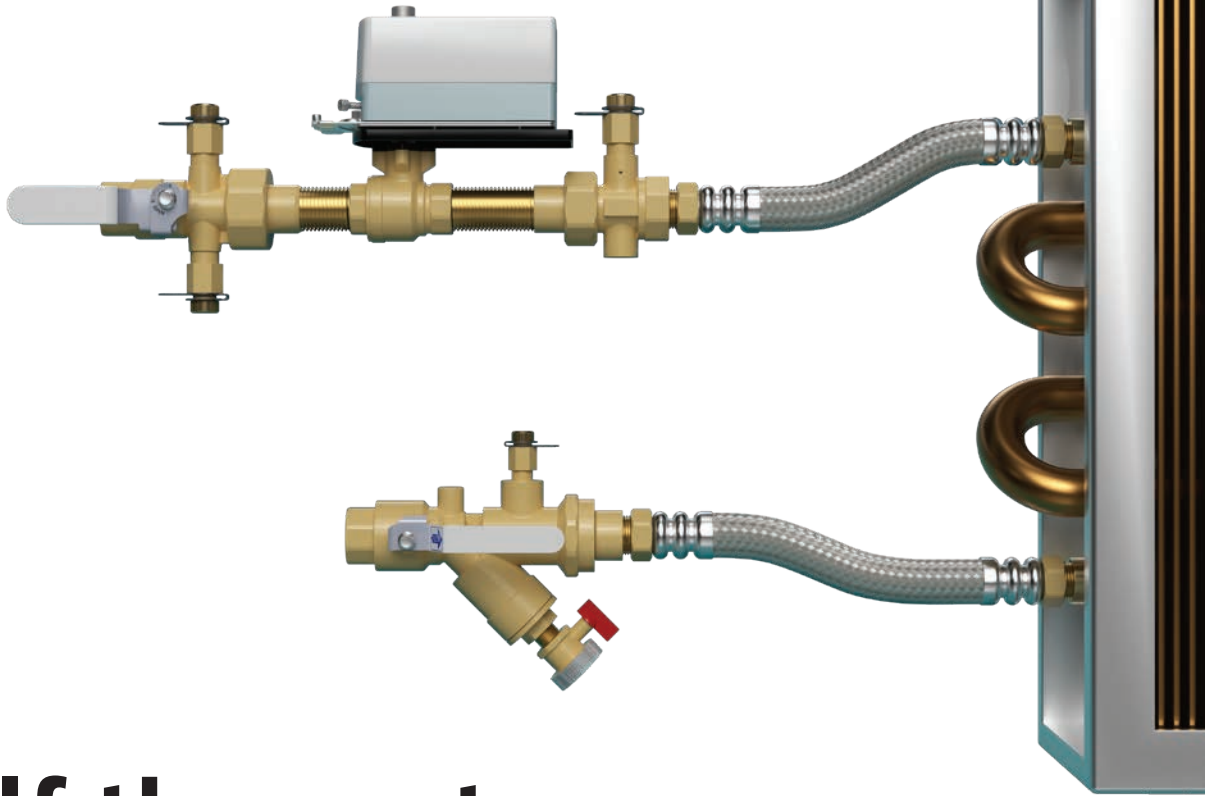
The pre-assembled package includes:

- Siemens control valve
- Isolation valve
- Balancing valve (ball and globe valve applications only)
- Hose
- Air vent
- Strainer





Siemens offers a 5-year warranty on valves and actuators.



A-300

# Half the cost, Half the time, Fast and easy selection

Say goodbye to hours of HVAC system design time with Siemens pre-assembled piping packages offered in the most popular valves and sizes. The packages make installation effortless by reducing several connections, which minimizes the chance for error; simplifies commissioning; and cuts costs, time and labor in half.

Product selection is fast and easy using Siemens HVAC Integrated Tool (HIT).

Visit [usa.siemens.com/piping-packages](http://usa.siemens.com/piping-packages) to learn more.



**Better Value**  
Half the cost,  
half the time



**Less Effort**  
Less installation effort  
and no callbacks



**Fast and Easy**  
Product selection



**75+ Years**  
Innovating control valves





## PICV Piping Packages

*Pre-assembled at factory*

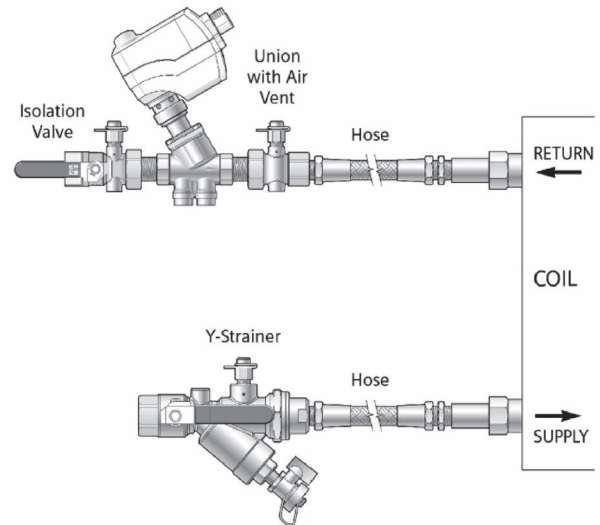
*1/2" to 2" sizes*

*12" to 24" hoses available*

*Tested at 100 Psi after assembly*

*Tagged for easy job distribution*

*Different configurations available to match project requirements*



### Description

Siemens Piping Packages are a streamlined solution that reduces several connections throughout the piping system resulting in less chance for error, ease of installation and simplified commissioning. These piping packages are shipped assembled from the factory and are available in sizes 1/2 to 2 inches. Piping package assemblies are shrink-wrapped and tagged for easy job distribution. Stainless Steel flex hoses are provided as additional accessories. Piping package assemblies with flex hoses will be zip tied together and delivered to the job site.

### Features

- Pre-assembled at factory
- Tagged for easy job distribution
- Leak tested after assembly to ensure zero leakage
- 20 mesh strainer to remove dirt and impurities
- Air-vent to purge air in the coil
- Manual isolation valve provides 200 psi close-off
- Stainless steel flex hoses available in different lengths
- Shrink wrapped to eliminate damage during transportation

### Applications

Piping packages make it easy to connect your HVAC system piping to typical terminal applications such as VAV units, fan coils, unit ventilators, air handling units and reheat coils

A-301

Valves

# Product Selection Table

Use the product numbers in the table below to order the valve and the actuator assembled. The product number consists of the PICV assembly and flow rate followed by a hyphen. The five digits after the hyphen signify the size and end connections of the strainer, and union valve respectively. The last digit always signifies the diameter and length of the stainless-steel flex hose. For control

valve sizing and selection and configuring the piping package assembly electronically, go to [usa.siemens.com/hit](http://usa.siemens.com/hit).

In the below example, **230043200.5-A2AAAX** = PICV PN 230-04320-0.5 with a factory pre-set flowrate of 0.5 GPM. The assembly consists of a 1/2" NPT Strainer, 1/2" NPT union valve, and no stainless-steel hoses.

<b>Example Product Number</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>.</b>	<b>5</b>	<b>-</b>	<b>A</b>	<b>2</b>	<b>A</b>	<b>A</b>	<b>X</b>
<b>Pressure Independent Control Valve Assembly Part No.</b>																	
Last three digits indicate flow rate. The period after the flow rate indicates flows of 10 GPM or greater. For example, "0.5" is 0.5 GPM, "11." is 11 GPM.																	
<i>Separator</i>																	
<b>Assembled Piping Package</b>																	
<b>2-Way</b>																	
<b>Strainer Size and Body End</b>																	
<b>A</b> = 1/2"; NPT <b>B</b> = 3/4"; NPT <b>C</b> = 1"; NPT <b>D</b> = 1-1/4"; NPT <b>E</b> = 1-1/2"; NPT <b>F</b> = 2" ; NPT																	
<b>Union Size and Body End</b>																	
<b>A</b> = 1/2"; NPT <b>B</b> = 3/4"; NPT <b>C</b> = 1"; NPT <b>D</b> = 1-1/4" ; NPT <b>E</b> = 1-1/2" ; NPT <b>F</b> = 2" ; NPT <b>M</b> = 3/4" to 1/2"; NPT <b>N</b> = 1" to 3/4" ; NPT <b>O</b> = 1-1/4" to 1" ; NPT <b>P</b> = 1-1/2" to 1-1/4" ; NPT <b>Q</b> = 2" to 1-1/2" ; NPT																	
<b>Hoses – Diameter &amp; Length</b>																	
<b>X</b> = No hoses <b>A</b> = 1/2"; 12" <b>B</b> = 1/2"; 18" <b>C</b> = 3/4"; 12" <b>D</b> = 3/4"; 18" <b>E</b> = 1"; 12" <b>F</b> = 1"; 18" <b>G</b> = 1-1/4"; 18" <b>H</b> = 1-1/4"; 24" <b>I</b> = 1-1/2"; 18" <b>J</b> = 1-1/2"; 24" <b>K</b> = 2"; 24"																	

A-302

Valves

## Component Specifications

Each piping package assembly consists of the following components along with the Siemens Pressure Independent Control Valve (ATC):

### Y-Strainer



The Y-strainer is installed on the supply side, upstream of the coil.

Sizes ..... 1/2" to 2"

**PSI/Temperature Rating:**

1/2" to 1-1/2"..... 600 WOG 400 PSI/250° F  
2"..... 400 WOG 275 PSI/250° F

**Body Material:**

1/2" to 1-1/2"..... Forged Brass ASTM B283-06  
2"..... Cast brass

**End Connections**..... NPT

**Ball Valve Seals**..... Teflon

**Union Seal**..... EPDM O-Ring

**Isolation Ball Valve**..... Nickel-plated brass ball

**Strainer**..... 20 mesh stainless steel

**P/T Port**..... 1/4" Combination P/T test valve and manual air vent

**Drain Valve**..... Rated 275 Psi/250°F.

Brass housing, nickel-plated ball.  
3/4" NPSH hose connection

### Union with Air Vent



The union with air vent is installed on the return side upstream of the Siemens PICV.

Sizes ..... 1/2" to 2"

**PSI/Temperature Rating**..... 400 PSI/250°F

**Body Material**..... Forged Brass ASTM B283-06

**End Connections**..... NPT

**Ball Valve Seals**..... Teflon

**Union Seal**..... EPDM O-Ring

**P/T Port**..... 1/4" Combination P/T test valve and manual air vent

### Isolation Valve



The isolation valve is installed on the return side downstream of the Siemens PICV.

Sizes ..... 1/2" to 2"

**PSI/Temperature Rating**..... 600 WOG 400 PSI/250°F

**Body Material**..... Forged Brass ASTM B283-06

**End Connections**..... NPT

**Ball Valve Seals**..... Teflon

**Union Seal**..... EPDM O-Ring

**P/T port**..... 1/4" Combination P/T test valve and manual air vent

### Flex Hoses



Stainless Steel flex hoses are braided with 304 stainless-steel. They are designed for most common operating conditions in HVAC applications. Different hose lengths are provided based on the application requirements.

**Size and lengths available:**

1/2" to 1" diameter..... 12" and 18" length

1-1/4" to 1-1/2" diameter..... 18" and 24" length

2" diameter..... 24" length

**Operating Temperature Range**..... -40°F to 260°F

**PSI/Temperature Rating at 77 °F**..... 1/2": 500 PSI, 3/4": 450 PSI,

1": 400 PSI, 1-1/4" to 2": 300 PSI

**Burst Pressure**..... 1/2": 1740 PSI, 3/4": 1600 PSI

1": 1400 PSI, 1-1/4" to 2": 900 PSI

**Hose Material**..... EPDM polymer vulcanized by peroxide,

wrapped with 304 stainless steel braid. EPDM polymer is fire retardant and meets requirements of UL-94 V0 testing.

**Ferrule (Crimp) Material**..... Double crimped stainless steel

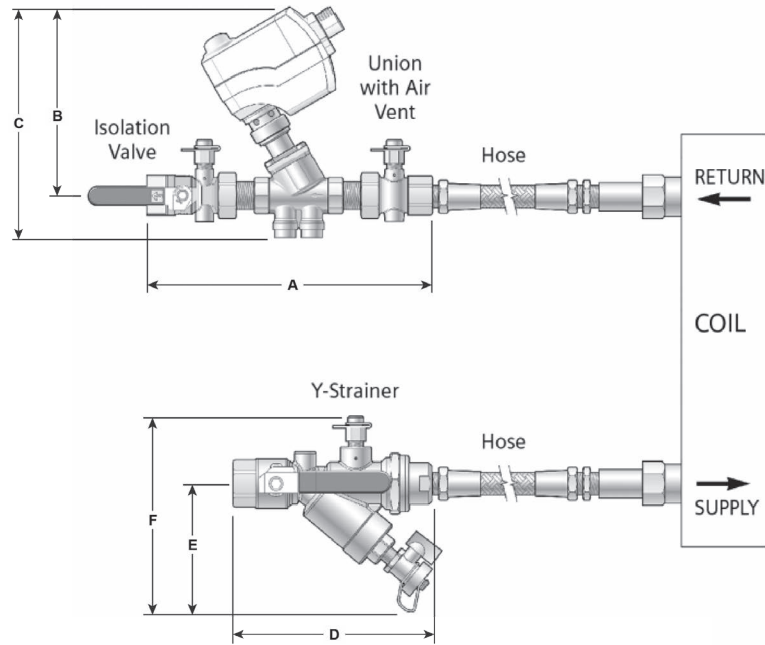
**End Connections**..... Brass

**Bend Radius**..... 1/2": 2", 3/4": 4", 1": 5", 1-1/4": 6.5", 1-1/2": 9", 2": 12"

**Swivel Nut Connection**..... 1/2" - 1": Cone Seat Gasketless Dry Seal

1-1/4" - 2": Flat Seat with EPDM Gasket Dry Seal

# Dimensions



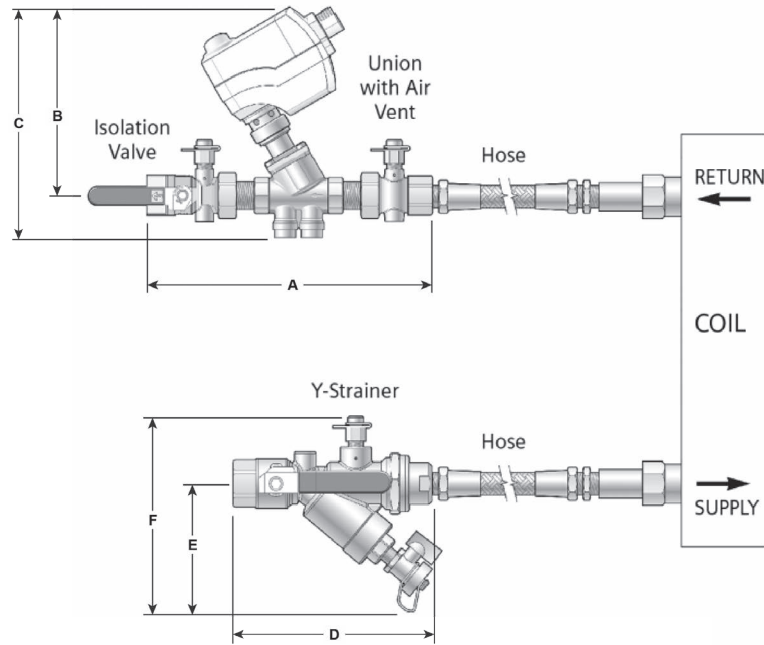
Dimensions shown in inches (mm).

A-304

Valves

1/2- to 1-1/4-Inch Normally Open PICV - Dimensions in Inches (mm)									
Valve Size	Connection Line Size	Actuator	Return			Supply			
			A*	B	C	D*	E	F	
0.50 (15)	0.50 (15)	SSD...U	11 (280)	6 (152)	8 (203)	5 (127)	3 (76)	5 (127)	
	0.75 (20)		12 (305)			7 (178)			
0.75 (20)	0.75 (20)		12 (305)	6 (152)	8 (203)	7 (178)	3 (76)	5 (127)	
	1.00 (25)		16 (406)			8 (203)			4 (102)
1.00 (25)	1.00 (25)		17 (432)	7 (178)	9 (229)	8 (203)	4 (102)	6 (152)	
	1.25 (32)		18 (457)			10 (254)			3 (76)
1.25 (32)	1.25 (32)		18 (457)	7 (178)	9 (229)	10 (254)	3 (76)	6 (152)	
	1.50 (40)		19 (408)						
0.50 (15)	0.50 (15)		SSD...5U	11 (280)	6 (152)	9 (229)	5 (127)	3 (76)	5 (127)
	0.75 (20)			12 (305)			7 (178)		
0.75 (20)	0.75 (20)	12 (305)		7 (178)	9 (229)	7 (178)	3 (76)	5 (127)	
	1.00 (25)	16 (406)				8 (203)			4 (102)
1.00 (25)	1.00 (25)	17 (432)		7 (178)	10 (254)	8 (203)	4 (102)	6 (152)	
	1.25 (32)	18 (457)				10 (254)			3 (76)
1.25 (32)	1.25 (32)	18 (457)		7 (178)	10 (254)	10 (254)	3 (76)	6 (152)	
	1.50 (40)	19 (408)							

\* If hoses are used, add the length of the hose to the total length.



Dimensions shown in inches (mm).

A-305

Valves

1/2- to 1-1/4-Inch Normally Closed PICV - Dimensions in Inches (mm)									
Valve Size	Connection Line Size	Actuator	Return			Supply			
			A*	B	C	D*	E	F	
0.50 (15)	0.50 (15)	SSD...U	12 (305)	6 (152)	9 (229)	5 (127)	3 (76)	5 (127)	
	0.75 (20)					7 (178)			
0.75 (20)	0.75 (20)		12 (305)	6 (152)	9 (229)	7 (178)	3 (76)	5 (127)	
	1.00 (25)					8 (203)			
1.00 (25)	1.00 (25)		16 (406)	6 (152)	9 (229)	8 (203)	4 (102)	6 (152)	
	1.25 (32)					10 (254)			
1.25 (32)	1.25 (32)		19 (483)	7 (178)	9 (229)	10 (254)	3 (76)	6 (152)	
	1.50 (40)								20 (508)
0.50 (15)	0.50 (15)		SSD...5U	12 (305)	7 (178)	9 (229)	5 (127)	3 (76)	5 (127)
	0.75 (20)						7 (178)		
0.75 (20)	0.75 (20)	12 (305)		7 (178)		9 (229)	7 (178)	3 (76)	5 (127)
	1.00 (25)						8 (203)		
1.00 (25)	1.00 (25)	16 (406)		7 (178)		9 (229)	8 (203)	4 (102)	6 (152)
	1.25 (32)						10 (254)		
1.25 (32)	1.25 (32)	19 (483)		7 (178)		9 (229)	10 (254)	3 (76)	6 (152)
	1.50 (40)								

\* If hoses are used, add the length of the hose to the total length.

1-1/2 and 2-Inch PICV - Dimensions in Inches (mm)								
Valve Size	Connection Line Size	Actuator	Return			Supply		
			A*	B	C	D*	E	F
1.50 (40)	1.50 (40)	SAY	21 (533)	15 (381)	18 (457)	10 (254)	3 (76)	6 (152)
1.50 (40)	2.00 (50)		22 (559)			13 (330)	4 (102)	
2.00 (50)	2.00 (50)		22 (559)			13 (330)	4 (102)	
1.50 (40)	1.50 (40)	R&P	21 (533)	15 (381)	18 (457)	10 (254)	3 (76)	6 (152)
1.50 (40)	2.00 (50)		22 (559)			13 (330)	4 (102)	
2.00 (50)	2.00 (50)		22 (559)			13 (330)	4 (102)	

\* If hoses are used, add the length of the hose to the total length.



Siemens offers a 5-year warranty on valves and actuators.



A-306

# Get the job done with ball valves

With line sizes ranging from 1/2" to 2" size (Cv ranging from 0.4 to 250) Siemens ball valves and valve actuators deliver comprehensive control solutions. We have the highest close-off in the industry and the largest selection of valve trim finishes for chrome plated brass and 316 stainless steel. Our premium grade materials and construction includes a better design blowout proof stem that withstands high pressure and a double O-ring stem packing.

Visit [usa.siemens.com/valves](http://usa.siemens.com/valves) to learn more.



75+ Years  
Innovating  
control valves



Fast and Easy  
Product selection



Quality  
Siemens standards



100%  
Factory tested



Up to 5 Million  
Repositions  
for longer life



Up to 100 Thousand  
Full strokes

# SIEMENS

## Ball Valve Piping Packages

*Pre-assembled at factory*

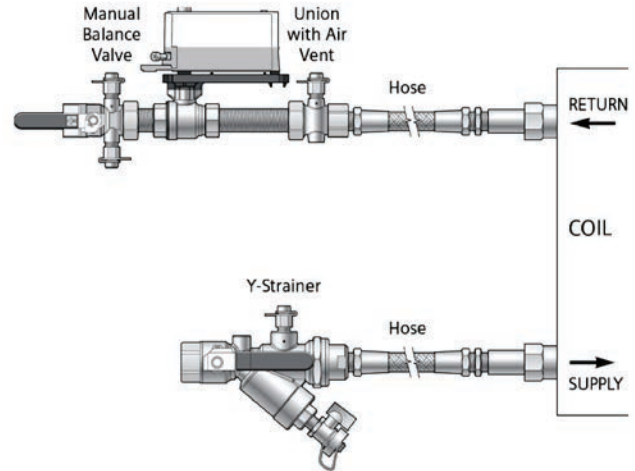
*1/2" to 2" sizes*

*12" to 24" hoses available*

*Tested at 100 PSI after assembly*

*Tagged for easy job distribution*

*Different configurations available to match project requirements*



### Description

Siemens Piping Packages are a streamlined solution that reduces several connections throughout the piping system resulting in less chance for error, ease of installation, and simplified commissioning.

These piping packages are shipped assembled from the factory and are available in sizes from 1/2 to 2 inches. Piping package assemblies are shrink-wrapped and tagged for easy job distribution. Stainless Steel flex hoses are provided as additional accessories. Piping package assemblies with flex hoses will be zip tied together and delivered to the job site.

### Features

- Pre-assembled at factory
- Tagged for easy job distribution
- Leak tested after assembly to ensure zero leakage
- 20 mesh strainer to remove dirt and impurities
- Air-vent to purge air in the coil
- Manual isolation valve provides 200 PSI close-off
- Stainless steel flex hoses available in different lengths
- Shrink wrapped to eliminate damage during transportation
- Manual balance valve has a Venturi insert for accurate flow measurement and graduated memory stops for flow setting

### Applications

Piping packages make it easy to connect your HVAC system piping to typical terminal applications such as VAV units, fan coils, unit ventilators, and reheat coils.

A-307

Valves

# Product Selection Table

Use the product numbers in the table below to order the valve and the actuator assembled. The product number consists of the Ball valve assembly followed by a hyphen. The 7 digits after the hyphen signify the size and end connections of the strainer, union valve and the manual balance valve respectively. The last digit always signifies the diameter and length of the stainless-steel flex hose.

For control valve sizing and selection and configuring the piping package assembly electronically, go to [usa.siemens.com/hit](http://usa.siemens.com/hit)

In the below example, **171A10300S-A2AAAAX** = Ball valve assembly PN 171A-10300S, 2-way control valve, 1/2" NPT valve strainer, 1/2" NPT union valve, 0.39 Cv manual balance valve, no stainless-steel hoses.

<b>Example Product Number</b>	<b>1</b>	<b>7</b>	<b>1</b>	<b>A</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>S</b>	<b>-</b>	<b>A</b>	<b>2</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>X</b>		
<b>Ball Valve Assembly Part Number</b>																				
<i>Separator</i>																				
<b>Assembled Piping Package</b>																				
<b>2-Way</b>																				
<b>Strainer Size and Body End</b>																				
A = 1/2"; NPT												D = 1-1/4"; NPT								
B = 3/4"; NPT												E = 1-1/2"; NPT								
C = 1"; NPT												F = 2"; NPT								
<b>Union Size and Body End</b>																				
A = 1/2"; NPT												O = 1-1/4" to 1"; NPT								
B = 3/4"; NPT												P = 1-1/2" to 1-1/4"; NPT								
C = 1"; NPT												Q = 2" to 1-1/2"; NPT								
D = 1-1/4"; NPT												V = 1" to 1/2"; NPT								
E = 1-1/2"; NPT												W = 1-1/4" to 3/4"; NPT								
F = 2"; NPT												X = 1-1/2" to 1"; NPT								
M = 3/4" to 1/2"; NPT												Y = 2" to 1-1/4"; NPT								
N = 1" to 3/4"; NPT																				
<b>Manual Balance Valve</b>																				
AA = 1/2" , 0.39 Cv, NPT												CA = 1" , 1.8 Cv, NPT								
AB = 1/2" , 1.1 Cv, NPT												CB = 1" , 3.8 Cv, NPT								
AC = 1/2" , 2.5 Cv, NPT												CC = 1" , 7.6 Cv, NPT								
AD = 1/2" , 4.2 Cv, NPT												CD = 1" , 12.2 Cv, NPT								
BA = 3/4" , 0.39 Cv, NPT												DA = 1-1/4" , 10 Cv, NPT								
BB = 3/4" , 1.1 Cv, NPT												DB = 1-1/4" , 21.8 Cv, NPT								
BC = 3/4" , 2.5 Cv, NPT												EA = 1-1/2" , 22.1 Cv, NPT								
BD = 3/4" , 4.2 Cv, NPT												EB = 1-1/2" , 54.7 Cv, NPT								
BE = 3/4" , 0.9 Cv, NPT												FA = 2" , 65.2 Cv, NPT								
BF = 3/4" , 1.9 Cv, NPT												FB = 2" , 105.2 Cv, NPT								
BG = 3/4" , 3.9 Cv, NPT																				
BH = 3/4" , 7.0 Cv, NPT																				
<b>Hoses – Diameter &amp; Length</b>																				
A = 1/2"; 12"												G = 1-1/4"; 18"								
B = 1/2"; 18"												H = 1-1/4"; 24"								
C = 3/4"; 12"												I = 1-1/2"; 18"								
D = 3/4"; 18"												J = 1-1/2"; 24"								
E = 1"; 12"												K = 2"; 24"								
F = 1"; 18"												X = No hoses								

A-308

Valves



## Component Specifications

Each piping package assembly consists of the following components along with the Siemens Ball Valve (ATC):

### Y-Strainer



The Y-strainer is installed on the supply side, upstream of the coil.

Sizes ..... 1/2" to 2"

**PSI/Temperature Rating:**

1/2" to 1-1/2"..... 600 WOG 400 PSI/250° F  
2"..... 400 WOG 275 PSI/250° F

**Body Material:**

1/2" to 1-1/2".....Forged Brass ASTM B283-06  
2"..... Cast brass

**End Connections**..... NPT

**Ball Valve Seals**..... Teflon

**Union Seal**.....EPDM O-Ring

**Isolation Ball Valve**..... Nickel-plated brass ball

**Strainer**..... 20 mesh stainless steel

**P/T Port**.....1/4" Combination P/T test valve and manual air vent

**Drain Valve**.....Rated 275 Psi/250°F.  
Brass housing, nickel-plated ball.  
3/4" NPSH hose connection

### Union with Air Vent



The union with air vent is installed on the return side upstream of the Siemens Ball Valve.

Sizes ..... 1/2" to 2"

**PSI/Temperature Rating**..... 400 PSI/250°F

**Body Material**.....Forged Brass ASTM B283-06

**End Connections**..... NPT

**Ball Valve Seals**..... Teflon

**Union Seal**.....EPDM O-Ring

**P/T Port**.....1/4" Combination P/T test valve and manual air vent

### Manual Balance Valve



The Manual Balance valve is placed immediately downstream of the Ball Valve to balance flow through the loop.

Sizes ..... 1/2" to 2"

**Venturi for flow measurement**..... Brass

**PSI/Temperature Rating**..... 600 WOG 400 PSI/250°F

**Body Material**.....Forged Brass ASTM B283-06

**End Connections**..... NPT

**Ball Valve Seals**..... Teflon

**Union Seal**.....EPDM O-Ring

**Ball Valve**..... Nickel plated Brass ball, full port

**P/T port**.....1/4" Combination P/T test valve and manual air vent

### Flex Hoses



Stainless Steel flex hoses are braided with 304 stainless-steel. They are designed for most common operating conditions in HVAC applications. Different hose lengths are provided based on the application requirements.

**Size and lengths available:**

1/2" to 1" diameter..... 12" and 18" length  
1-1/4" to 1-1/2" diameter ..... 18" and 24" length  
2" diameter..... 24" length

**Operating Temperature Range**..... -40°F to 260°F

**PSI/Temperature Rating at 77 °F** ..... 1/2": 500 PSI, 3/4": 450 PSI,  
1": 400 PSI, 1-1/4" to 2": 300 PSI

**Burst Pressure**..... 1/2": 1740 PSI, 3/4": 1600 PSI  
1": 1400 PSI, 1-1/4" to 2": 900 PSI

**Hose Material**.....EPDM polymer vulcanized by peroxide, wrapped with 304 stainless steel braid. EPDM polymer is fire retardant and meets requirements of UL-94 V0 testing.

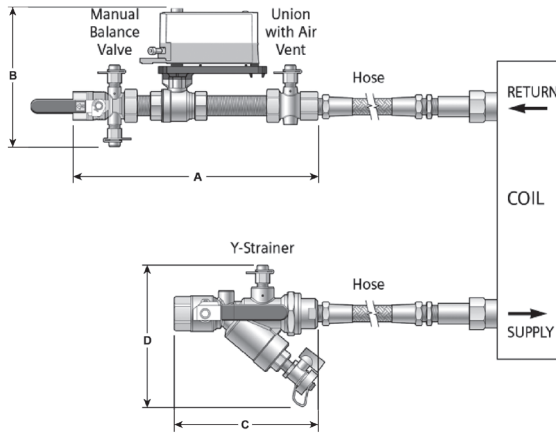
**Ferrule (Crimp) Material**.....Double crimped stainless steel

**End Connections**..... Brass

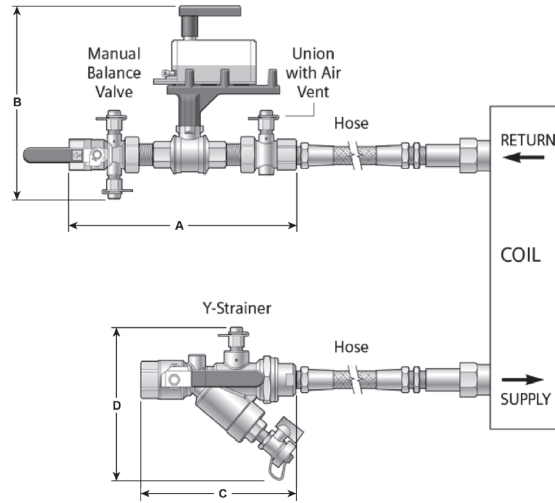
**Bend Radius**.....1/2": 2", 3/4": 4", 1": 5", 1-1/4": 6.5", 1-1/2": 9", 2": 12"

**Swivel Nut Connection**..... 1/2" - 1": Cone Seat Gasketless Dry Seal  
1-1/4" - 2": Flat Seat with EPDM Gasket Dry Seal

# Dimensions



1/2" and 3/4" Ball Valves.



1" to 2" Ball Valves.

Dimensions shown in inches (mm).

A-310

Valves

1/2- to 2-Inch Ball Valves Spring Return - Dimensions in Inches (mm)							
Valve Size	Connection Line Size	Actuator	Return		Supply		
			A	B	C	D	
0.50 (15)	0.50 (15)	GQD	11 (280)	5 (127)	5 (127)	5 (127)	
	0.75 (20)				7 (178)		
	1.00 (25)		8 (203)		6 (152)		
0.75 (20)	1.00 (25)		16 (406)		5 (127)	8 (203)	6 (152)
	1.25 (32)					10 (254)	
1.00 (25)	1.25 (32)		GMA		18 (457)	9 (229)	10 (254)
	1.50 (40)	19 (483)					
1.25 (32)	1.50 (40)	19 (483)		9 (229)	10 (254)	6 (152)	
	2.00 (50)				13 (330)		
1.50 (40)	1.50 (40)	19 (483)		9 (229)	10 (254)	6 (152)	
	2.00 (50)				13 (330)		
2.00 (50)	2.00 (50)	20 (508)		9 (229)	13 (330)	6 (152)	

\* If hoses are used, add the length of the hose to the total length.

1/2- to 2-Inch Ball Valves Non-Spring Return - Dimensions in Inches (mm)							
Valve Size	Connection Line Size	Actuator	Return		Supply		
			A	B	C	D	
0.50 (15)	0.50 (15)	GDE	11 (280)	5 (127)	5 (127)	5 (127)	
	0.75 (20)				7 (178)		
	1.00 (25)		8 (203)		6 (152)		
0.75 (20)	1.00 (25)		16 (406)		5 (127)	8 (203)	6 (152)
	1.25 (32)					10 (254)	
1.00 (25)	1.25 (32)		GLB		18 (457)	9 (229)	10 (254)
	1.50 (40)	19 (483)					
1.25 (32)	1.50 (40)	19 (483)		9 (229)	10 (254)	6 (152)	
	2.00 (50)				13 (330)		
1.50 (40)	1.50 (40)	19 (483)		9 (229)	10 (254)	6 (152)	
	2.00 (50)				13 (330)		
2.00 (50)	2.00 (50)	20 (508)		9 (229)	13 (330)	6 (152)	

\* If hoses are used, add the length of the hose to the total length.

## Globe Valve Piping Packages

*Pre-assembled at factory*

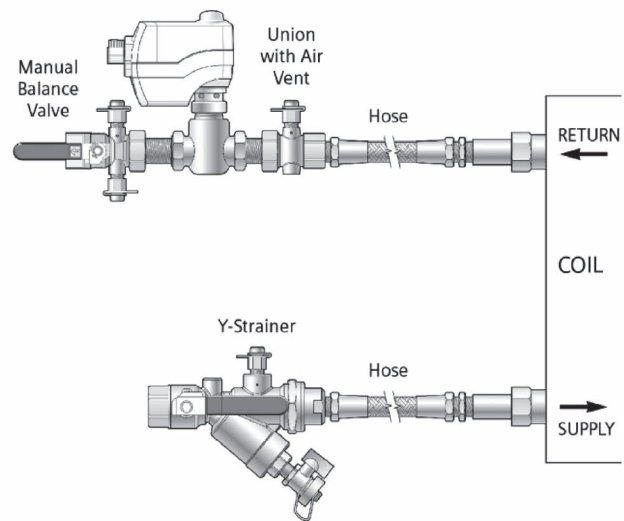
*1/2" to 2" sizes*

*12" to 24" hoses available*

*Tested at 100 PSI after assembly*

*Tagged for easy job distribution*

*Different configurations available to match project requirements*



### Description

Siemens Piping Packages are a streamlined solution that reduces several connections throughout the piping system resulting in less chance for error, ease of installation, and simplified commissioning.

These piping packages are shipped assembled from the factory and are available in sizes from 1/2 to 2 inches. Piping package assemblies are shrink-wrapped and tagged for easy job distribution. Stainless Steel flex hoses are provided as additional accessories. Piping package assemblies with flex hoses will be zip tied together and delivered to the job site.

### Features

- Pre-assembled at factory
- Tagged for easy job distribution
- Leak tested after assembly to ensure zero leakage
- 20 mesh strainer to remove dirt and impurities
- Air-vent to purge air in the coil
- Manual isolation valve provides 200 PSI close-off
- Stainless steel flex hoses available in different lengths
- Shrink wrapped to eliminate damage during transportation
- Manual balance valve has a Venturi insert for accurate flow measurement and graduated memory stops for flow setting

### Applications

Piping packages make it easy to connect your HVAC system piping to typical terminal applications such as VAV units, fan coils, unit ventilators, and reheat coils.

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Valves

# Product Selection Table

Use the product numbers in the table below to order the valve and the actuator assembled. The product number consists of the Globe valve assembly followed by a hyphen. The 7 digits after the hyphen signify the size and end connections of the strainer, union valve and the manual balance valve respectively. The last digit always signifies the diameter and length of the stainless-steel

flex hose. For control valve sizing and selection and configuring the piping package assembly electronically, go to [usa.siemens.com/hit](http://usa.siemens.com/hit)

In the below example, **25902000-A2AAAAX** = Globe valve assembly PN 259-02000, 2-way control valve, 1/2" NPT valve strainer 1/2" NPT union valve, 0.39 Cv manual balance valve, no stainless-steel hoses.

<b>Example Product Number</b>	<b>2</b>	<b>5</b>	<b>9</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>A</b>	<b>2</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>X</b>		
<b>Globe Valve Assembly Part Number</b>																				
<i>Separator</i>																				
<b>Assembled Piping Package</b>																				
<b>2-Way</b>																				
<b>Strainer Size and Body End</b>																				
A = 1/2"; NPT												D = 1-1/4"; NPT								
B = 3/4"; NPT												E = 1-1/2"; NPT								
C = 1"; NPT												F = 2"; NPT								
<b>Union Size and Body End</b>																				
A = 1/2"; NPT												O = 1-1/4" to 1"; NPT								
B = 3/4"; NPT												P = 1-1/2" to 1-1/4"; NPT								
C = 1"; NPT												Q = 2" to 1-1/2"; NPT								
D = 1-1/4"; NPT												V = 1" to 1/2"; NPT								
E = 1-1/2"; NPT												W = 1-1/4" to 3/4"; NPT								
F = 2"; NPT												X = 1-1/2" to 1"; NPT								
M = 3/4" to 1/2"; NPT												Y = 2" to 1-1/4"; NPT								
N = 1" to 3/4"; NPT																				
<b>Manual Balance Valve</b>																				
AA = 1/2" , 0.39 Cv, NPT												CA = 1" , 1.8 Cv, NPT								
AB = 1/2" , 1.1 Cv, NPT												CB = 1" , 3.8 Cv, NPT								
AC = 1/2" , 2.5 Cv, NPT												CC = 1" , 7.6 Cv, NPT								
AD = 1/2" , 4.2 Cv, NPT												CD = 1" , 12.2 Cv, NPT								
BA = 3/4" , 0.39 Cv, NPT												DA = 1-1/4" , 10 Cv, NPT								
BB = 3/4" , 1.1 Cv, NPT												DB = 1-1/4" , 21.8 Cv, NPT								
BC = 3/4" , 2.5 Cv, NPT												EA = 1-1/2" , 22.1 Cv, NPT								
BD = 3/4" , 4.2 Cv, NPT												EB = 1-1/2" , 54.7 Cv, NPT								
BE = 3/4" , 0.9 Cv, NPT												FA = 2" , 65.2 Cv, NPT								
BF = 3/4" , 1.9 Cv, NPT												FB = 2" , 105.2 Cv, NPT								
BG = 3/4" , 3.9 Cv, NPT																				
BH = 3/4" , 7.0 Cv, NPT																				
<b>Hoses – Diameter &amp; Length</b>																				
A = 1/2"; 12"												G = 1-1/4"; 18"								
B = 1/2"; 18"												H = 1-1/4"; 24"								
C = 3/4"; 12"												I = 1-1/2"; 18"								
D = 3/4"; 18"												J = 1-1/2"; 24"								
E = 1"; 12"												K = 2"; 24"								
F = 1"; 18"												X = No hoses								

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Valves

## Component Specifications

Each piping package assembly consists of the following components along with the Siemens Globe Valve (ATC):

### Y-Strainer



The Y-strainer is installed on the supply side, upstream of the coil.

Sizes ..... 1/2" to 2"

**PSI/Temperature Rating:**

1/2" to 1-1/2"..... 600 WOG 400 PSI/250° F  
2"..... 400 WOG 275 PSI/250° F

**Body Material:**

1/2" to 1-1/2".....Forged Brass ASTM B283-06  
2"..... Cast brass

**End Connections**..... NPT

**Ball Valve Seals**..... Teflon

**Union Seal**.....EPDM O-Ring

**Isolation Ball Valve**..... Nickel-plated brass ball

**Strainer**..... 20 mesh stainless steel

**P/T Port**.....1/4" Combination P/T test valve and manual air vent

**Drain Valve**.....Rated 275 Psi/250°F.  
Brass housing, nickel-plated ball.  
3/4" NPSH hose connection

### Union with Air Vent



The union with air vent is installed on the return side upstream of the Siemens Globe Valve.

Sizes ..... 1/2" to 2"

**PSI/Temperature Rating**..... 400 PSI/250°F

**Body Material**.....Forged Brass ASTM B283-06

**End Connections**..... NPT

**Ball Valve Seals**..... Teflon

**Union Seal**.....EPDM O-Ring

**P/T Port**.....1/4" Combination P/T test valve and manual air vent

### Manual Balance Valve



The Manual Balance valve is placed immediately downstream of the Globe Valve to balance flow through the loop.

Sizes ..... 1/2" to 2"

**Venturi for flow measurement**..... Brass

**PSI/Temperature Rating**..... 600 WOG 400 PSI/250°F

**Body Material**.....Forged Brass ASTM B283-06

**End Connections**..... NPT

**Ball Valve Seals**..... Teflon

**Union Seal**.....EPDM O-Ring

**Ball Valve**..... Nickel plated Brass ball, full port

**P/T port**.....1/4" Combination P/T test valve and manual air vent

### Flex Hoses



Stainless Steel flex hoses are braided with 304 stainless-steel. They are designed for most common operating conditions in HVAC applications. Different hose lengths are provided based on the application requirements.

**Size and lengths available:**

1/2" to 1" diameter..... 12" and 18" length  
1-1/4" to 1-1/2" diameter ..... 18" and 24" length  
2" diameter..... 24" length

**Operating Temperature Range**..... -40°F to 260°F

**PSI/Temperature Rating at 77 °F** ..... 1/2": 500 PSI, 3/4": 450 PSI,  
1": 400 PSI, 1-1/4" to 2": 300 PSI

**Burst Pressure**..... 1/2": 1740 PSI, 3/4": 1600 PSI  
1": 1400 PSI, 1-1/4" to 2": 900 PSI

**Hose Material**.....EPDM polymer vulcanized by peroxide, wrapped with 304 stainless steel braid. EPDM polymer is fire retardant and meets requirements of UL-94 V0 testing.

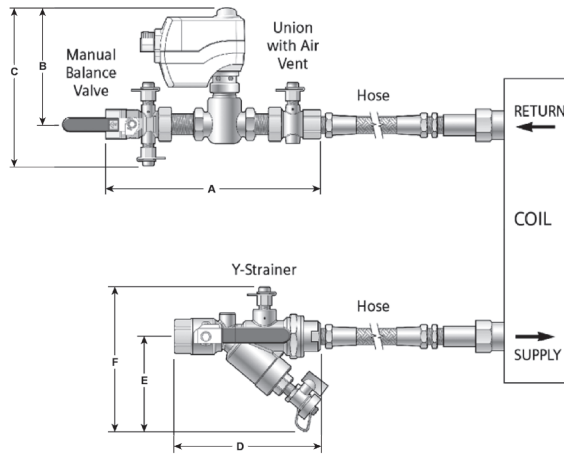
**Ferrule (Crimp) Material**.....Double crimped stainless steel

**End Connections**..... Brass

**Bend Radius**..... 1/2": 2", 3/4": 4", 1": 5", 1-1/4": 6.5", 1-1/2": 9", 2": 12"

**Swivel Nut Connection**..... 1/2" - 1": Cone Seat Gasketless Dry Seal  
1-1/4" - 2": Flat Seat with EPDM Gasket Dry Seal

# Dimensions



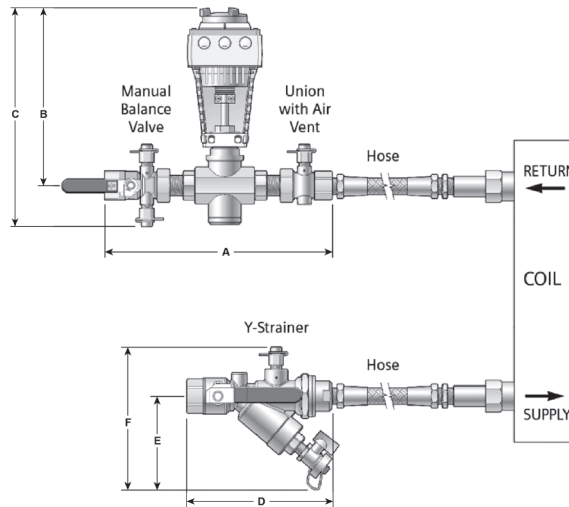
1/2" to 1 Powermite Globe Valves

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Valves

1/2- to 1 Inch Powermite Globe Valves – Dimensions in Inches (mm)									
Valve Size	Connection Line Size	Actuator	Return			Supply			
			A	B	C	D	E	F	
0.50 (15)	0.50 (15)	SAS	11 (280)	8 (203)	8 (203)	5 (127)	3 (76)	5 (127)	
	0.75 (20)					7 (178)			
	1.00 (25)					8 (203)			
0.75 (20)	1.25 (32)		16 (406)		18 (457)	9 (229)	8 (203)	3 (76)	6 (152)
	1.00 (25)						10 (254)		
1.00 (25)	1.25 (32)		18 (457)		19 (483)	9 (229)	10 (254)	3 (76)	6 (152)
	1.50 (40)								
0.50 (15)	0.50 (15)	SSC	11 (280)	6 (152)	6 (152)	5 (127)	3 (76)	5 (127)	
	0.75 (20)					7 (178)			
	1.00 (25)					8 (203)			
0.75 (20)	1.00 (25)		16 (406)		18 (457)	7 (178)	8 (203)	4 (102)	6 (152)
	1.25 (32)						10 (254)		
1.00 (25)	1.25 (32)		18 (457)		19 (483)	7 (178)	10 (254)	3 (76)	6 (152)
	1.50 (40)								

# Dimensions



1-1/4" to 2" Flowrite Globe Valves

1-1/4 to 2 Inch Normally Open Flowrite Globe Valves – Dimensions in Inches (mm)								
Valve Size	Connection Line Size	Actuator	Return			Supply		
			A	B	C	D	E	F
1.25 (32)	1.50 (40)	SAX	20 (508)	12 (305)	14 (356)	10 (254)	3 (76)	6 (152)
	2.00 (50)		21 (553)			13 (330)	4 (102)	
1.50 (40)	1.50 (40)		20 (508)			13 (330)	4 (102)	
	2.00 (50)		22 (559)			13 (330)	4 (102)	
2.00 (50)	2.00 (50)		23 (584)			13 (330)	4 (102)	
1.25 (32)	1.50 (40)		SKB			20 (508)	17 (432)	
	2.00 (50)	21 (553)		13 (330)	4 (102)			
1.50 (40)	1.50 (40)	20 (508)		13 (330)	4 (102)			
	2.00 (50)	22 (559)		13 (330)	4 (102)			
2.00 (50)	2.00 (50)	23 (584)		13 (330)	4 (102)			
1.25 (32)	1.50 (40)	SKD		20 (508)	14 (356)	16 (406)		10 (254)
	2.00 (50)		21 (553)	13 (330)			4 (102)	
1.50 (40)	1.50 (40)		20 (508)	13 (330)			4 (102)	
	2.00 (50)		21 (553)	13 (330)			4 (102)	
2.00 (50)	2.00 (50)		23 (584)	13 (330)			4 (102)	

1-1/4 to 2 Inch Normally Closed Flowrite Globe Valves – Dimensions in Inches (mm)									
Valve Size	Connection Line Size	Actuator	Return			Supply			
			A	B	C	D	E	F	
1.25 (32)	1.50 (40)	SAX	20 (508)	12 (305)	13 (330)	10 (254)	3 (76)	6 (152)	
	2.00 (50)		21 (553)			13 (330)	4 (102)		
1.50 (40)	1.50 (40)		20 (508)			13 (330)	4 (102)		
	2.00 (50)		22 (559)			13 (330)	4 (102)		
2.00 (50)	2.00 (50)		23 (584)			14 (356)	13 (330)		4 (102)
1.25 (32)	1.50 (40)		SKB			20 (508)	17 (432)		19 (483)
	2.00 (50)	21 (553)		13 (330)	4 (102)				
1.50 (40)	1.50 (40)	20 (508)		13 (330)	4 (102)				
	2.00 (50)	22 (559)		13 (330)	4 (102)				
2.00 (50)	2.00 (50)	23 (584)		13 (330)	4 (102)				
1.25 (32)	1.50 (40)	SKD		20 (508)	14 (356)	16 (406)		10 (254)	
	2.00 (50)		21 (553)	13 (330)			4 (102)		
1.50 (40)	1.50 (40)		20 (508)	13 (330)			4 (102)		
	2.00 (50)		22 (559)	13 (330)			4 (102)		
2.00 (50)	2.00 (50)		23 (584)	13 (330)			4 (102)		

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Valves



Siemens offers a 5-year warranty on sensors.\*

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# Gain insights for **building efficiency and indoor air quality**

Our complete sensor portfolio measures air quality, flow, humidity, pressure and temperature, so you are in control of your entire HVAC system. This ensures occupant comfort while also optimizing building efficiency and indoor air quality. Built to Siemens standards, our sensors provide reliable, accurate performance in any HVAC or building automation system.

Visit [usa.siemens.com/sensors](http://usa.siemens.com/sensors) to learn more.



#### Complete Product Portfolio

Sensors for every HVAC application



#### Quality

Rigorous testing to meet Siemens high standards



#### Less Effort

Easy to install and maintenance-free



#### Indoor Air Quality

Ensure healthy indoor climates



#### Maximize Comfort

Ensure occupant comfort and productivity



#### System Performance

Optimize building efficiency

\* Not applicable to PL-link devices, IAQ multi-sensor or Series 2200/3200 units with display.

**SIEMENS**



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Valves

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Valves

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# Universal Valve Retrofit Kit

## Description

The Universal Valve Retrofit Kit allows you to install a state-of-the-art Siemens Flowrite Electronic Actuators, regardless of the valve’s manufacturer. This kit contains the parts needed to adapt a valve to all Flowrite Pneumatic or SKB, SKC, SKD or SAX Actuators. Kit includes: bonnet adaptor, bonnet adaptor insert, stem adaptor jam nut and square head set screws.

## Features

- Easy installation
- Works with electronic or pneumatic actuators
- Installs on most manufacturer’s valves



Universal Valve Actuator Retrofit Kit.



Assembling the Universal Valve Retrofit Kit is quick and easy.

## Universal Valve Retrofit Kit Product Ordering

Brand	Valve Part No.	Kit Part No.
Siemens	658-XXXX and 339-XXXX	<b>ARK10</b>
	591-XXXX and 598-XXXX	<b>ARK11</b>
Honeywell	V3XXXX (2-1/2 and 3-in.)	<b>ARK16</b>
	V3XXXX (4 through 6-in.)	<b>ARK18</b>
	V501X (A, B, C, F, G, N) 1/2 through 3-in.	<b>ARK17</b>
	V501X (A, B, C) 4 through 6-in.	<b>ARK21</b>
Johnson Controls	VG2XXX	<b>ARK12</b>
	VG7XXX (1 thru 2-in.)	<b>ARK13</b>
	VG7XXX (1/2 to 3/4-in.)	<b>ARK19</b>
Siebe	VB7XXX and VB9XXX (threaded and flanged)	<b>ARK14</b>

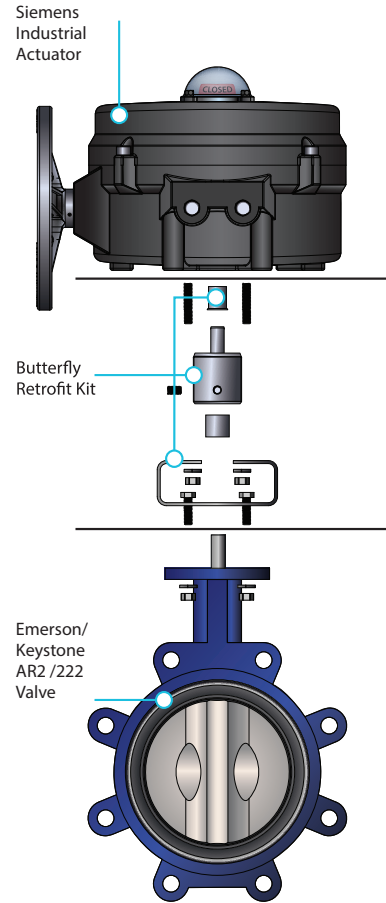
# Replace Emerson/Keystone EPI2 actuators with Siemens Butterfly Valve Retrofit Kits

## Description

Siemens Retrofit Kits are a quick, easy, and cost-effective solution to replacing failed Emerson/Keystone EPI2 actuators. Below is a selection guide to help choose the best kit (adapter) and Siemens A-series industrial actuator.











## Features

- 1) Identify the size of the Emerson Butterfly Valve and determine if it is Full Cut or Under Cut.
- 2) Based on the size, choose either 599-10062, 599-10072, 599-10073, or 599-10074 Retrofit Kit along with the Siemens actuator.
- 3) When ordering the actuator, replace XXX with following:
  - 126 for 24V On/Off
  - 166 for 24V Modulating
  - 226 for 120V On/Off
  - 266 for 120V Modulating
- 4) Contact tech support for 3-way retrofitting questions



## Butterfly Valve Retrofit Kits












Emerson Valve Size	Description	Retrofit Kit	Siemens Actuator
2"	BFV 2W 2" Full cut valve	599-10072	AXXX.600
2.5"	BFV 2W 2.5" Full cut valve	599-10072	AXXX.600
3"	BFV 2W 3" Full cut valve	599-10072	AXXX.600
4"	BFV 2W 4" Full cut valve	599-10062	AXXX.2K
4"	BFV 2W 4" Undercut valve	599-10062	AXXX.600
5"	BFV 2W 5" Full cut valve	599-10062	AXXX.2K
5"	BFV 2W 5" Undercut valve	599-10062	AXXX.600
6"	BFV 2W 6" Full cut valve	599-10062	AXXX.2K
6"	BFV 2W 6" Undercut valve	599-10062	AXXX.2K
8"	BFV 2W 8" Full cut valve	599-10074	AXXX.5K
8"	BFV 2W 8" Undercut valve	599-10074	AXXX.2K
10"	BFV 2W 10" Full cut valve	599-10073	AXXX.6K
10"	BFV 2W 10" Undercut valve	599-10073	AXXX.5K
12"	BFV 2W 12" Full cut valve	599-10073	AXXX.13K
12"	BFV 2W 2" Full cut valve	599-10073	AXXX.5K

	Description	Product Group	Quantity	Part No.
<b>Pressure Independent Control Valves</b>				
	<b>Weathershield for Pressure Independent Control Valves</b>	SAV, SAX, SAY	1	<b>ASK39.1</b>
	<b>PT Port Kit</b>	1/2 to 1-1/4 inch PICV	1 Set	<b>599-10079</b>
	<b>Rack and Pinion Linkage for PICV</b>	1-1/2 and 2-inch PICV	1	<b>599-03615</b>
	<b>Conduit Connectors</b>	SSD61U, SSD81U	1	<b>ASY97</b>
	<b>Terminal Plug and Cover</b> Labeled Y1-G-Y2. (Cover not shown)	SSD81U	1	<b>ASY99</b>
	<b>Terminal Plug and Cover</b> Labeled G-G0-Y. (Cover not shown)	SSD61U	1	<b>ASY100</b>
	<b>Auxiliary Switch</b> Switches on or off when a certain position is reached. The switching point can lie between 0 to 100%.	SAV61, SAX61, SAY61	1	<b>ASC10.51</b>
	<b>Function Module</b> • Changeover of acting direction • Connection terminals • Sequence control	SAV61, SAX61, SAY61	1	<b>AZX61.1</b>
<b>Zone Valves</b>				
	<b>Weather Shield for Zone Valves</b>	All Zone Valves	1	<b>599-10077</b>
	<b>Actuator Support Ring</b>	All Zone Valves	Package of 10	<b>599-00599</b>

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Valves

## Accessories & Service Kits

	Description	Product Group	Quantity	Part No.
<b>Zone Valves (cont.)</b>				
	<b>Conduit Connectors</b>	SSA81U	1	<b>ASY97</b>
	<b>Conduit Adapter</b>	SSE161.05U SSF161.05U	5	<b>ASY101</b>
	<b>Terminal Plug and Cover</b> Labeled Y1-G-Y2. (Cover not shown)	SSA81U	1	<b>ASY99</b>
	<b>Terminal Plug and Cover</b> Labeled G-G0-Y. (Cover not shown)	SSA61U, SSP61U	1	<b>ASY100</b>
<b>Powermite Valves</b>				
	<b>Weather Shield for Powermite Valves</b>	All Powermite Valves	1	<b>599-10077</b>
	<b>Conduit Connectors</b>	SSB81U	1	<b>ASY97</b>
	<b>Conduit Adapter</b>	SSB161.05U	5	<b>ASY101</b>
	<b>Terminal Plug and Cover</b> Labeled Y1-G-Y2. (Cover not shown)	SSB81U	1	<b>ASY99</b>
	<b>Terminal Plug and Cover</b> Labeled G-G0-Y. (Cover not shown)	SSB61U	1	<b>ASY100</b>
	<b>Protective Black Knob</b> Protects bonnet and threads.	MZ, MT	1	<b>4 268 8895 0</b>
	<b>Diaphragm Kit</b> Contains five diaphragms and mounting screws.	MT	Package of 5	<b>656-736</b>
	<b>Powermite Male Union Connection Kit</b> • 1/2"	MT	1	<b>599-02941</b>
	<b>Powermite Union Gasket Kit</b> • 1/2"	MT	25 Pieces	<b>698-088</b>
	• 3/4"		25 Pieces	<b>599-03394</b>

A-322

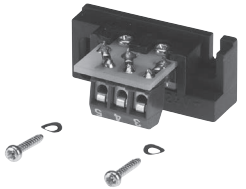

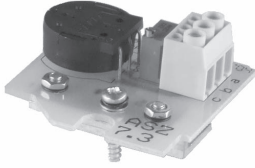


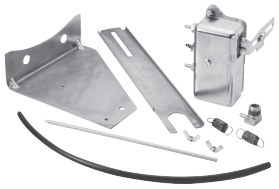
Valves

	Description	Product Group	Quantity	Part No.
<b>Ball Valves</b>				
	<b>Low Profile Ball Valve Bracket</b> Includes mounting screws.	Two-Way	1	599-10088
	<b>Ball Valve Bracket Kit</b> Includes mounting screws.	Two-Way & Three-Way	1	599-10078
	<b>Ball Valve Weathershield</b> Not compatible with 1/2 and 3/4" 2-Way Valves.	Two-Way & Three-Way	1	599-10080
	<b>Actuator Bracket</b>	Six-Way	1	ASK77.3
	<b>1/2" Tail Pieces</b> 1/2" union fittings with NPT female tailpieces and gaskets.	Six-Way	Package of 6	599-10661
	<b>3/4" Tail Pieces</b> 3/4" union fittings with NPT female tailpieces and gaskets.	Six-Way	Package of 6	599-10662
	<b>1" Tail Pieces</b> 1" union fittings with NPT female tailpieces and gaskets.	Six-Way	Package of 6	599-10663

A-323

Valves

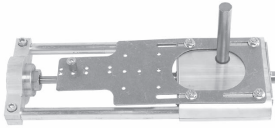




## Accessories & Service Kits

	Description	Product Group	Quantity	Part No.
<b>Flowrite Valves</b>				
	<b>Auxiliary Switch</b> Sends a signal to indicate that the valve is in the 0% stroke position; switching point is fixed at the 0% stroke position.	SKB62, SKC62, SKD62	1	<b>ASC1.6</b>
	<b>Double Auxiliary Switch</b> Switch has adjustable cams that can be set to give a signal at a desired position. • SKB/C • SKD	SKB82, SKC82, SKD82	1	<b>ASC9.3BCU</b>
			1	<b>ASC9.3DU</b>
	<b>Potentiometer</b>	SK_82_	1	<b>ASZ7.3</b>
	<b>Auxiliary Switch</b> Switches on or off when a certain position is reached. The switching point can lie between 0 to 100%.	SAX	1	<b>ASC10.51</b>
	<b>Function Module</b> • Changeover of acting direction • Connection terminals • Sequence control	SAX61	1	<b>AZX61.1</b>
	<b>Positioning Relay and Mounting Kit</b> • 8-inch • 12-inch	Flowrite	1	<b>599-00426</b>
			1	<b>599-00423</b>

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Valves




	Description	Product Group	Quantity	Part No.
<b>Flowrite Valves</b>				
	<b>Rack and Pinion/Bracket Only.</b> Use with OpenAir on Flowrite 1/2-2" (20 mm) stroke valves.	Flowrite	1	599-03610
	<b>Weathershield.</b>	SKB/SKC	1	599-10065
	<b>Weathershield.</b>	SKD/SQX	1	599-10071
	<b>Weathershield.</b>	SAX	1	ASK39.1
	<b>Universal Valve Retrofit Kit.</b> Contains parts to adapt a valve to Siemens Flowrite 599 Series Actuators.	SKB/SKC, SKD, SQX	1	See table below
<b>Brand</b>	<b>Valve and Product No.</b>	<b>Kit Part No.</b>		
Siemens	658-XXXX and 339-XXXX	ARK10		
	591-XXXX and 598-XXXX	ARK11		
Honeywell	V3XXXX (2-1/2 and 3-in.)	ARK16		
	V3XXXX (4 thru 6-in.)	ARK18		
	V501X (A, B, C, F, G, N) 1/2 thru 3-in.	ARK17		
	V501X (A, B, C) 4 thru 6-in.	ARK21		
Johnson Controls	VG2XXX	ARK12		
	VG7XXX (1 thru 2-in.)	ARK13		
	VG7XXX (1/2 to 3/4-in.)	ARK19		
Siebe	VB7XXX and VB9XXX (threaded & flanged)	ARK14		

**Note:**  
The model (M), year (Y) and week (W) of original manufacture of the valve is stamped on the valve tag in MM/YY/WW format.

A-325

Valves

# Accessories & Service Kits

	Description	Product Group	Quantity	Part No.
<b>Flowrite Valves</b>				
	1/2" to 2" 2-way Bronze Valve Body Rebuild/Repack Service Kits.	Flowrite	1	See table below

Valve Part No. FxF	Model 1 Part No.	Model 2 Part No.
599-03000	599-03300	—
599-03001	599-03301	—
599-03002	599-03302	—
599-03003	599-03303	—
599-03004	599-03304	—
599-03005	599-03305	—
599-03006	599-03306	599-09201
599-03007	599-03307	599-09202
599-03008	599-03308	599-09203
599-03018	599-03309	—
599-03019	599-03310	—
599-03020	599-03311	—
599-03021	599-03312	—
599-03022	599-03313	—
599-03023	599-03314	—
599-03024	599-03315	599-09213
599-03025	599-03316	599-09214
599-03026	599-03317	599-09215
599-03054	599-03318	—
599-03055	599-03319	—
599-03056	599-03320	—
599-03057	599-03321	—
599-03058	599-03322	—
599-03059	599-03323	—
599-03060	599-03324	599-09204
599-03061	599-03325	599-09205
599-03062	599-03326	599-09206
599-03072	599-03327	—
599-03073	599-03328	—
599-03074	599-03329	—
599-03075	599-03330	—
599-03076	599-03331	—
599-03077	599-03332	—
599-03078	599-03333	599-09216
599-03079	599-03334	599-09217
599-03080	599-03335	599-09218

**Note:**  
The model (M), year (Y) and week (W) of original manufacture of the valve is stamped on the valve tag in MM/YY/WW format.


**Key:**  
**F** Female NPT      **UF** Union Female  
**AF** Angle Female      **UM** Union Male

Continued...

A-326

Valves

Continued...

	Description	Product Group	Quantity	Part No.
<b>Flowrite Valves</b>				
	1/2 to 2" 2-way Bronze Valve Body Rebuild/Repack Service Kits.	Flowrite	1	See table below

Valve Part No. FxF	Model 1 Part No.	Model 2 Part No.
599-03108	599-03336	—
599-03109	599-03337	—
599-03110	599-03338	—
599-03111	599-03339	—
599-03112	599-03340	—
599-03113	599-03341	—
599-03114	599-03342	599-09207
599-03115	599-03343	599-09208
599-03116	599-03344	599-09209
599-03126	599-03345	—
599-03127	599-03346	—
599-03128	599-03347	—
599-03129	599-03348	—
599-03130	599-03349	—
599-03131	599-03350	—
599-03132	599-03351	599-09219
599-03133	599-03352	599-09220
599-03134	599-03353	599-09221
599-03162	599-03354	—
599-03163	599-03355	—
599-03164	599-03356	—
599-03165	599-03357	—
599-03166	599-03358	—
599-03167	599-03359	—
599-03168	599-03360	599-09210
599-03169	599-03361	599-09211
599-03170	599-03362	599-09212
599-03180	599-03363	—
599-03181	599-03364	—
599-03182	599-03365	—
599-03183	599-03366	—
599-03184	599-03367	—
599-03185	599-03368	—
599-03186	599-03369	599-09222
599-03187	599-03370	599-09223
599-03188	599-03371	599-09224

**Note:**

The model (M), year (Y) and week (W) of original manufacture of the valve is stamped on the valve tag in MM/YY/WW format.

**Key:**

**F** Female NPT      **UF** Union Female  
**AF** Angle Female    **UM** Union Male



A-327

Valves


# Accessories & Service Kits

A-328

Valves

	Description	Product Group	Quantity	Part No.																																																																												
<b>Flowrite Valves</b>																																																																																
 <p><b>Note:</b> The model (M), year (Y) and week (W) of original manufacture of the valve is stamped on the valve tag in MM/YY/WW format.</p> <p><b>Key:</b>  <b>F</b> Female NPT  <b>AF</b> Angle Female  <b>UF</b> Union Female  <b>UM</b> Union Male</p>	<b>1/2 to 2" 3-way Bronze Valve Body Rebuild/Repack Service Kits.</b>	Flowrite	1	See table below																																																																												
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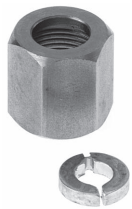
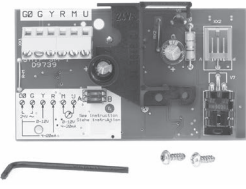

Valves

# Accessories & Service Kits

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Valves


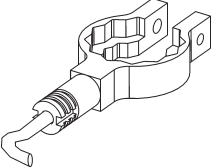

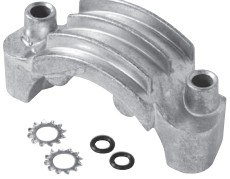
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	Description	Product Group	Quantity	Part No.
<b>Flowrite Valves</b>				
	<b>1/2 to 2" Bronze Valve Body Valve Repack Kits (10 mm. dia.).</b>	Flowrite		
	<ul style="list-style-type: none"> <li>• Normal Duty</li> </ul>		1	<b>599-03390</b>
	<ul style="list-style-type: none"> <li>• Steam</li> </ul>		1	<b>599-03391</b>
	<b>2-1/2 to 6" Flanged Iron Valve Body Repack Kit (14 mm dia.). (Cartridge)</b>	Flowrite		
	<ul style="list-style-type: none"> <li>• Normal Duty</li> </ul>		1	<b>599-08020</b>
	<ul style="list-style-type: none"> <li>• Steam</li> </ul>		1	<b>599-08021</b>
	<b>Packing Kits.</b>	Flowrite 591-598 Series Valves		
	<ul style="list-style-type: none"> <li>• 1/4" Diameter</li> </ul>		1	<b>591-501</b>
	<ul style="list-style-type: none"> <li>• 3/8" Diameter</li> </ul>		1	<b>591-502</b>
 <p>8" Shown</p>	<b>Diaphragm Replacement Kits.</b>	Flowrite		
	<ul style="list-style-type: none"> <li>• 4-inch Normal Duty</li> </ul>		1	<b>599-01093</b>
	<ul style="list-style-type: none"> <li>• 8-inch Normal Duty</li> </ul>		1	<b>599-01060</b>
	<ul style="list-style-type: none"> <li>• 8-inch High Temperature</li> </ul>		1	<b>599-01061</b>
	<ul style="list-style-type: none"> <li>• 12-inch Normal Duty</li> </ul>		1	<b>599-01070</b>
	<b>Stem Retainer Kit.</b> With interface nut and stem retainer ring. For 8-inch, 12-inch and SKB/C actuators.	Flowrite		
	<ul style="list-style-type: none"> <li>• 10 mm</li> </ul>		1	<b>599-10048</b>
	<ul style="list-style-type: none"> <li>• 14 mm</li> </ul>		1	<b>599-10049</b>
	<b>Circuit Board Replacement.</b>	SKB/C/D62U	1	<b>466857488</b>
		SKB/C/D62UA	1	<b>466857518</b>
		SKB/C/D60_	1	<b>466857598</b>
	<b>Plastic Wiring Compartment Cover.</b>	SKD	1	<b>410456348</b>
		SKB/SKC	1	<b>410455828</b>

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Valves








## Accessories & Service Kits

	Description	Product Group	Quantity	Part No.
<b>Flowrite Valves</b>				
	<b>Manual Override Crank Assembly.</b>	SKB/SKC	1	<b>426855108</b>
		SKD	1	<b>426855048</b>
	<b>Stem Heater</b>	Flowrite	1	<b>ASZ6.6</b>
	<b>Stroke Inverter.</b> 1/2" - 2.5" valves with .75" max. stroke.	SKD	1	<b>ASK50</b>
		SKB	1	<b>ASK51</b>
	<b>Retainer Clamp Kit.</b>	SKB/C	1	<b>599-10200</b>
		8 & 12" pneu	1	<b>599-00436</b>

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Valves



	Description	Product Group	Quantity	Part No.
<b>Magnetic Valves</b>				
	Control Signal Module w/ Feedback, 3-4".	M3P_FY	1	ZM250
	<b>Blanking Flange.</b>	M3P		
	• 3"		1	Z155/80
	• 4"		1	Z155/100
	Replacement Circuit Board.	MVF461H/ MXG461B	1	ASE12
	<b>Repair Module.</b>			
	• 1/2" to 1-1/4"	MXG461	1	ASE1
	• 1-1/2" to 2-1/2"	MXG461/ MXF461	1	ASE2
	Phase Cut to 0 to 10 Vdc Signal Converter.	MX../M3P/MV..	1	SEZ91.6
<b>Refrigeration Valves</b>				
	<b>Terminal Housing.</b> Converts 0 to 10 Vdc input to 0 to 20 Vdc phase cut output.			
	• up to 40W, IP54 rated housing	M3.../M2FP	1	ZM101/A
	<b>Terminal Housing.</b> Converts 0 to 20 mA/24 Vdc input to 0 to 20 Vdc phase cut output.			
	• to 40W, IP54 rated housing	M3.../M2FP	1	ZM121/A
	Replacement Electronics.	MV_661	1	ASR61
	<b>Valve Insert.</b> 1" (25 mm)			
	• 0.18 Cv (0,16 k <sub>vs</sub> )	MVS661	1	ASR0.16N
	• 0.46 Cv (0,40 k <sub>vs</sub> )	MVS661	1	ASR0.4N
	• 1.16 Cv (1,0 k <sub>vs</sub> )	MVS661	1	ASR1.0N
	• 2.89 Cv (2,5 k <sub>vs</sub> )	MVS661	1	ASR2.5N
	• 7.28 Cv (6,3 k <sub>vs</sub> )	MVS661	1	ASR6.3N

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Valves

## Accessories & Service Kits

Part No.	Valve Size in. (mm)	Valve Action	Actuator Spring Range psi (kPa)	Nominal Stem Travel in. (mm)	Cv, USgpm	Diaphragm (Pkg. of 5)	Stem Repack Kit (Pkg. of 6)	Rebuild Kit	Replacement Actuator
<b>VP 656 Powermite Valves</b>									
656-0001	.50 (13)	NO	3-8 (21-55)	.25 (6.4)	2.1	656-736	656-601	656-761	656-599
656-0002	.50 (13)	NO	3-8 (21-55)	.25 (6.4)	2.1	656-736	656-601	656-761	656-599
656-0003	.50 (13)	NO	3-8 (21-55)	.25 (6.4)	0.9	656-736	656-601	656-761	656-830
656-0004	.50 (13)	NO	3-8 (21-55)	.25 (6.4)	0.9	656-736	656-601	656-761	656-830
656-0005	.75 (19)	NO	3-8 (21-55)	.25 (6.4)	4.6	656-736	656-601	656-762	656-600
656-0009	.50 (13)	3WM	10-15 (69-103)	.375 (9.5)	2.5	656-736	656-601	—	—
656-0010	.50 (13)	3WM	3-8 (21-55)	.375 (9.5)	2.5	656-736	656-601	—	—
656-0011	.50 (13)	3WM	3-8 (21-55)	.375 (9.5)	1.5	656-736	656-601	—	—
656-0012	.50 (13)	NC	10-15 (69-103)	.25 (6.4)	2.1	656-736	656-601	656-014	—
656-0013	.50 (13)	NC	10-15 (69-103)	.25 (6.4)	2.7	656-736	656-601	656-014	—
656-0015	.50 (13)	3WM	10-15 (69-103)	.375 (9.5)	3.1	656-736	656-601	—	—
656-0017	.50 (13)	NO	3-8 (21-55)	.25 (6.4)	2.1	656-736	656-601	656-761	656-599
656-0018	.75 (19)	NO	3-8 (21-55)	.25 (6.4)	4.6	656-736	656-601	656-762	656-600
656-0020	.50 (13)	NO	5-10 (34-69)	.25 (6.4)	2.1	656-736	656-601	656-761	—
656-0022	.75 (19)	NO	5-10 (34-69)	.25 (6.4)	4.6	656-736	656-601	656-762	—
656-0028	.50 (13)	NO	3-8 (21-55)	.25 (6.4)	0.5	656-736	656-601	656-768	656-833
656-0029	.50 (13)	NO	5-10 (34-69)	.25 (6.4)	0.5	656-736	656-601	656-768	656-834

**Note:** Actuator with trim includes actuator, rebuild kit and bonnet pre-assembled.

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Valves

Part No.	Valve Size in. (mm)	Valve Action	Actuator Spring Range psi (kPa)	Nominal Stem Travel in. (mm)	Cv, USgpm	Diaphragm (Pkg. of 5)	Stem Repack Kit (Pkg. of 6)	Actuator with Trim	Replacement Actuator
<b>VP 658 Powertop Valves</b>									
658-0001	.50 (13)	NO	2-6 (14-41)	.50 (13)	1.0	658-166	658-167	—	658-067
658-0002	.50 (13)	NO	2-6 (14-41)	.50 (13)	2.5	658-166	658-167	658-070	658-067
658-0004	.50 (13)	NO	2-6 (14-41)	.50 (13)	1.0	658-166	658-167	—	658-067
658-0005	.50 (13)	NO	2-6 (14-41)	.50 (13)	2.5	658-166	658-167	658-070	658-067
658-0007	.50 (13)	NO	2-6 (14-41)	.50 (13)	1.0	658-166	658-167	—	658-067
658-0008	.50 (13)	NO	2-6 (14-41)	.50 (13)	2.5	658-166	658-167	658-070	658-067
658-0009	.75 (19)	NO	2-6 (14-41)	.50 (13)	6.3	658-166	658-167	658-071	658-067
658-0010	.75 (19)	NO	2-6 (14-41)	.50 (13)	6.3	658-166	658-167	658-071	658-067
658-0011	1 (25)	NO	2-6 (14-41)	.50 (13)	10	658-166	658-167	658-072	658-067
658-0012	1 (25)	NO	2-6 (14-41)	.50 (13)	10	658-166	658-167	658-072	658-067
658-0013	1.25 (32)	NO	2-6 (14-41)	.50 (13)	16	658-166	658-167	658-074	658-067
658-0014	1.25 (32)	NO	2-6 (14-41)	.50 (13)	16	658-166	658-167	658-074	658-067
658-0018	.50 (13)	NO	2-6 (14-41)	.50 (13)	1.0	658-166	658-167	—	658-067
658-0019	.50 (13)	NO	2-6 (14-41)	.50 (13)	2.5	658-166	658-167	658-070	658-067
658-0020	.75 (19)	NO	2-6 (14-41)	.50 (13)	6.3	658-166	658-167	658-071	658-067
658-0021	1 (25)	NO	2-6 (14-41)	.50 (13)	10	658-166	658-167	658-072	658-067
658-0022	1.25 (32)	NO	2-6 (14-41)	.50 (13)	16	658-166	658-167	658-074	658-067
658-0026	.50 (13)	3WM	3-7 (21-48)	.50 (13)	2.5	658-166	658-167	—	658-069
658-0027	.50 (13)	3WM	10-14 (69-97)	.50 (13)	2.5	658-166	658-167	—	658-068
658-0028	.75 (19)	3WM	3-7 (21-48)	.50 (13)	6.3	658-166	658-167	—	658-069
658-0029	.75 (19)	3WM	10-14 (69-97)	.50 (13)	6.3	658-166	658-167	—	658-068
658-0030	1 (25)	3WM	3-7 (21-48)	.50 (13)	10	658-166	658-167	—	658-069
658-0031	1 (25)	3WM	10-14 (69-97)	.50 (13)	10	658-166	658-167	—	658-068
658-0032	1.25 (32)	3WM	10-14 (69-97)	.50 (13)	16	658-166	658-167	—	658-068
658-0033	1.25 (32)	3WM	3-7 (21-48)	.50 (13)	16	658-166	658-167	—	658-069
658-0040	.50 (13)	NC	10-14 (69-97)	.50 (13)	2.5	658-166	658-167	—	658-068
658-0041	.75 (19)	NC	10-14 (69-97)	.50 (13)	6.3	658-166	658-167	—	658-068
658-0042	1 (25)	NC	10-14 (69-97)	.50 (13)	10	658-166	658-167	—	658-068
658-0043	.50 (13)	NC	10-14 (69-97)	.50 (13)	2.5	658-166	658-167	—	658-068
658-0050	.50 (13)	SEQ	2-11 (14-76)	.406 (10)	1.5	658-166	658-167	—	658-066
658-0051	.50 (13)	SEQ	2-11 (14-76)	.406 (10)	2.5	658-166	658-167	—	658-066
658-0052	.50 (13)	CHG	2-11 (14-76)	.406 (10)	2.5	658-166	658-167	—	658-066
658-0060	.50 (13)	NO	10-14 (69-97)	.50 (13)	1.0	658-166	658-167	—	658-068
658-0061	.50 (13)	NO	10-14 (69-97)	.50 (13)	2.5	658-166	658-167	658-070	658-068
658-0062	.50 (13)	NO	10-14 (69-97)	.50 (13)	1.0	658-166	658-167	—	658-068
658-0063	.50 (13)	NO	10-14 (69-97)	.50 (13)	2.5	658-166	658-167	658-070	658-068
658-0064	.50 (13)	NO	10-14 (69-97)	.50 (13)	1.0	658-166	658-167	—	658-068
658-0065	.50 (13)	NO	10-14 (69-97)	.50 (13)	2.5	658-166	658-167	658-070	658-068
658-0066	.75 (19)	NO	10-14 (69-97)	.50 (13)	6.3	658-166	658-167	658-071	658-068
658-0067	.75 (19)	NO	10-14 (69-97)	.50 (13)	6.3	658-166	658-167	658-072	658-068
658-0068	1 (25)	NO	10-14 (69-97)	.50 (13)	10	658-166	658-167	658-072	658-068
658-0069	1 (25)	NO	10-14 (69-97)	.50 (13)	10	658-166	658-167	658-072	658-068
658-0070	1.25 (32)	NO	10-14 (69-97)	.50 (13)	16	658-166	658-167	658-074	658-068
658-0071	1.25 (32)	NO	10-14 (69-97)	.50 (13)	16	658-166	658-167	—	658-068
658-0085	.50 (13)	NC	10-14 (69-97)	.50 (13)	1.0	658-166	658-167	—	658-068
658-0086	.50 (13)	NC	10-14 (69-97)	.50 (13)	1.0	658-166	658-167	—	658-068
658-0100	.50 (13)	NO	2-6 (14-41)	.50 (13)	0.5	658-166	658-167	—	658-067
658-0101	.50 (13)	NO	2-6 (14-41)	.50 (13)	0.5	658-166	658-167	—	658-067



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# Intelligent VAV Actuator solution Commissioning made easy

The OpenAir™ Intelligent Variable Air Volume (VAV) actuator is a simple plug-and-play solution that is easy to commission and delivers reliable air volume control.

The Climatix mobile app transforms the commissioning process, making it intuitive for technicians at any experience level.

Visit [usa.siemens.com/vav-solutions](http://usa.siemens.com/vav-solutions) to learn more.



**Easy Commissioning**  
Empowers any experience level technician



**Productivity**  
Save time and stay on schedule



**100%**  
Factory tested



**40+ Years**  
Innovating control actuators



**Up to 5 Million**  
Repositions for longer life



**Up to 100 Thousand**  
Full strokes

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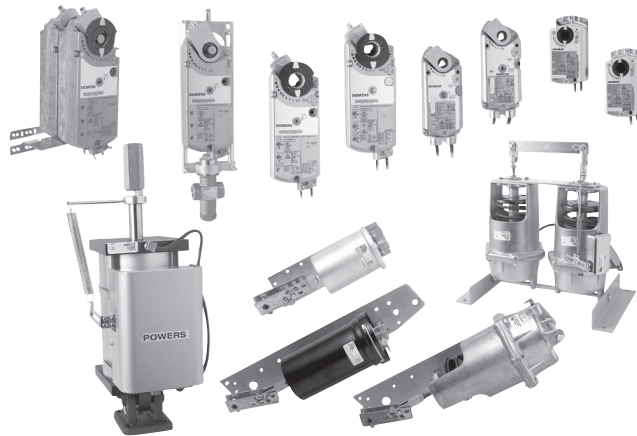
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# Overview

## Damper Actuators

Damper Actuators provide control, either electronically or pneumatically, for a variety of HVAC applications, including:

- VAV Systems
- Mixing Boxes
- Central Fan Systems
- Exhaust Dampers
- Fire/Smoke Dampers
- Rooftop Units
- Air Handling Units
- Economizer Dampers



### Selection Guide Square footage is approximate, based on 4 lb-in/ft<sup>2</sup>

Application	Electronic																Pneumatic*			
	Spring Return								Non-Spring Return								Spring Return			
	GQD 5 ft <sup>2</sup>	GJD 5 ft <sup>2</sup>	GRD 8 ft <sup>2</sup>	GPC 9 ft <sup>2</sup>	GNP 12 ft <sup>2</sup>	GMA 16 ft <sup>2</sup>	GKD 20 ft <sup>2</sup>	GCA 40 ft <sup>2</sup>	GVD 50 ft <sup>2</sup>	GSD 5 ft <sup>2</sup>	GDE 11 ft <sup>2</sup>	GAP 12 ft <sup>2</sup>	GLB 22 ft <sup>2</sup>	GEB 32 ft <sup>2</sup>	GBB 55 ft <sup>2</sup>	GIB 77 ft <sup>2</sup>	DXR1 22 ft <sup>2</sup>	No.3 12 ft <sup>2</sup>	No.4 16 ft <sup>2</sup>	No.6 24 ft <sup>2</sup>
Terminal Units (VAV)	●			●		●			●	●		●					●	●		
Fan Powered Box (FPB)										●		●					●			
Face and Bypass										●		●							●	
Multi-Zone Mixing Boxes								●		●		●		●		●				
Bypass Dampers										●		●								
Makeup Air Damper										●		●				●				
Outside Air Dampers	●			●		●		●		●				●	●	●				
Small Rooftop Units (RTU)	●			●		●		●		●				●						
Economizer Dampers	●			●		●		●												
Rooftop Units (RTU)								●							●	●			●	
Zone Isolation Dampers	●			●		●		●		●				●	●	●				
Vortex Dampers								●							●	●				
Inlet Vane Dampers								●							●	●				●
Return Air Dampers	●			●		●		●		●				●	●	●				
Unit Ventilators	●			●		●				●										
Central VAV Fans								●											●	***
Fire/Smoke Dampers		●	●					●		●								●	***	●
Fume Hoods/Supply and Exhaust Dampers					●							●								

\* Estimates for pneumatic actuators are based on the maximum stroke of the actuator and the 90° damper rotation

\*\* LC Model

\*\*\* See data sheets for specific types

Damper Type	Damper Leakage at 1" H <sub>2</sub> O (240 Pa) Static Pressure	Damper Torque for Approach Air of 1200 ft./min. (6 m/s) or less
Standard Leakage	More than 10 CFM/ft. <sup>2</sup> (50.8 l/s per m <sup>2</sup> )	2.5 lb.-in./ft. <sup>2</sup> (0.3 Nm/m <sup>2</sup> )
Low Leakage	5 to 10 CFM/ft. <sup>2</sup> (25.4 to 50.8 l/s per m <sup>2</sup> )	5.0 lb.-in./ft. <sup>2</sup> (0.6 Nm/m <sup>2</sup> )
Very Low Leakage	Less than 5 CFM/ft. <sup>2</sup> (Less than 25.4 l/s per m <sup>2</sup> )	7.0 lb.-in./ft. <sup>2</sup> (0.8 Nm/m <sup>2</sup> )

▶ For detailed damper actuator sizing information, please refer to Engineering, Section G.

## Electronic Damper Actuators Spring Return

### Easily Replaces:

- Belimo TF Series



### 20 lb.-in. Torque

- 24 Vac/dc, 2-Position (Open/Closed) Control
- 120 Vac, 2-Position (Open/Closed) Control
- 24 Vac/dc, Floating Control
- 24 Vac/dc, 2 to 10 Vdc/10 to 2 Vdc, (Modulating) Control



GQD Series Spring Return  
Direct Coupled Electronic Damper Actuator.

### Description

The OpenAir GQD Series direct-coupled, spring return electronic damper actuators are 24 Vac/dc and 120 Vac rated and available in 2-position, floating and 2 to 10 Vdc control.

### Features

- Bi-directional, fail-safe spring return
- Modulating actuators contain built-in feedback
- Pre-cabled
- Plenum rated
- Signal inversion capability on modulating type (2 to 10 Vdc/10 to 2 Vdc)
- Small footprint for installation flexibility
- UL, cUL, CE rated
- Quiet operation

### Options

- Available with optional built-in dual auxiliary switches fixed at 5° and 85°

### Applications

The small footprint and torque make this actuator ideal for small HVAC dampers, economizer units, or residential zone dampers requiring fail safe operation.

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Damper Actuators



\* Intelligent VAV actuators offer a 2-year warranty.

# Specifications

**Operating Voltage** ..... 24 Vac/dc ±20%  
 120 Vac ±15%

**Frequency** ..... 50/60 Hz

**Power Consumption**

GQD121.1P (24 Vac/24 Vdc)  
 Running ..... 6.5 VA (4.5 W)  
 Holding ..... 4 VA (2.5 W)

GQD131.1P (24 Vac/24 Vdc)  
 Running ..... 4 VA (2.5 W)  
 Holding ..... 3 VA (1.5 W)

GQD151.1P (24 Vac/24 Vdc)  
 Running ..... 4.5 VA (3 W)  
 Holding ..... 3.5 VA (2 W)

GQD221.1U (120 Vac)  
 Running ..... 10 VA  
 Holding ..... 7 VA

**Function**

Torque ..... 20 lb.-in. (2 Nm)  
 Runtime for 90° ..... 30 sec.  
 Spring Return ..... 15 sec. nominal  
 Nominal Angle of Rotation ..... 90°

**Dual Auxiliary Switches** ..... Fixed at 5° and 85°

AC Rating ..... 24 to 250 Vac  
 AC 6A resistive  
 AC 2A General Purpose

DC Rating (Standard/Plenum Cable) ..... 12 to 30 Vdc  
 DC 2A

**Shaft Size** ..... 3/8 to 1/2-in. (8 to 13.4 mm) round/square ● ■

**Min. Shaft Length** ..... 3/4-in (20 mm)

**Conduit Connection** ..... (GQD221.1U only) 1/2" NPT

**Housing Enclosure** ..... NEMA 1

**Material** ..... Plenum rated rugged plastic

**Ambient Temperature**

Operating ..... -25°F to 130°F (-32°C to 55°C)  
 Storage and Transport ..... -40°F to 158°F (-40°C to 70°C)

**Ambient Humidity** ..... 95% RH, non-condensing

**Agency Approvals** ..... UL873, cUL, CE rated

**Pre-Cabled Connection** ..... AWG 18

**Cable Length** ..... 3 ft. (0.9m)

**Dimensions** ..... <4.72" H x <2.75" W x <2.5" D  
 (<120 mm H x <70 mm W x <63 mm D)

**Shipping Weight** ..... <1.5 lbs. (<.68 kg)

## Product Ordering

Control Signal	Cabling	Standard	Dual Auxiliary Switches
2-Position (Open/Closed), 24 Vac/dc	Plenum Cable	<b>GQD121.1P</b>	<b>GQD126.1P</b>
	Plenum Cable/Bulk	<b>GQD121.1P/B</b>	—
2-Position (Open/Closed), 120 Vac	Standard Cable	<b>GQD221.1U</b>	<b>GQD226.1U</b>
	Standard Cable/Bulk	<b>GQD221.1U/B</b>	—
Floating, 24 Vac/dc	Plenum Cable	<b>GQD131.1P</b>	<b>GQD136.1P</b>
	Plenum Cable/Bulk	<b>GQD131.1P/B</b>	—
2 to 10 Vdc/10 to 2 Vdc, (Modulating), 24 Vac/dc	Plenum Cable	<b>GQD151.1P</b>	<b>GQD156.1P</b>
	Plenum Cable/Bulk	<b>GQD151.1P/B</b>	—

**Ordering Notes:**

Bulk packages contain 10 actuators unless otherwise noted.

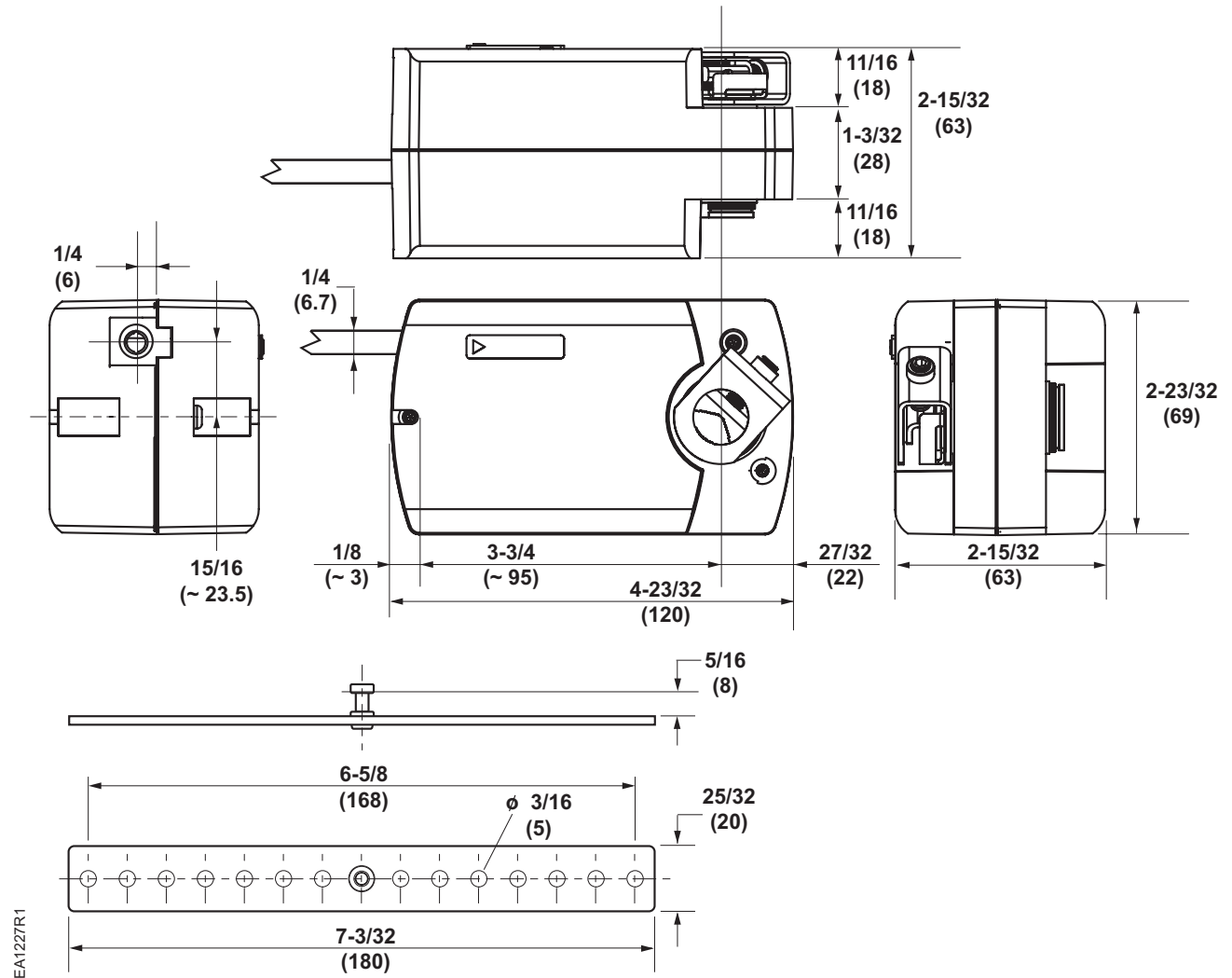
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Damper Actuators



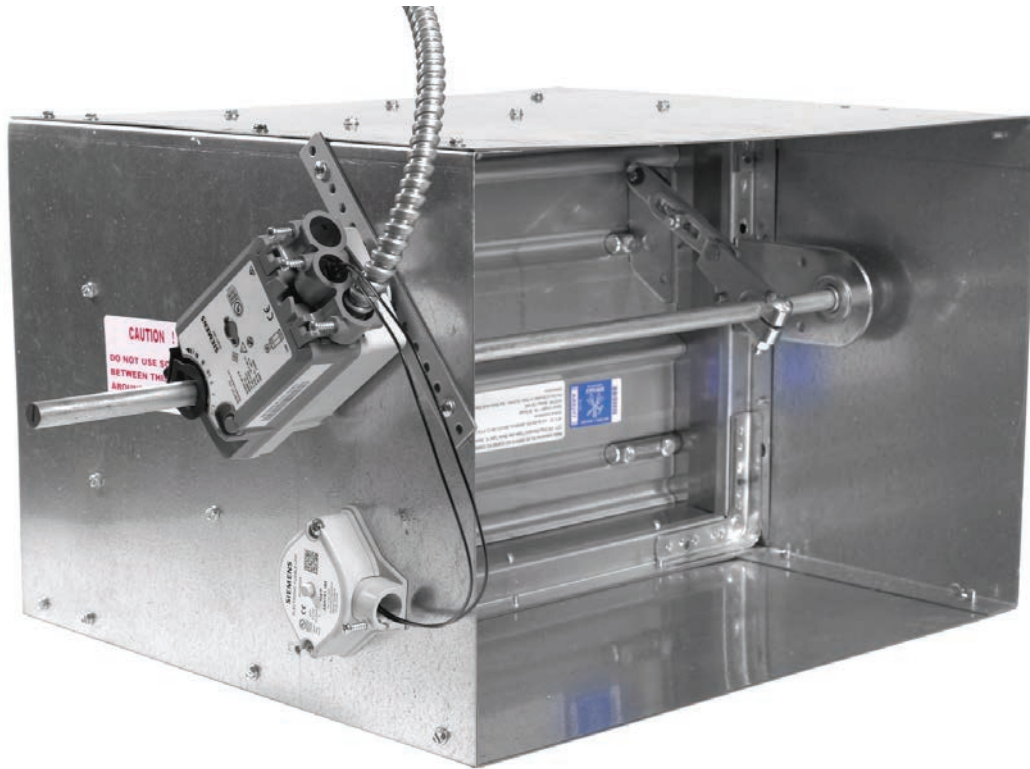
# Dimensions

## GQD Series Open Air Electronic Damper Actuators





Siemens offers a 5-year warranty on damper actuators.



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# The right device matters when lives matter.

## Reduce risk with OpenAir™

OpenAir fire and smoke electronic damper actuators are designed to reduce risk and deliver better life safety performance. Keep people and property protected with Siemens reliable fire and smoke damper actuators designed to meet both UL 555 and UL 555S certification requirements.

Visit [usa.siemens.com/openair](https://usa.siemens.com/openair) to learn more.

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## Electronic Damper Actuators Spring Return

### Easily Replaces:

- Belimo LF Series



### 35 lb.-in. Torque

- 24 Vac/dc, 2-Position (Open/Closed) Control
- 100 to 240 Vac, 2-Position (Open/Closed) Control
- 24 Vac/dc, Floating Control
- 24 Vac/dc, 0(2) to 10 Vdc/10 to 0(2) Vdc, (Modulating) Control



GPC Series Spring Return  
Direct Coupled Electronic Damper Actuator.

### Description

The OpenAir GPC Series direct-coupled, spring return electronic damper actuators are 24 Vac/dc and 100 to 240 Vac rated. Available in 2-position, floating and 0(2) to 10 Vdc control.

### Features

- Bi-directional, fail-safe spring return
- Selectable modulating control (0 to 10 Vdc or 2 to 10 Vdc)
- Modulating actuators contain built-in feedback (0 to 10 Vdc or 2 to 10 Vdc)
- Pre-cabled
- Integral 1/2 inch conduit connection
- Plenum rated
- Manual override with easy lock function
- 24 Vac/dc compatible
- Flexible 2-position line voltage (100 to 240 Vac)
- Signal inversion capability on modulating type (2 to 10 Vdc/10 to 2 Vdc)
- Small footprint for installation flexibility
- UL, cUL, CE rated
- Very energy efficient

### Options

- Available with optional built-in dual auxiliary switches fixed at 5° and 85°

### Applications

The small footprint and torque make this actuator ideal for small HVAC dampers, economizer units, or residential zone dampers requiring fail safe operation.

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Damper Actuators

## Specifications

**Operating Voltage** ..... 24 Vac/dc  $\pm$ 20%  
100-240 Vac (-15/+10%)

**Frequency** ..... 50/60 Hz

**Power Consumption**

GPC121.1P (24 Vac/24 Vdc)  
Running ..... 3.4 VA (2.0 W)  
Holding ..... 2.6 VA (1.6 W)  
GPC131.1P (24 Vac/24 Vdc)  
Running ..... 3.5 VA (2.1 W)  
Holding ..... 2.8 VA (1.7 W)  
GPC161.1P (24 Vac/24 Vdc)  
Running ..... 3.5 VA (2.1 W)  
Holding ..... 2.8 VA (1.6 W)  
GPC321.1U (120 Vac)  
Running ..... 4.6 VA (2.4 W)  
Holding ..... 3.5 VA (1.7 W)

**Function**

Torque ..... 35 lb.-in. (4 Nm)  
Runtime for 90° ..... 60 sec.  
Spring Return ..... 15 sec. nominal  
Nominal Angle of Rotation ..... 90°

**Dual Auxiliary Switches**

Fixed at 5° and 85° AC Rating ..... 24 to 250 Vac  
AC 6A resistive  
AC 2A General Purpose  
DC Rating (Standard/Plenum Cable) ..... 12 to 30 Vdc  
DC 2A

**Shaft Size** ..... 3/8 to 1/2-in. (8 to 13.4 mm) round ●  
1/4 to 7/16-in. (6 to 11 mm) square ■

**Min. Shaft Length** ..... 3/4-in (20 mm)

**Conduit Connection** ..... 1/2" NPT

**Housing Enclosure** ..... NEMA 1

**Material** ..... Plenum rated rugged plastic

**Ambient Temperature**

Operating ..... -25°F to 130°F (-32°C to 55°C)  
Storage and Transport ..... -40°F to 158°F (-40°C to 70°C)

**Ambient Humidity** ..... 95% RH, non-condensing

**Agency Approvals** ..... UL60730, cUL, CE rated

**Pre-Cabled Connection** ..... AWG 18

**Cable Length** ..... 3 ft. (0.9m)

**Dimensions** ..... <5.6" H x <2.83" W x <2.5" D  
(<142 mm H x <72 mm W x <63 mm D)

**Shipping Weight** ..... <1.5 lbs. (<.68 kg)

## Product Ordering

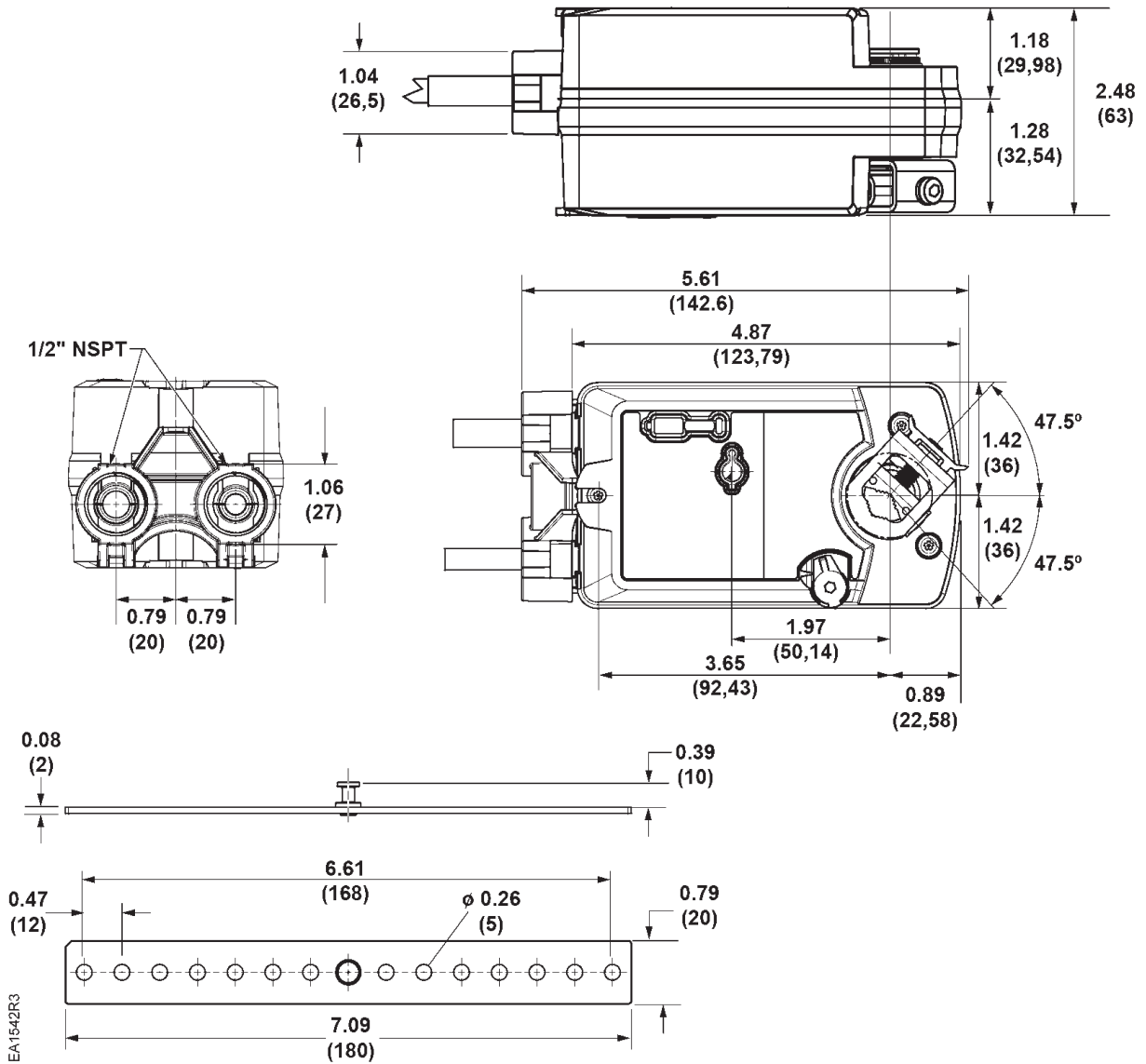
Control Signal	Cabling	Standard	Dual Auxiliary Switches
2-position (Open/Closed), 24 Vac/dc	Plenum Cable	<b>GPC121.1P</b>	<b>GPC126.1P</b>
Floating, 24 Vac/dc	Plenum Cable	<b>GPC131.1P</b>	<b>GPC136.1P</b>
0(2) to 10 Vdc/10 to 0(2) Vdc, (Modulating), 24 Vac/dc	Plenum Cable	<b>GPC161.1P</b>	<b>GPC166.1P</b>
2-position (Open/Closed), 100-240 Vac	Standard Cable	<b>GPC321.1U</b>	<b>GPC326.1U</b>

B-8

Damper Actuators

# Dimensions

## GPC Series Open Air Electronic Damper Actuators



Dimensions shown in inches (mm).



Siemens offers a 5-year warranty on damper actuators.\*



B-10

# Built for long-lasting performance

Our OpenAir™ series provides more torque sizes to meet all of your needs. With over 40 years of innovating control actuators, Siemens is a recognized global leader in HVAC damper actuators. Energy-efficient, robust, flexible, and reliable — save time and costs with OpenAir.

Visit [usa.siemens.com/openair](http://usa.siemens.com/openair) to learn more.

\* Intelligent VAV actuators offer a 2-year warranty



**40+ Years**  
Innovating control actuators



**25%**  
Lower power consumption



**20%**  
More torque than the competition



**100%**  
Factory tested



**1.5+ Million**  
OpenAir reposition operations for longer life



**60+ Thousand**  
Full strokes at rated torque and temperature



## Electronic Damper Actuator Spring Return

### Easily Replaces:

- Belimo LN/NF Series



### 62 lb.-in. Torque

- 24 Vac/Vdc, 2-Position Control
- 120 Vac, 2-Position Control
- 24 Vac/dc, Floating Control
- 0 to 10 Vdc, Modulating Control
- 2 to 10 Vdc/10 to 2 Vdc, Modulating Control



GMA Series Spring Return  
Direct-coupled Electronic Damper Actuator.

### Description

The OpenAir GMA Series Direct-coupled, Spring Return Electronic Damper Actuators provide modulating, two-position and floating control of building HVAC dampers.

### Features

- 24 Vac/dc compatible
- Integral 1/2-inch conduit connector
- Small actuator footprint with 62 lb.-in. of torque
- Bi-directional fail-safe spring return
- Unique self-centering shaft coupling
- Floating control models available with feedback potentiometer
- Manual override
- Mechanical range adjustment capability
- Easily visible position indicator
- Brushless DC motor technology
- Precabled
- UL60730, cUL (C22.2 No. 24-93), and CE listed
- All modulating types contain built-in feedback
- Assembled in the U.S.A

### Options

- Dual independently adjustable auxiliary switch
- Adjustable offset and span
- Signal inversion

### Applications

The OpenAir GMA Series Damper Actuators are ideal for rooftop unit economizer dampers and constant or variable air volume installations for the control of return air, mixed air, exhaust, and face and bypass dampers that require up to 62 lb.-in. of torque.

The actuators are designed for applications where the damper is required to return to a fail-safe position when there is a power failure.

Models are available with either an appliance cable for wiring in conduit or a plenum-rated cable.

B-11

Damper Actuators

# Specifications

## Operating Voltage

GMA12x, GMA13x, GMA16x, GMA15x ..... 24 Vac ±20%; 24 Vdc ±15%  
 GMA22x ..... 120 Vac ±10%

Frequency ..... 50/60 Hz

## Power Consumption

Running ..... 24 Vac/dc  
 5 VA (3.5 W)  
 Holding ..... 4 VA (3 W)

Equipment Rating ..... Class 2, in accordance with UL/CSA

## Control Signal

Input Signal (wires 8-2) ..... GMA16x  
 Voltage Input  
 GMA16x ..... 0 to 10 Vdc (max. 35 Vdc)  
 GMA15x ..... 2 to 10 Vdc (max. 35 Vdc)  
 Input Resistance ..... >100K Ohms

## Control Signal Adjustment

Offset (Start Point) ..... 0 to 5 Vdc  
 Factory Setting ..... 0 V  
 Span ..... 2 to 30 Vdc  
 Factory Setting ..... 30 V

## Dual Auxiliary Switch

Contact Rating  
 AC Rating ..... 24 to 250 Vac  
 AC 6 A resistive  
 AC 2A General Purpose  
 DC Rating ..... 12 to 30 Vdc  
 DC 2 A

Position Feedback ..... 0 to 1000 Ohm <10 mA

Feedback Signal ..... Position output signal (wires 9-2) GMA16x.xx/  
 GMA15x.xx

## Voltage Output

GMA16x ..... 0 to 10 Vdc  
 GMA15x ..... 2 to 10 Vdc  
 Max. Output Current (both) ..... +1 mA, -0.5 mA

Running Torque ..... 62 lb.-in. (7 Nm)  
 Spring Return Torque ..... 62 lb.-in. (7 Nm)  
 Max. Torque ..... 186 lb.-in. (21 Nm)

Runtime for 90° operating with motor ..... 90 sec.  
 Closing on power loss ..... 15 sec. typical  
 (60 sec. Max. at -25°F)

Nominal Angle of Rotation ..... 90°, 95° max.

Shaft Dimensions ..... 1/4 to 3/4-in. (6 to 20.5 mm) Dia. ●  
 1/4 to 1/2-in. (6 to 13 mm) Sq. ■

Min. Shaft Length ..... 3/4-in. (20 mm) min. length

## Temperature

Operating ..... -25°F to 130°F (-32°C to 55°C)  
 Storage ..... -25°F to 158°F (-32°C to 70°C)

Humidity ..... 95% RH, non-condensing

Agency Approvals ..... UL listed UL60730 (Replacing UL873)  
 C-UL certified to Canadian Standard  
 C22.2 No. 24-93  
 CE

## Housing

Enclosure ..... NEMA 1  
 Material ..... Die-cast Aluminum Alloy  
 Gear Lubrication ..... Silicone free

Pre-cabled Connection ..... 18 AWG, 3 ft. (0.9 m)

Life Cycle ..... Designed for over 60,000 full strokes  
 at rated torque and temperature

Dimensions ..... 8.38" H x 3.25" W x 2.67" D  
 (212 mm H x 83 mm W x 68 mm D)

Shipping Weight ..... 2.86 lbs. (1.3 kg)

# Product Ordering

Input Signal	Cabling	Part No.				
		Standard	Span/Offset Adjustable	Dual Aux. Switches & Span/Offset Adjustable	Dual Aux. Switches Only	Position Feedback Only
Modulating, 0 to 10 Vdc, 24 Vac/dc	Plenum Cable	GMA161.1P	GMA163.1P	—	GMA166.1P	—
	Plenum Cable/Bulk	GMA161.1P/B	—	—	—	—
	Standard	GMA161.1U	GMA163.1U	GMA164.1U	GMA166.1U	—
Modulating, 24 Vac/dc 2 to 10 Vdc/10 to 2 Vdc (Signal inversion)	Plenum Cable	GMA151.1P	—	—	GMA156.1P	—
	Standard	GMA151.1U	—	—	GMA156.1U	—
2-position, 24 Vac/Vdc	Plenum Cable	GMA121.1P	—	—	GMA126.1P	—
	Plenum Cable/Bulk	GMA121.1P/B	—	—	—	—
	Standard	GMA121.1U	—	—	GMA126.1U	—
	Standard/Bulk	GMA121.1U/B	—	—	—	—
2-position, 120 Vac	Standard	GMA221.1U	—	—	GMA226.1U	—
	Standard/Bulk	GMA221.1U/B	—	—	—	—
Floating, 24 Vac/Vdc	Plenum Cable	GMA131.1P	—	—	—	—
	Standard	GMA131.1U	—	—	GMA136.1U	GMA132.1U

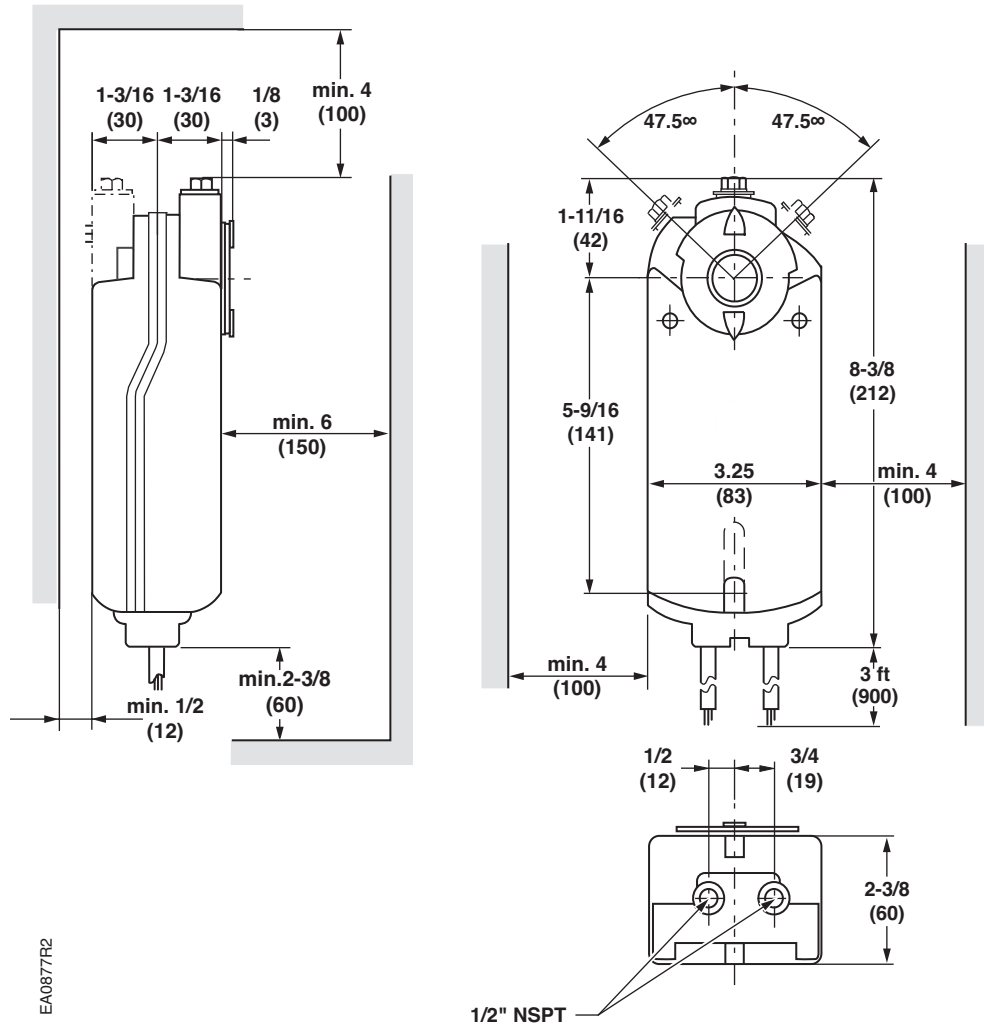
### Ordering Notes:

Bulk packages contain 10 actuators.



# Dimensions

## GMA/GEB Series OpenAir Damper Actuator



EA0877R2

Dimensions shown in inches (mm).

B-13

Damper Actuators

2x

Bull Valley grew their membership by 100% in 2020, due in part to the peace of mind afforded by the Climatix RTU fresh air purge functionality.



**Better efficiency**

Climatix RTU solution monitors performance to drive energy efficiency, enhance system lifespan, and improve uptime.



**Automatic indoor air quality**

Climatix RTU monitors carbon dioxide and increases fresh air supply when CO2 levels become too high (demand-controlled ventilation).



**Remote access for better control**

The Climatix RT controller and mobile app create a combined, cloud-based solution that enables remote monitoring, which means fewer truck rolls for service and maintenance.



**Fresh air purge**

Created in response to the COVID-19 pandemic this feature enables maximum fresh air intake into buildings without using mixed or return air.

**50% Labor savings**  
"It's plug and play. You don't need to be a seasoned technician with tons of controls experience. You just work through the steps on the app, which is fairly intuitive. They're quick too. **We can do each one in about two to three hours. It's fair to say it's at least a 50% reduction in labor,**" says contractor, Mark Stranges.

B-14

# Bull Valley achieves **energy efficiency and comfort** for their guests



With dozens of events and thousands of people visiting the clubhouse every year, Bull Valley needed to address some deficiencies within the HVAC system and the rooftop units in particular.

Bull Valley knew the Climatix RTU Solution was a no-brainer and jumped on the opportunity knowing that it would save them money on their energy bills and make for a safer indoor environment for members.

Visit [usa.siemens.com/bullvalley](http://usa.siemens.com/bullvalley) to learn more.

We have not seen anything else on the market that is as easy to use as this product. It is something we can train our people on at a national level, making it a very good fit for our business model."

— **Mark Stranges**

Contractor / Owner Rabine Mechanical



## Electronic Damper Actuator Spring Return

### Easily Replaces:

- Belimo AF Series



### 160 lb.-in. Torque

- 24 Vac/dc, 2-Position Control
- 120 Vac, 2-Position Control
- 24 Vac/dc, Floating Control
- 24 Vac/dc, 0 to 10 Vdc/2 to 10 Vdc, Modulating Control



GCA Series Spring Return  
Electronic Damper Actuator.

### Description

Designed for control of building HVAC dampers, the OpenAir GCA Series Direct-coupled, Spring Return Electronic Actuators are available in 0 to 10 Vdc or 2 to 10 Vdc modulating, floating and two-position (on/off) control models.

### Features

- 24 Vac/dc compatible
- Visible position indication
- Self-centering shaft coupling
- Bidirectional fail-safe spring return
- Rugged all metal housing
- Accepts shaft diameters up to 1" (25 mm)
- Quiet, low-power operation
- Brushless DC motor technology with stall protection
- Assembled in the U.S.A.
- Manual override
- Precabled
- All modulating types contain built-in feedback

### Options

- Independently adjustable dual auxiliary switches
- Potentiometer for floating models
- Adjustable span and offset
- Signal inversion

### Applications

The OpenAir GCA Series Damper Actuators are ideal for large economizer dampers, constant or variable air volume installations for the control of return air, mixed air, exhaust, and face and bypass dampers that require up to 160 lb.-in. (18 Nm) torque.

The actuators are designed for applications where the damper is required to return to a fail-safe position when there is a power failure.

Models are available with either an appliance cable for wiring in conduit or a plenum-rated cable for applications where conduit is not required.

B-15

Damper Actuators

# Specifications

## Operating Voltage (1–2)

GCA1xx.....	24 Vac ±20%, 24 Vdc ±10%
GCA22x.....	120 Vac ±10%

**Frequency** ..... 50 to 60 Hz

## Power Consumption

GCA15x.xx & GCA16x.xx	
Running.....	7 VA (5 W)
Holding.....	5 VA (3 W)

GCA12x.xx AC 24 Vac/dc	
Running.....	7 VA (5 W)
Holding.....	5 VA (3 W)

GCA22x.xx AC 120 Vac	
Running.....	8 VA
Holding.....	6 VA

GCA13x.xx AC 24 Vac/dc	
Running.....	7 VA (5 W)
Holding.....	5 VA (3 W)

## Input Signal (8–2)

GCA16x	
Voltage-input.....	0 to 10 Vdc (max. 35 Vdc)
Input Resistance.....	>100 K Ohms

GCA15x	
Voltage-input.....	0 to 10 Vdc or 2 to 10 Vdc (max. 35 Vdc)
Input Resistance.....	>100 K Ohms

## Position Output Signal (9–2)

GCA16x/GCA15x	
Voltage-output.....	0 to 10 Vdc
Max. Output Current.....	±1 mA

**Equipment Rating for Operating Voltage, Input Signal, and Position Output Signal** ..... Class 2

## Control Signal Adjustment

Offset (start point).....	0 to 5 Vdc
Factory setting.....	0 V
Span.....	2 to 30 Vdc
Factory setting.....	10 V

## Dual Auxiliary Switch

Contact Rating	
Standard Cable.....	6 A resistive, 2 A General Purpose
Plenum Cable.....	4 A resistive, 2 A General Purpose

## Voltage

Standard Cable.....	24 to 250 Vac
Plenum Cable.....	24 Vac

## Switch Range

Switch A.....	0° to 90° with 5° intervals
Recommended Range.....	0 to 45°
Switch B.....	0° to 90° with 5° intervals
Recommended Range.....	45° to 90°

Switching Hysteresis..... 2°

## Position Feedback

GCA132.1x ..... 0 to 1000 Ohm <10 mA

## Torque

Running Torque.....	160 lb.-in. (18 Nm)
Spring Return.....	160 lb.-in. (18 Nm)
Max. Torque.....	<360 lb.-in. (40 Nm)

## Runtime for 90° operating with motor

Closing (on power loss) with Spring Return..... 15 seconds

**Nominal Angle of Rotation** ..... 90°

**Max. Angular Rotation** ..... 95°

## Temperature

Operation.....	-25°F to 130°F (-32°C to 55°C)
Storage and Transport.....	-40°F to 158°F (-40°C to 70°C)

**Humidity** ..... 95% RH, non-condensing

**Shaft Size** ..... 3/8 to 1-in. (8 to 25 mm) Dia. ●  
1/4 to 3/4-in. (6 to 18 mm) Sq. ■

**Min. Shaft Length** ..... 3/4-in. (20 mm)

**Housing Enclosure** ..... NEMA 2\*

**Material** ..... Die-cast Aluminum alloy

**Pre-cabled Connection** ..... AWG 18

**Cable Length** ..... 3 ft. (0.9 m)

**Agency Approvals** ..... UL60730  
cUL C22.2 No. 24-93  
CE

**Dimensions** ..... 12" H x 4.75" W x 2.88" D  
(305 mm H x 121 mm W x 73 mm D)

**Shipping Weight** ..... 4.85 lb. (2.2 kg)

\*Refer to Installation Instructions for acceptable mounting positions.

# Product Ordering

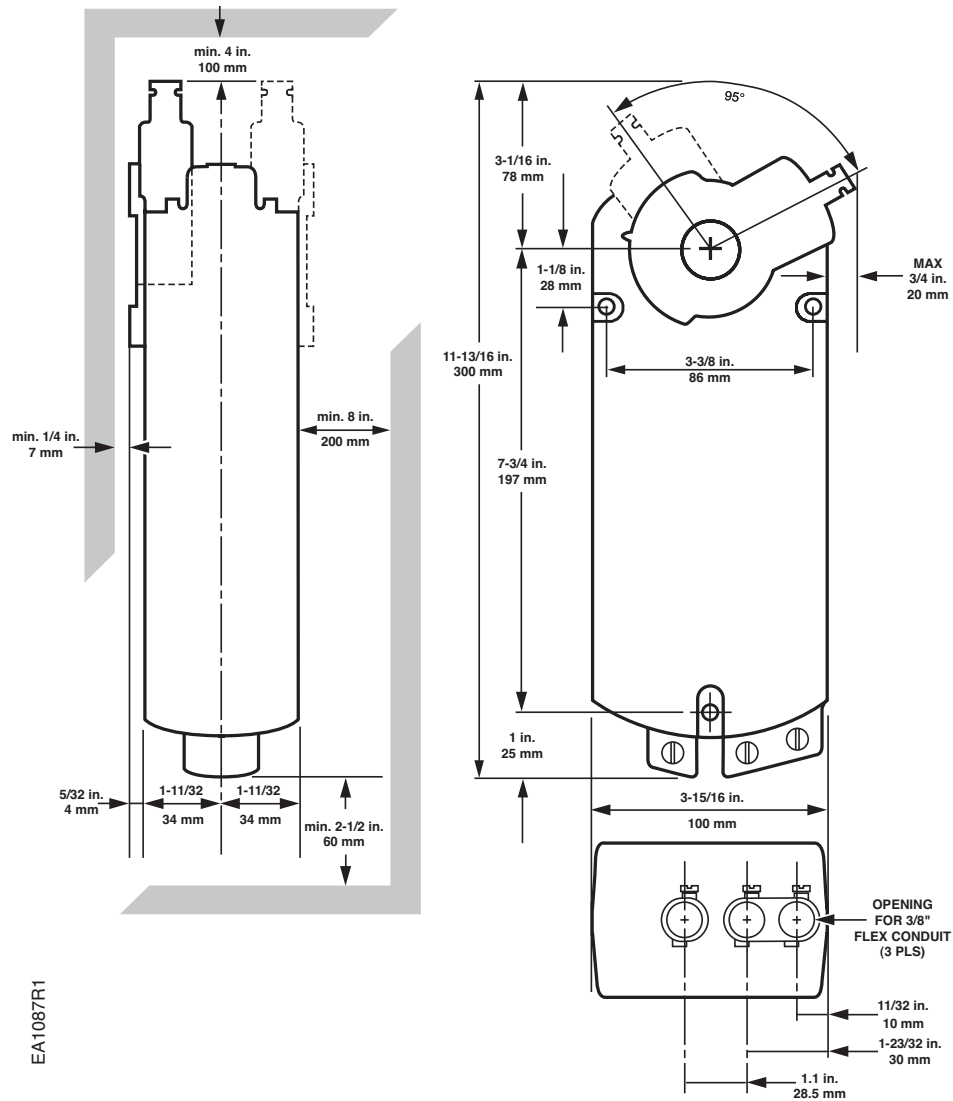
Input Signal	Cabling	Part No.						
		Standard	Span/Offset Adjustable	Dual Aux. Switches & Span/Offset Adjustable	Dual Aux. Switches Only	Position Feedback Only	Oversized Shaft Adapter Only	Oversized Shaft Adapter & Dual Aux. Switches
0 to 10 Vdc, 24 Vac/dc	Standard	GCA161.1U	GCA163.1U	GCA164.1U	GCA166.1U	—	GCA161.3U	—
	Plenum Cable	GCA161.1P	GCA163.1P	GCA164.1P	GCA166.1P	—	—	—
	Plenum Cbl/Bulk	GCA161.1P/B	—	—	—	—	—	—
0 to 10 Vdc or 2 to 10 Vdc, Modulating 24 Vac/dc, (Signal Inversion)	Standard	GCA151.1U	—	—	GCA156.1U	—	—	—
	Plenum Cable	GCA151.1P	—	—	GCA156.1P	—	—	—
2-position, 24 Vac/dc	Standard	GCA121.1U	—	—	GCA126.1U	—	GCA121.3U	GCA126.3U
	Standard/Bulk	GCA121.1U/B	—	—	-	—	—	—
	Plenum Cable	GCA121.1P	—	—	GCA126.1P	—	—	—
2-position, 120 Vac	Standard	GCA221.1U	—	—	GCA226.1U	—	GCA221.3U	GCA226.3U
	Standard/Bulk	GCA221.1U/B	—	—	—	—	—	—
Floating, 24Vac/dc	Standard	GCA131.1U	—	—	GCA136.1U	GCA132.1U	—	—
	Plenum Cable	GCA131.1P	—	—	GCA136.1P	—	—	—

## Ordering Notes:

Bulk packages contain 8 actuators

# GCA Series Dimensions

## GCA/GIB/GBB Series OpenAir Damper Actuator



EA1087R1

B-17

Damper Actuators



B-18

# Rooftop unit performance made easy with the Climatrix RTU Solution

The Climatrix RTU solution simplifies maintenance and management of rooftop units to make life easy. It's a pre-engineered package specially designed to optimize RTU performance out of the box. No special controller programming is required — it's done for you. The sensors you need are included in one kit that works with any manufacturer's rooftop unit with up to three cooling compressors and two stages of heating.

Visit [usa.siemens.com/rtu](http://usa.siemens.com/rtu) to learn more.



Download  
Climatrix  
mobile app



Download on the  
App Store



GET IT ON  
Google Play



**SIEMENS**

## Rotary, Electronic Damper Actuators Fail Safe and Fail-In-Place



**53 lb.-in. Torque**  
 2-Position Control  
 Floating Control  
 0-10/2-10 Vdc Modulating Voltage Control  
 (0) 4-20 mA Modulating Current Control



GNP/GAP Series Spring Return and Non-Spring Return Electronic Damper Actuator.

### Description

Designed for control of critical environments, the OpenAir direct-coupled fail safe/fail-in-place electronic actuators are available in modulating, two-position, and floating control for laboratory fume hoods, supply and exhaust units.

### Features

- Fast operation, 2 seconds runtime
- One model performs all control signals:
  - 2-position
  - Floating
  - Modulating (0(2) to 10 Vdc and 4 (0) to 20 mA)
- 24 Vac/dc compatible
- Selectable fail-safe position (fail open or closed)
- Feedback standard on all models
- Highly accurate positioning
- Self centering
- Unique self-centering shaft coupling
- Assembled in the U.S.A.
- Plenum rated
- UL and cUL listed, CE certified
- Manual Override
- Precabled

### Options

- Available with dual, independently adjustable auxiliary switches

### Applications

Used in laboratory fume hoods, constant or variable air volume installations for the control of supply and exhaust air terminals; 53 lb-in (6 Nm) torque.

Models designed for applications that require the damper to return to a fail-safe position when there is a power failure; or models for fail-in-place.

B-19

Damper Actuators

## Specifications

<b>Operating Voltage (1–2)</b> .....	24 Vac/dc ±20%
<b>Frequency</b> .....	50 to 60 Hz
<b>Power Consumption</b>	
GNP19x/GAP19x	
Running .....	28 VA (19 W)
Holding .....	8 VA (5 W)
<b>Control Signal Y/Y1 (Wires 8-2)</b>	
Modulating Input Signal	
Voltage Input Signal .....	0 to 10 Vdc (Max. 35 Vdc) or 2 to 10 Vdc (Max. 35 Vdc)
Current Input Signal .....	4-20 mA or 0-20 mA
Input Resistance.....	< 20k ohms
Floating Input Signal .....	0 or 24 Vac/dc Clockwise
<b>Control Signal Y2 (Wires 7-2)</b>	
Floating Input Signal.....	0 or 24 Vac/dc Clockwise
<b>Position Output Signal (Wires 9-2)</b>	
Voltage-Output .....	0 to 10 Vdc
Maximum Output Current DC.....	± 1 mA
<b>Equipment Rating</b> .....	Class 2, in Accordance with UL/CSA Class III per EN 60730
<b>Dual Auxiliary Switches</b>	
Contact Loading .....	6 A resistive, 2A inductive
Voltage (No Mixed Operation 24 Vac/230 Vac).....	24 to 250 Vac
Switch Range .....	5° to 90°
Step Increments .....	5°
<b>Feedback Signal (Wires 9-2)</b>	
Position Output Signal.....	0 to 10 Vdc
Maximum Output Current.....	DC ± 1 mA
<b>Torque</b>	
Running Torque .....	53 lb-in (6 Nm)
Maximum Torque.....	142 lb-in (16 Nm)

<b>Runtime for 90° Operating with Motor</b> .....	< 2 seconds
Fail-safe position on power loss (for GNP19x only) .....	2 seconds
<b>Nominal Angle Of Rotation</b> .....	90°
<b>Maximum Angular Rotation</b> .....	95°
<b>Fail-Safe Operation</b>	
GNP Actuator Series .....	On initial power-up, and after a power-fail event, the GNP actuators require up to 90 seconds for the capacitors to fully charge.
During this time the actuator will respond to positioning commands, but will not power-fail until the capacitors are fully charged.	
<b>Temperature</b>	
Operation.....	-0°F to 122°F (-18°C to 50°C)
Storage and Transport.....	-26°F to 158°F (-32°C to 70°C)
<b>Humidity</b> .....	95% RH, Non-condensing
<b>Shaft Size</b> .....	1/4 to 3/4-inch (6.4 to 20.5 mm) dia. ● 1/4 to 1/2-inch (6.4 to 13 mm) square ■
<b>Minimum Shaft Length</b> .....	3/4-inch (20 mm)
<b>Housing Enclosure</b> .....	NEMA 1 IP54 according to EN 60 529*
<b>Material</b> .....	Die-cast Aluminum Alloy
<b>Cable Length</b> .....	3 Ft. (0.9 m)
<b>Agency Approvals</b> .....	UL 873 cUL C22, 2 No. 24-93 CE
<b>Dimensions</b> .....	8-3/8" H x 3-1/4" W x 2-3/8" D (212 mm H x 83 mm W x 60 mm D)
<b>Shipping Weight</b> .....	3 lbs 6 oz

\*Limited positions; refer to OpenAir™ GNP/GAP Series Installation Instructions, 129-541.

B-20

Damper Actuators

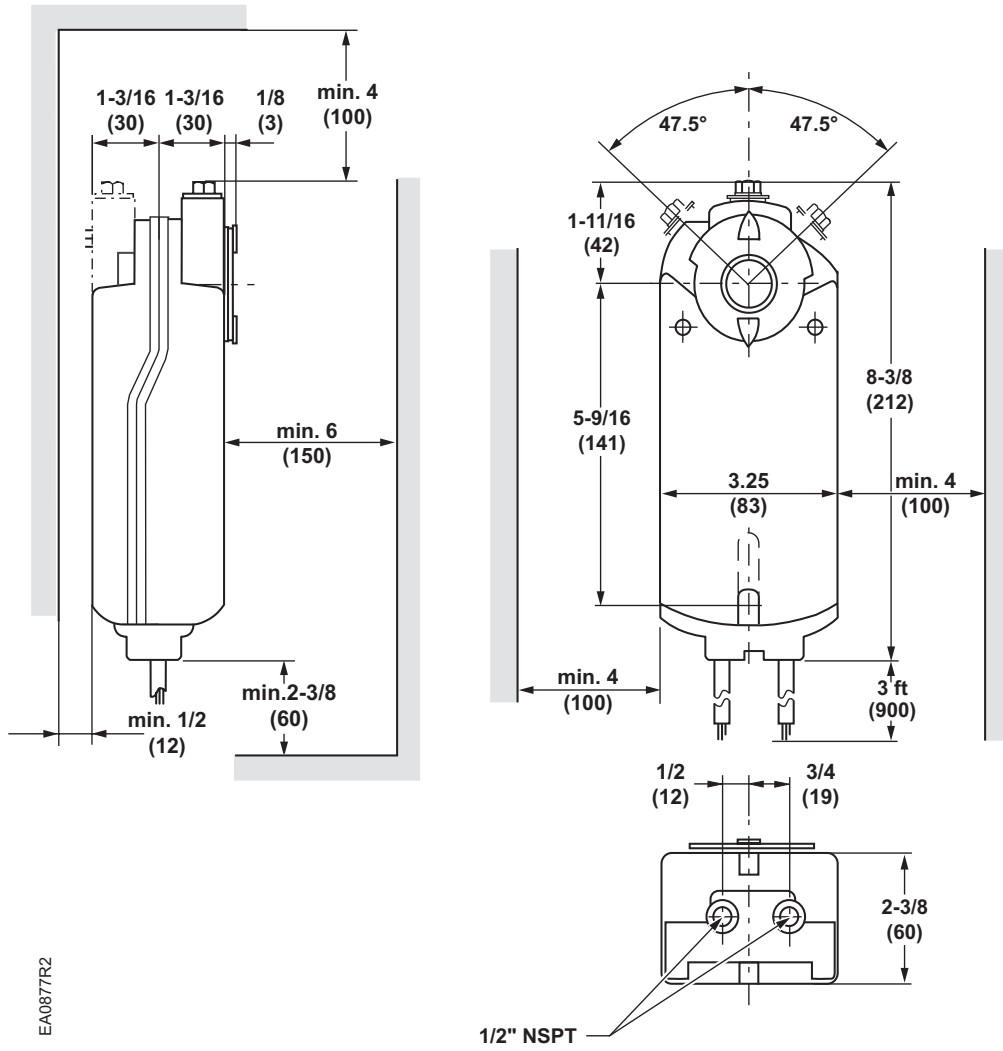
## Product Ordering

Input Signal	Standard Model with Plenum Cable	Dual Adjustable Auxiliary Switches	Mutli-Packed Actuators
<b>Fail Safe</b> 2P, Floating, 0-10 Vdc, 2-10 Vdc, 4-20 mA	<b>GNP191.1P</b>	<b>GNP196.1P</b>	<b>GNP191.1P/M10</b>
<b>Fail-in-place</b> 2P, Floating, 0-10 Vdc, 2-10 Vdc, 4-20 mA	<b>GAP191.1P</b>	<b>GAP196.1P</b>	—



# Dimensions

## GNP/GAP Series Rotary, Electronic Damper Actuators



EA0877R2

Dimensions shown in inches (mm).



Siemens offers a 5-year warranty on damper actuators.\*



B-22

# Built for long-lasting performance

Our OpenAir™ series provides more torque sizes to meet all of your needs. With over 40 years of innovating control actuators, Siemens is a recognized global leader in HVAC damper actuators. Energy-efficient, robust, flexible, and reliable — save time and costs with OpenAir.

Visit [usa.siemens.com/openair](http://usa.siemens.com/openair) to learn more.



**40+ Years**  
Innovating control actuators



**25%**  
Lower power consumption



**20%**  
More torque than the competition



**100%**  
Factory tested



**1.5+ Million**  
OpenAir reposition operations for longer life



**60+ Thousand**  
Full strokes at rated torque and temperature

\* Intelligent VAV actuators offer a 2-year warranty



## Electronic Damper Actuators Non-Spring Return

### Easily Replaces:

- Belimo CM Series



### 20 lb.-in. Torque

- 24 Vac/dc, 2-Position (Open/Closed) Control
- 24 Vac/dc, Floating Control
- 24 Vac/dc, 2 to 10 Vdc/10 to 2 Vdc, (Modulating) Control



GSD Series Non-Spring Return  
Direct Coupled Electronic Damper Actuator.

### Description

The OpenAir GSD Series direct-coupled, non-spring return rotary electronic damper actuators are 24 Vac/dc rated and available in 2-position, floating, and modulating [0(2) to 10 Vdc or 10 to 0(2) Vdc] control.

### Applications

The small footprint and torque make this actuator ideal for VAV boxes, small HVAC dampers, or residential zone dampers.

### Features

- Pre-cabled
- Plenum rated models available
- Optional built-in auxiliary switches with fixed switch points at 5° and 85° rotation
- 30-second run time
- Signal inversion capability on modulating type [0(2) to 10 Vdc or 10 to 0(2) Vdc]
- Small footprint for installation flexibility
- UL and cUL listed; CE certified
- Approved for installation in plenum areas by Underwriters Laboratories, Inc. per UL 2043.
- Low voltage models are 24 Vac/dc compatible
- 100 to 240 Vac models available
- Fixed Dual End Switches  
24 Vac to 250 Vac/12 to 30 Vdc  
6A resistive/2A inductive @ AC  
4A resistive/2A inductive @ 30 Vdc  
0.8A resistive, 0.5A inductive @ 60 Vdc
- 1/2" NPT conduit

B-23

Damper Actuators



\* Intelligent VAV actuators offer a 2-year warranty.

# Specifications

**Operating Voltage**  
 GSD1x.....24 Vac/dc ±20%  
 GSD3x..... 100 to 240 Vac ±10%

**Frequency** ..... 50/60 Hz

**Power Consumption**  
 GSD14x (24 Vac/dc 60 Hz)  
 Running ..... 2.2 VA (1.2 W)  
 Holding ..... 1.0 VA (0.5 W)  
 GSD14x (24 Vac/dc 60 Hz)  
 Running ..... 2.4 VA (1.4 W)  
 Holding ..... 1.2 VA (0.7 W)  
 GSD14x (24 Vac/dc 60 Hz)  
 Running ..... 4.5 VA (1.8 W)  
 Holding ..... 2.4 VA (0.9 W)

**Function**  
 Torque .....20 lb.-in. (2 Nm)  
 Runtime for 90° .....30 sec.  
 Nominal Angle of Rotation ..... 90°

**Auxiliary Switches**..... Fixed at 5° and 85°  
 AC Rating .....24 to 250 Vac  
   AC 6A resistive  
   AC 2A General Purpose  
 DC Rating (Standard/Plenum Cable) ..... 12 to 30 Vdc  
   DC 2A

**Shaft Size** ..... 3/8 to 1/2-in. (8 to 13 mm) round ●  
   1/4 to 7/16-in. (6 to 11 mm) square ■

**Min. Shaft Length** ..... 3/4-in (20 mm)

**Housing Enclosure** ..... NEMA 1

**Material** ..... Plenum rated rugged plastic

**Ambient Temperature**  
 Operating..... -25°F to 130°F (-32°C to 55°C)  
 Storage and Transport..... -25°F to 158°F (-32°C to 70°C)

**Ambient Humidity** .....95% RH, non-condensing

**Agency Approvals** ..... UL listed per UL 60730,  
   cUL listed to CSA C22.2 N. 24-93;  
   CE certified  
   120 through 240 Vac ..... EMC and Low Voltage Directives

**Pre-Cabled Connection** ..... AWG 18

**Cable Length** ..... 3 ft. (0.9m)

**Dimensions** ..... 5.46" H x 2.83" W x 2.45" D  
   (138.8 mm H x 72 mm W x 62.5 mm D)

**Shipping Weight** ..... 1.54 lbs. (0.55 kg)

## Product Ordering

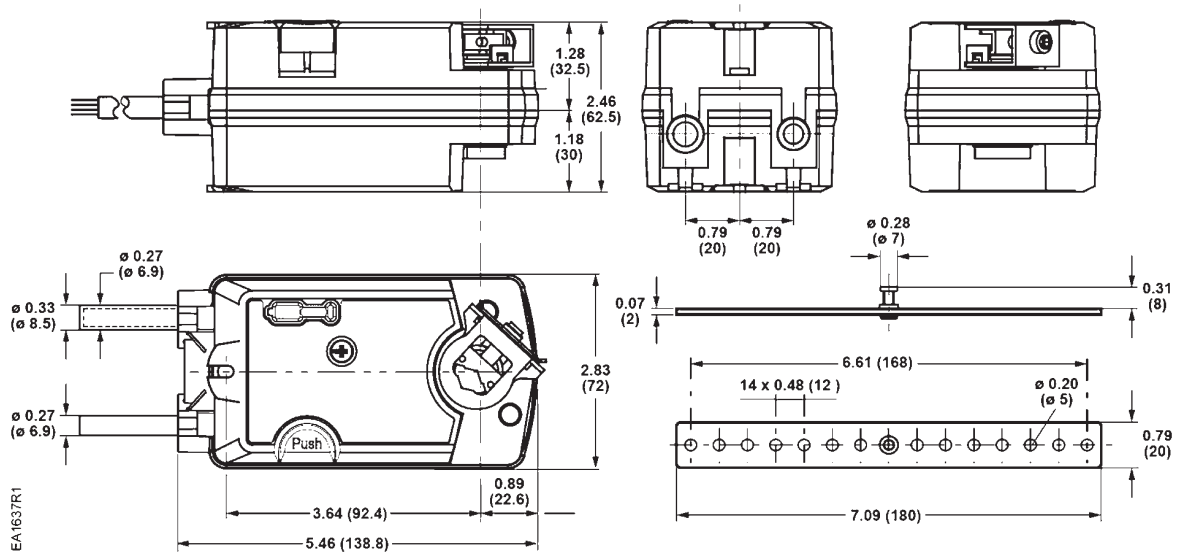
Control Signal	Cabling	Part No.	
		Standard	Aux. Switch
2-position/Floating, 24 Vac/dc	Plenum	<b>GSD141.1P</b>	<b>GSD146.1P</b>
2-position/Floating, 100 to 240 Vac	Appliance	<b>GSD341.1U</b>	<b>GSD346.1U</b>
0 to 10 Vdc or 2 to 10 Vdc Modulating 24 Vac/dc	Plenum	<b>GSD161.1P</b>	<b>GSD166.1P</b>

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Damper Actuators

# Dimensions

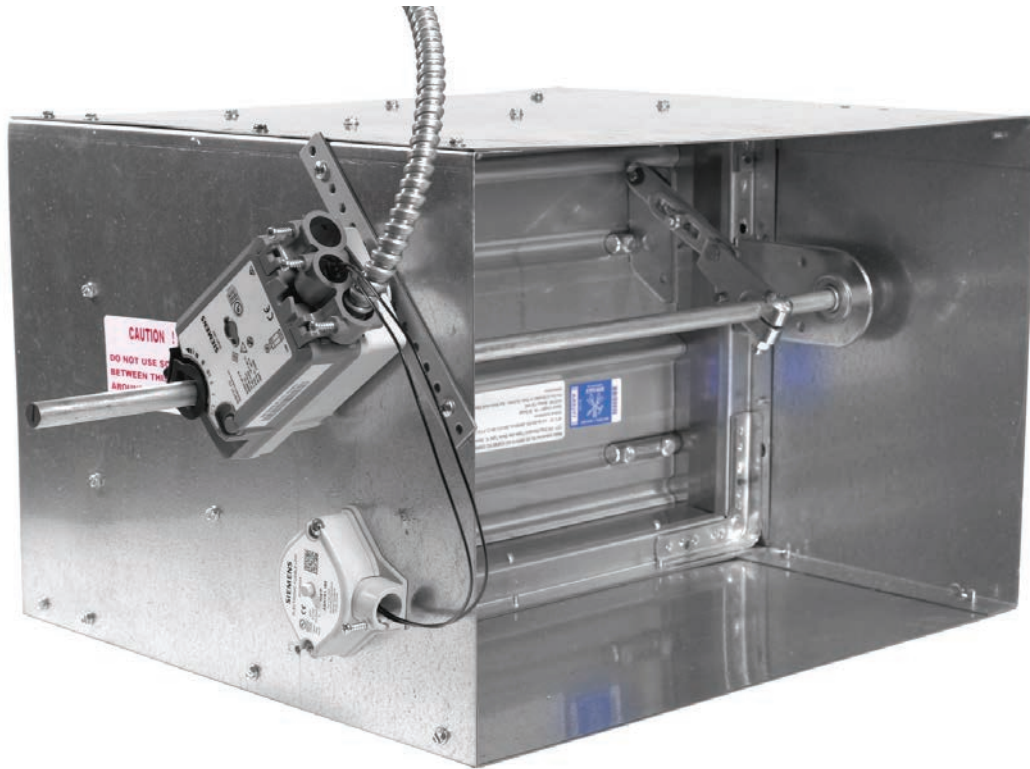
## GSD Series Actuators with Mounting Bracket



Dimensions shown in inches (mm).



Siemens offers a 5-year warranty on damper actuators.



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# The right device matters when lives matter.

## Reduce risk with OpenAir™

OpenAir fire and smoke electronic damper actuators are designed to reduce risk and deliver better life safety performance. Keep people and property protected with Siemens reliable fire and smoke damper actuators designed to meet both UL 555 and UL 555S certification requirements.

Visit [usa.siemens.com/openair](https://usa.siemens.com/openair) to learn more.

**SIEMENS**

## Electronic Damper Actuator Non-Spring Return

### Easily Replaces:

- Belimo LM Series



### 44 lb.-in. Torque

24 Vac/dc, 2-Position/Floating Control  
120 Vac, 2-Position/Floating Control  
0(2) to 10 Vdc/10 to 0(2) Vdc, Modulating Control



GDE Series Non-Spring Return  
Electronic Damper Actuator.

### Description

The OpenAir GDE Series Direct-coupled Non-Spring Return Rotary Electronic Actuator is designed for 0 to 10 Vdc or 2-position/floating control of building HVAC dampers.

### Features

#### Enhanced Features

- 141 models perform both 2-position and floating control
- Selectable modulating control (0 to 10 Vdc or 2 to 10 Vdc)
- 24 Vac/dc compatible
- Line voltage 341 models for 100 to 240 Vac 2-position/floating control
- Integral 1/2 inch conduit connection (No conduit on auxiliary switch types – use ASK76.1U bracket)

#### Standard Features

- Compact design
- Easy-to-see position indicator
- Self-adapting capability for maximum flexibility in damper positioning
- Energy efficient
- UL, cUL, CE listed
- Quiet operation
- Rated NEMA 2
- Assembled in the U.S.A.
- Manual override
- Modulating actuators contain built-in feedback
- N Versions designed for under floor installation (pluggable cable connections)

### Options

- Independently adjustable dual auxiliary switches
- Adjustable start/span
- Standard or plenum cable
- Available in bulk packs for additional savings
- Potentiometer on 2-position/floating control

### Applications

The OpenAir GDE Series Damper Actuators are used in Constant or Variable Air Volume installations for the control requiring up to 44 lb.-in. (5 Nm) torque.

Models are available with either a universal cable for wiring in conduit or a plenum-rated cable for applications where conduit is not required.

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Damper Actuators

## Specifications

<b>Operating Voltage</b> .....	24 Vac/dc 100 to 240 Vac (GDE34x)	
<b>Frequency</b> .....	50/60 Hz	
<b>Power Consumption</b>		
GDE14x		
Running .....	2 VA (1 W)	
GDE34x		
Running .....	5 VA (1.6 W)	
GDE16x		
Running .....	2.1 VA (1.2 W)	
<b>Input signal (8–2)</b>		
Voltage-Input .....	0(2) to 10 Vdc	
Input Resistance .....	100K Ohms	
<b>Position Output Signal (9–2)</b>		
Voltage-Output .....	0(2) to 10 Vdc	
Max. Output Current .....	1 mA	
<b>Equipment Rating for Operating Voltage, Input Signal, and Position Output Signal</b> .....		Class 2
<b>Control Signal Adjustment</b>		
Offset (Start Point) .....	Between 0 to 5 Vdc	
Factory Setting .....	0 V	
Span .....	Between 2 to 10 Vdc	
<b>Dual Auxiliary Switch</b>		
Contact Rating .....	4 A resistive, 2 A General Purpose	
Voltage .....	24 Vac	
Switch Range		
Switch A .....	0° to 90° with 5° intervals	
Recommended Range Usage .....	0 to 45°	
Factory Setting .....	5°	
Switch B .....	0° to 90° with 5° intervals	
Recommended Range Usage .....	45° to 90°	
Factory Setting .....	85°	
Switching Hysteresis .....	3°	

<b>Position Feedback</b>	
GDE142.1P .....	0 to 5000 Ohm <10 mA
<b>Function</b>	
Torque .....	44 lb.-in. (5 Nm)
at 50/60 Hz .....	90 sec.
Nominal Angle of Rotation .....	90°
Max. Angular Rotation .....	95°
<b>Shaft Size</b> .....	3/8 to 5/8-in. (8 to 16 mm) Dia. ● 1/4 to 1/2-in. (6 to 13 mm) Sq. ■
<b>Min. Shaft Length</b> .....	3/4-in. (20 mm)
<b>Housing Enclosure</b> .....	NEMA Type 2
<b>Material</b> .....	Plenum Rated Rugged Plastic
<b>Temperature</b>	
Operation .....	-25°F to 130°F (-32°C to 55°C)
Storage and Transport .....	-25°F to 140°F (-30°C to 60°C)
<b>Humidity</b> .....	95% RH, non-condensing
<b>Agency Approvals</b> .....	UL873 cUL C22.2 No. 24-93 CE
<b>Pre-cabled Connection</b> .....	AWG 18
<b>Cable Length</b> .....	3 ft. (0.9 m)
<b>Dimensions</b> .....	6.6" H x 2.7" W x 2.3" D (167 mm H x 68 mm W x 59.2 mm D)
<b>Weight</b> .....	1.35 lb. (0.61 kg)

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Damper Actuators



## Product Ordering

Input Signal	Part No.					Pre-Cabled	No Cables
	Standard	With Potentiometer	Slope/Offset Adjustable	Dual Aux. Switches & Slope/Offset Adjustable	Dual Aux. Switches Only		
<b>Enhanced Models</b>							
2-position/Floating 24 Vac/dc	GDE141.1U	—	—	—	—	Standard	—
	GDE141.1U/B	—	—	—	—	Standard	—
	GDE141.1P	GDE142.1P	—	—	GDE146.1P	Plenum	—
	GDE141.1P/B (24 ea)		—	—		6 ft Plenum	—
GDE141.1Q	—	—	—	—	6 ft Plenum	—	
2-position/Floating 100 to 240 Vac	GDE341.1U	—	—	—	GDE346.1U	Standard	—
Modulating 0(2) to 10 Vdc 24 Vac/dc	GDE161.1P	—	GDE163.1P	GDE164.1P	GDE166.1P	Plenum	—
	GDE161.1P/B (24 pk)	—				—	—
	GDE161.1Q	—	—	—	—	6 ft Plenum	—
<b>Standard Models</b>							
Floating 24 Vac	GDE131.1U	—	—	—	—	Standard	—
	GDE131.1U/B (24 pk)	—	—	—	—	Standard	—
	GDE131.1P	—	—	—	—	Plenum	—
	GDE131.1P/B (24 pk)	—	—	—	—	Plenum	—
	GDE131.1N	—	—	—	—	—	Post Header AMP
	GDE131.1T	—	—	—	—	—	Terminal Strip
0 to 10 Vdc 24 Vac	GDE161.1N	—	—	—	—	—	Post Header AMP
	GDE161.1T	—	—	—	—	—	Terminal Strip
	GDE161.1T/B (24 pk)	—	—	—	—	—	Terminal Strip

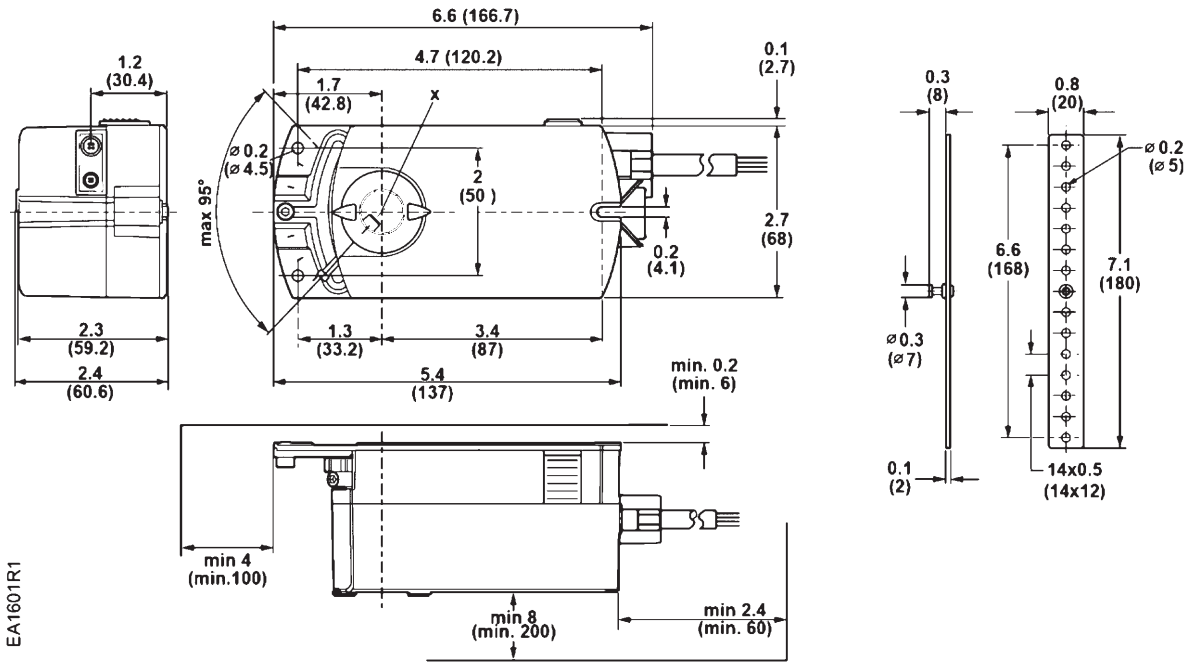
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Cables compatible with the GDE131.1N and GDE161.1N sold separately on page B-82.

Damper Actuators

# Dimensions

## GDE/GLB Series OpenAir Electronic Damper Actuator and Mounting Bracket



B-30

Damper Actuators

## Electronic Damper Actuator Non-Spring Return

### Easily Replaces:

- Belimo NM Series



### 88 lb.-in. Torque

24 Vac/dc, 2-Position/Floating Control  
100 to 240 Vac, 2-Position/Floating Control  
0 to 10 Vdc, Modulating Control



GLB Series Non-Spring Return  
Electronic Damper Actuator.

### Description

The OpenAir GLB Series Direct-coupled Non-Spring Electronic Actuator is designed for 0 to 10 Vdc or floating control of building HVAC dampers.

### Features

#### Enhanced Features

- 141 models perform both 2-position and floating control
- Selectable modulating control (0 to 10 Vdc or 2 to 10 Vdc)
- 24 Vac/dc compatible
- Line voltage 341 models for 100 to 240 Vac 2-position/floating control
- Integral 1/2 inch conduit connection (No conduit on auxiliary switch types – use ASK76.1U bracket)

#### Standard Features

- Compact design
- Easy-to-see position indicator
- Self-adapting capability for maximum flexibility in damper positioning
- UL, cUL, CE listed
- Quiet operation
- Rugged all metal housing, rated NEMA 2
- Assembled in the U.S.A.
- Manual override
- Plenum-rated cable
- Modulating actuators contain built-in feedback
- Energy efficient

### Options

- Independently adjustable dual auxiliary switches
- Adjustable start/span
- Potentiometer on 2-position/floating control

### Applications

The OpenAir GLB Series Damper Actuators are used in constant or variable air volume installations for the control requiring up to 88 lb.-in. (10 Nm) torque.

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Damper Actuators



\* Intelligent VAV actuators offer a 2-year warranty.

# Specifications

**Operating Voltage** ..... 24 Vac/dc  
100 to 240 Vac (GLB34x)

**Frequency** ..... 50 to 60 Hz

**Power Consumption**

GLB14x

Running ..... 2.2 VA (1.3 W)

GLB34x

Running ..... 5.8 VA (1.9 W)

GLB16x

Running ..... 2.5 VA (1.5 W)

**Input Signal (8–2)**

Voltage-Input ..... 0(2) to 10 Vdc

Input Resistance ..... 100K Ohms

**Position Output Signal (9–2)**

Voltage-Output ..... 0(2) to 10 Vdc

Max. Output Current ..... 1 mA

**Equipment Rating for Operating Voltage, Input Signal, and Position Output Signal** ..... Class 2

**Dual Auxiliary Switch**

Contact Rating ..... 4 A resistive, 2 A General Purpose

Voltage ..... 24 Vac

Switch Range

Switch A ..... 0° to 90° with 5° intervals

Recommended Range Usage ..... 0 to 45°

Factory Setting ..... 5°

Switch B ..... 0° to 90° with 5° intervals

Recommended Range Usage ..... 45° to 90°

Factory Setting ..... 85°

Switching Hysteresis ..... 3°

**Function**

Torque ..... 88 lb.-in. (10 Nm)

at 50/60 Hz ..... 125 sec.

Nominal Angle of Rotation ..... 90°

Max. Angular Rotation ..... 95°

**Shaft Dimensions** ..... 3/8 to 5/8-in. (8 to 16 mm) Dia.  
1/4 to 1/2-in. (6 to 13 mm) Sq.

**Min. Shaft Length** ..... 3/4-in. (20 mm)

**Housing Enclosure** ..... NEMA 2

**Material** ..... Plenum Rated Rugged Plastic

**Temperature**

Operation ..... -25°F to 130°F (-32°C to 55°C)

Storage and Transport ..... -40°F to 158°F (-40°C to 70°C)

**Humidity** ..... 95% RH, non-condensing

**Agency Approvals** ..... UL873  
cUL C22.2 No. 24-93  
CE

**Pre-cabled Connection** ..... AWG 18

**Cable Length** ..... 3 ft. (0.9 m)

**Dimensions** ..... 6.6" H x 2.7" W x 2.3" D  
(167 mm H x 68 mm W x 59.2 mm D)

**Weight** ..... 1.35 lb. (0.61 kg)

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Refer to page B-30 for Dimensions.

## Product Ordering

Input Signal	Cabling	Part No.	
		Standard	Dual Aux. Switches Only
<b>Enhanced Models</b>			
2-position/Floating, 24 Vac/dc	3' Plenum Cable	<b>GLB141.1P</b>	<b>GLB146.1P</b>
	6' Plenum Cable	<b>GLB141.1Q</b>	—
2-position/Floating, 100 to 240 Vac	Standard	<b>GLB341.1U</b>	<b>GLB346.1U</b>
0(2) to 10 Vdc	3' Plenum Cable	<b>GLB161.1P</b>	<b>GLB166.1P</b>
	6' Plenum Cable	<b>GLB161.1Q</b>	—

Damper Actuators

## VAV Compact Controller BACnet MS/TP with built-in differential pressure sensor

### Easily Replaces:

- Belimo LMV and NMV Series

GDB181.1P/BA 44 lb-in torque  
120 second run time  
GLB181.1P/BA 88 lb-in torque  
120 second run time



Available Spring 2023



GDB GLB Series  
VAV compact controller

### Description

The OpenAir GDB & GLB Series Direct-coupled VAV Compact Controllers consist of a differential pressure sensor, actuator and digitally configurable control electronics. These Non-Sprng Return damper actuators are BACnet MS/TP (BTL-listed) open communication for control of building dampers.

### Applications

The OpenAir GDB & GLB Series VAV Compact Controllers are primarily used for controlling variable or constant air volume flow within HVAC building systems. These actuators can be used for any supply and extract air control and on air dampers with a nominal torque of up to 44 lb-in (GDB) and 88 lb-in (GLB).

### Features

- BACnet MS/TP (BTL-listed) open communication for plants with variable or constant air volume flow
- Integrated, highly precise differential pressure sensor 0-2.0 inWC (0.500 Pa), damper actuator and digitally configurable air volume controller
- Air damper rotation angle mechanically adjustable between 0 and 90°
- Configurable as single device per room or for cascade control with pressure ratio 1:1, positive pressure, or negative pressure

### Quiet Operation

- Manual override switch built in
- Plenum-rated housing and cable
- UL Listed

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Damper Actuators



\* Intelligent VAV actuators offer a 2-year warranty.

# Specifications

**Operating Voltage** ..... 24Vac ± 20% (SELV)  
 24 Vac Class 2 (US)

**Frequency** ..... 50/60 Hz

**Power Consumption**..... 24Vac  
 GDB181.1P/BA  
 Running ..... ~ 1 VA / .5W  
 GLB181.1P/BA  
 Running ..... ~ 3 VA / 2.5W

**Torque**  
 GDB181.1P/BA ..... 44 lb-in (5 Nm)  
 GLB181.1P/BA ..... 88 lb-in (10 Nm)

**Runtime for 90°**  
 Operating with motor at 50hz ..... 150 seconds nominal  
 Operating with motor at 60hz ..... 120 seconds nominal

**Nominal Angle of Rotation** ..... 90°

**Max. Angular Rotation** ..... 95° ± 2°

**Direction of Rotation**  
 Adjustable by tool or over bus ..... Clockwise / Counter-Clockwise

**Life Expectancy** ..... 1.5M Full Stroke Cycles 5M repositions

**Min. Shaft Length** ..... 3/4-inch (20 mm)

**Shaft Dimensions** ..... 3/8 to 5/8-in. (8 to 16 mm) round  
 1/4 to 1/2-in. (6 to 13 mm) square

**Housing**  
 Enclosure ..... IP54  
 Material ..... Plenum-Rated Plastic

**Temperature**  
 Operation..... 32°F to 122°F (0°C to 50°C)  
 Transport ..... -13°F to 158°F (-25°C to 70°C)  
 Storage ..... -23°F to 113°F (-5°C to 45°C)

**Humidity** ..... .5%- 95% rh non-condensing

**Agency Certifications**  
 UL/ CUL  
 EN 60730-x  
 CE Conformity for Residential, Commercial and Industrial Environments  
 EN 50491-3, EN 50491-5

## Agency Certifications (cont.)

EN ISO 16848-2  
 EN 60730-x  
 Australian RCM Conformity

**Pre-cabled Connection** ..... 18 GA, 3 ft (0.9m)

**Dimensions** ..... 6.22" H x 2.8" W x 2.4" D  
 (158 mm H x 71 mm W x 61 mm D)

**Shipping Weight**  
 Single pack ..... ~ 1.32 lb. (0.6 kg)

## Communication Protocol

BACnet MS/TP ..... RS-485, galv. Separated  
 Number of Nodes ..... Max. 32  
 Address Range ..... 0..128; Default: 1  
 Transmission Formal ..... 1-8-N-1  
 Max. Master ..... 1...127; Default: 127  
 Device Object ID ..... 0..4193404; Default: 10000  
 Baudrates (kBaud) ..... Auto / 9.6 / 19.2 / 38.4 / 57.6 / 76.8 / 115.2;  
 Default: Auto  
 Termination ..... 120 Ω electronically switchable; Default: Off

## Air Volume Flow Controller

Type ..... 3 Position Controller with Hysterisis  
 Vmax, adjustable ..... 20% to 120%  
 resolution 1% / factory setting 100%  
 Vmin, adjustable ..... -20% to 100%  
 resolution 1% / factory setting 0%  
 Vn = F(dpn), adjustable ..... 1.0 to 3.16  
 resolution 0.01 / factory setting 1.00

## Differential Pressure Sensor

Connection Tubes (interior Diameter) ..... 1/8-inch to 5/16-inch  
 (3 mm to 8 mm)  
 Measuring Range ..... 0 to 500 Pa  
 Operating Range ..... 0 to 300 Pa  
 Zero Point ..... + - 0.2 Pa  
 Amplitude ..... + - 4.5 % of the measured value  
 Drift ..... + - 0.1 Pa / Year  
 Max. Permissible Operating Pressure ..... 3,000 Pa  
 Max. Permissible Overload on One Side ..... 3,000 Pa

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Damper Actuators



AST20



ACS931



AST22

## Product Ordering

Torque Size	Part No.
44 Lb-in.	BACnet MS/TP GDB181.1P/BA
88 Lb-in.	GLB181.1P/BA

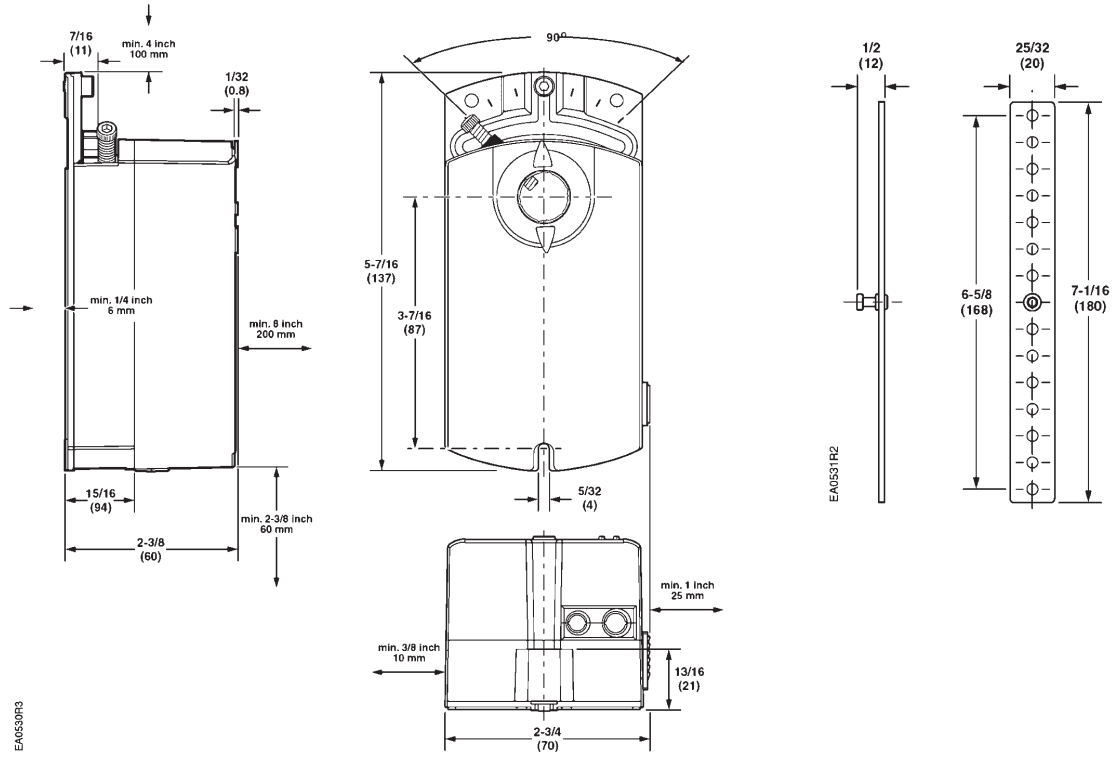
## Accessories

Commissioning Tools	Part No.
Handheld Tool	AST20
PC Tool For Download	ACS931
Actuator Adapter for PC Tool	AST22

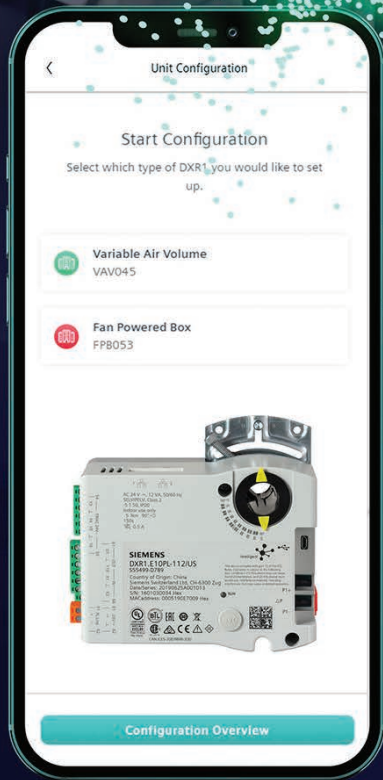
\*See accessories section for additional information on commissioning tools

# Dimensions

## GDB & GLB Series OpenAir Damper Actuators



Dimensions shown in inches (mm).



# Intelligent VAV Actuator solution Commissioning made easy

The OpenAir™ Intelligent Variable Air Volume (VAV) actuator is a simple plug-and-play solution that is easy to commission and delivers reliable air volume control.

The Climatix mobile app transforms the commissioning process, making it intuitive for technicians at any experience level.

Visit [usa.siemens.com/vav-solutions](http://usa.siemens.com/vav-solutions) to learn more.



**Easy Commissioning**  
Empowers any experience level technician



**Productivity**  
Save time and stay on schedule



**100%**  
Factory tested



**40+ Years**  
Innovating control actuators



**Up to 5 Million**  
Repositions for longer life



**Up to 100 Thousand**  
Full strokes

Download  
Climatix  
mobile app



Download on the  
App Store



GET IT ON  
Google Play



**SIEMENS**



## Intelligent Variable Air Volume Actuator

### 88 lb-in torque

BACnet I/P Communications (BTL Certified)

24 Vac Operating Voltage

150 second run time

Internal 0 to 500 Pa Differential

Pressure Sensor



The Intelligent VAV actuator with BACnet open communication

### Description

The OpenAir Intelligent VAV actuator incorporates a differential pressure sensor, VAV logic, and a built-in non-spring return damper actuator. These BTL certified actuators are commissioned with the Climatix mobile app and are compatible with most BACnet/IP open communication platforms.

### Features

- Built-in 88 lb-in (10 Nm) actuator
- Internal 0..2.0 inWC (0...500 Pa) differential pressure sensor
- 2-port Ethernet switch
- PL-Link bus to connect room unit sensors and (including bus power) QMX3.P34, QMX3.P30, QMX3.P74, QMX3.P70
- Applications for Variable Air Volume, Fan Powered Box, and Constant Air Volume
- One to three stages of electric heat
- Modulating electric heating with room or supply temperature control
- Modulating hot water with room or supply temperature control
- Separate temperature setpoints for each operating mode
- Separate minimum and maximum cooling and heating flow setpoints
- Separate minimum ventilation air volume flow setpoint for each operating mode
- 2-year warranty

### Applications

The Intelligent VAV actuator is perfectly suited for variable air volume applications controlling automatic heating, ventilation and air conditioning in a room. For Variable Air Volume, Constant Air Volume and Fan Powered Box Applications.



Download iOS App



Download Android App

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Damper Actuators

## Specifications

<b>Operating Voltage</b> .....	24Vac ± 20%
<b>Frequency</b> .....	50/60 Hz
<b>Power Consumption</b> .....	~12 VA
<b>Nominal Torque</b> .....	88 lb-in (10 Nm)
<b>Runtime for 90°</b>	
Operating with motor at 60hz .....	150 seconds nominal
<b>Nominal Angle of Rotation</b> .....	90°
<b>Max. Angular Rotation</b> .....	95° ± 2°
<b>Life Expectancy</b> .....	1.5M Full Stroke Cycles 5M repositions
<b>Shaft Dimensions</b> .....	3/8 to 5/8-in. (8 to 16 mm) round 3/8 to 7/16-in. (8 to 10 mm) round with centering insert 1/4 to 1/2-in. (6 to 13 mm) square
<b>Min. Shaft Length</b> .....	3/4-inch (20 mm)
<b>Housing</b>	
Enclosure .....	IP20
Material .....	Plenum-Rated Plastic
<b>Temperature</b>	
Operation .....	32°F to 122°F (0°C to 50°C)
Transport .....	-13°F to 158°F (-25°C to 70°C)
Storage .....	-23°F to 113°F (-5°C to 45°C)
Humidity .....	5%- 95% rh non-condensing
<b>Analog Inputs</b>	
Operating Range .....	0 to 10 Vdc
Resolution .....	10mV
<b>Sensor Analog Inputs</b> .....	
Type .....	5%- 95% rh non-condensing LG / DIN-Ni 1000; Pt1k, 375/385 ; or NTC10k / NTC100K
Measuring Range .....	32°F to 122°F (0°C to 50°C)
Accuracy .....	± 0.5 K at 77°F (25°C)
Resolution .....	0.1 K at 77°F (25°C)
<b>Digital Input</b>	
Binary (0/1 digital signal) .....	For potential-free contacts
Sampling Voltage/current .....	15 Vdc, 7mA
<b>Contact Resistance</b>	
Open .....	Min. 50 kΩ
Closed .....	Max. 200 kΩ
Delay .....	10 ms
Pulse Frequency .....	Max. 20 Hz

<b>Analog Output</b>	
Control Range .....	0 to 10 V
Resolution .....	5 mV
Output Current .....	Max. 1 mA
<b>Triac Outputs</b>	
Number of Channels .....	4
Type .....	Requires 24 Vac surge to allow switching: switching to phase (24 Vac) or neutral
Current Rating .....	0.5 A Max. per channel
Voltage Rating .....	24 Vac ±20%
Max. Load .....	12 VA per channel
<b>Pressure Sensor</b>	
Measurement Range .....	0 to 500 Pa
Sample Rate .....	≤500 ms
Overload Range .....	0 to 100 kPa
Measure Range Accuracy .....	3 %
Zero Point Accuract .....	0.2 Pa
Resolution .....	12 Bit
<b>Connection Types</b>	
<b>Ethernet</b>	
Plugs .....	dual RJ45, 10M/100M fast ethernet
Interface Type .....	IEEE 802.3 compliance
Cable Type .....	100 M STP CAT 5
USB(2.0) .....	Type Micro B
<b>KNX PL-Link</b>	
Terminal .....	5.08 mm (0.2-inch), 2 pin
DPSU .....	50 mA, non-standard DPSU

<b>Agency Certifications</b>	
UL as per UL916, cUL as per CSA – C22.2 No. 205	
FCC CFR 47 Part 15 Class B	
IEC/EN 60730-1	
CAN ICES-3 (B)/ NMB-3(B)	

<b>Dimensions</b> .....	5.39"L x 5.63" W x 3.4" D (137mm L x 143 mm W x 82 mm H)
-------------------------	---

<b>Shipping Weight</b>	
Single Pack .....	~ 1.97 lb. (0.892 kg)

## Product Ordering

Input Signal	Application	Torque	Inputs	Outputs	Part No.
BACnet/IP	Variable Air Volume (VAV)	88 lb-in	2 Universal 1 Digital	4 Digital 1 Analog	<b>DXR1.E10PL-112/US</b>
BACnet/IP	Fan Powered Box (FPB)	88 lb-in	2 Universal 1 Digital	4 Digital 1 Analog	<b>DXR1.E10PL-113/US</b>

## Accessories

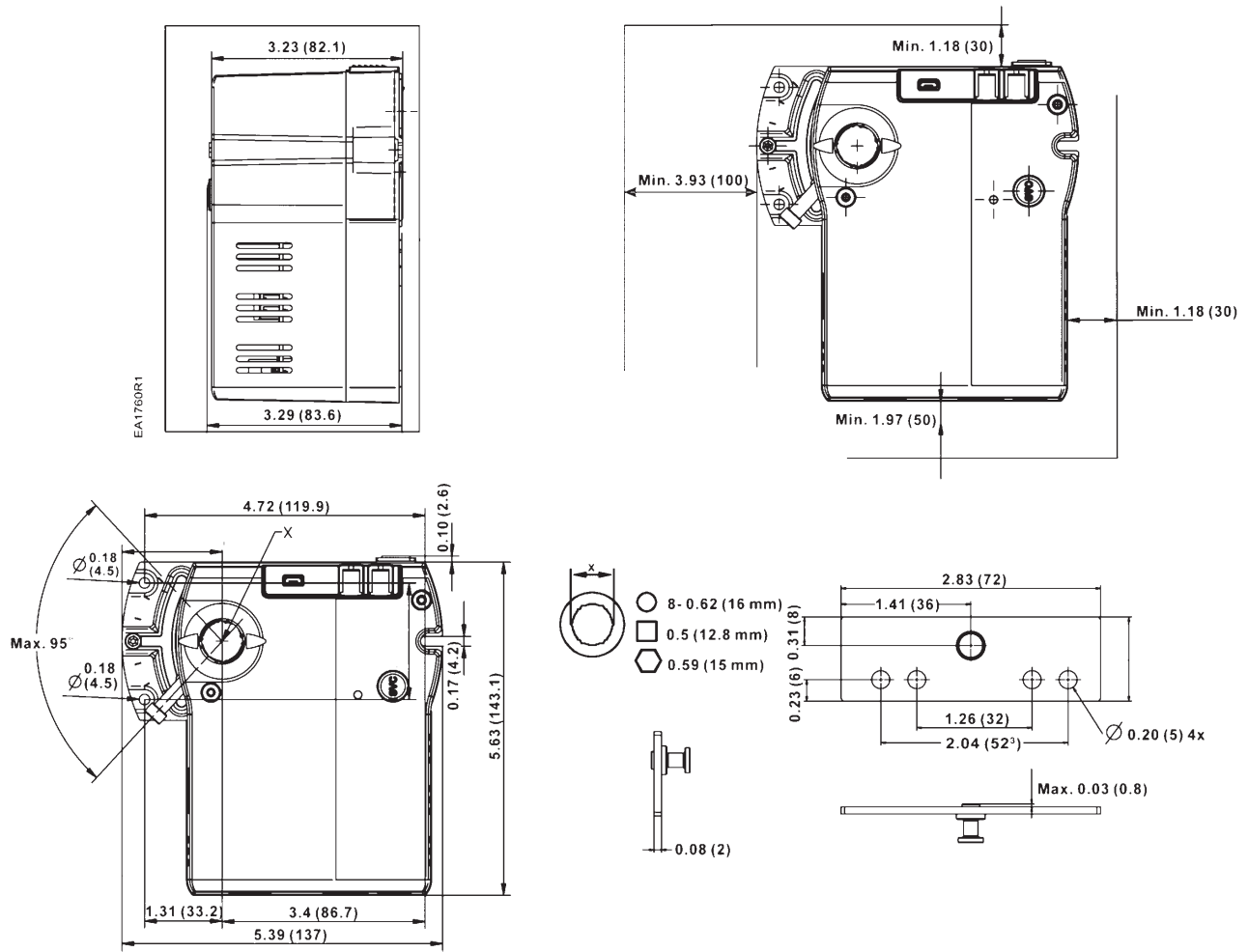
Description	Part No.
Room operator unit with sensors for temperature, segmented backlit display, touchkeys, white	<b>QMX3 P34</b>
Room operator unit with sensors for temperature, humidity, CO2, segmented backlit display, touchkeys, white	<b>QMX3 P74</b>
Room sensor for temperature, white	<b>QMX3 P30</b>
Room sensor for temperature, humidity, CO2, white	<b>QMX3 P70</b>

## Commissioning Tools

Description	Part No.
Available for download on App Store and Android	<b>Climatix App</b>
WiFi commissioning stick	<b>POL903.00/100</b>
Mini USB to Standard USB adapter cable	<b>POL-HMI-MUSB</b>

# Dimensions

## DXR1 Series OpenAir Damper Actuators



Dimensions shown in inches (mm).

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Damper Actuators

# HIT

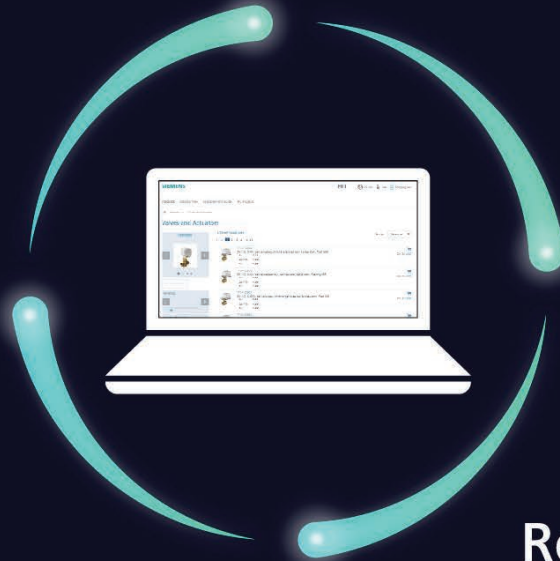
## HVAC Integrated Tool



Order



Selection



Projects



Replacement

B-40

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## Electronic Damper Actuator Non-Spring Return

**177 lb-in Torque**  
24Vac/Vdc or 100 to 240 Vac

Combined On/Off & Floating Control and  
Modulating 0 to 10 Vdc or 2 to 10 Vdc Control



Enhanced GEB Series Electronic Damper Actuator

### Description

The OpenAir direct-coupled, 24 Vac/Vdc, Non-Spring Return Electronic Damper Actuators are designed for modulating and combined on/off and floating control of building HVAC dampers.

### Features

- Brushless motor technology with stall protection
- Unique self-centering shaft coupling
- Manual override button built-in
- 177 lb-in (20 Nm) torque
- 5° preload as shipped from factory
- 5 Year warranty
- Mechanical adjustable span between 0 and 90 degrees
- Operating voltage 24 Vac/Vdc; or 100 to 240 Vac
- UL and cUL listed, CE Certified

### Options

- Optional built-in Auxiliary Switches: fixed switch points at 5° and 85° rotation

### Applications

The OpenAir GEB Series Damper Actuators are ideal for Constant or Variable Air Volume installations for the control of return air, mixed air, exhaust, and face and bypass.

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Damper Actuators



\* Intelligent VAV actuators offer a 2-year warranty.

## Specifications

**Operating Voltage** ..... 24Vac +20%  
24 Vdc +20%  
100 to 240 Vac +10%

**Frequency** ..... 50/60 Hz

**Power Consumption**..... 24Vac/Vdc

On/Off & Floating

Running .....2.3 VA / 1.1 W

Holding .....0.5 W

Modulating

Running .....2.5 VA / 1.2 W

Holding .....0.65 W

**Power Consumption**..... 100 to 240 Vac

On/Off & Floating

Running .....4 VA / 1.6 W

Holding .....0.9 W

Modulating

Running .....3.4 VA / 1.3 W

Holding .....0.6 W

**Torque**

Running .....177 lb-in (20 Nm)

Minimum Stall .....310 lb-in (35 Nm)

**Runtime for 90°**

Nominal Runtime for 90° opening or closing .....150 seconds nominal

**Nominal Angle of Rotation** ..... 90°

**Maximum Angle of Rotation** ..... 95° +/- 2°

**Life Expectancy** ..... 50,000 full stroke cycles

**Damper Shaft Size** ..... 1/4-inch to 3/4-inch (6.4 mm to 20.5 mm) round  
1/4-inch to 1/2-inch (6.4 mm to 13 mm) square  
Min. Shaft Length 3/4-inch (20 mm)

**Housing**

Enclosure ..... NEMA 1/IP54 according to EN 60 529

Material.....Die cast aluminum alloy

**Temperature**

Operation..... -25°F to 130°F (-32°C to 55°C)

Storage and Transport..... - 40°F to 158°F (-40°C to 70°C)

Humidity .....Maximum 95% rh non-condensing

### Dual Auxiliary Switch

Contact Rating

AC Rating .....24 to 250 Vac  
AC 6A Resistive  
AC 2A General Purpose

DC Rating ..... 12 to 30 Vdc  
DC 2A

Voltage

Standard Cable ..... 24Vac/Vdc; 24 to 250 Vac

Plenum Cable ..... 24 Vac/ Vdc

Switch Range

Switch A ..... 0 to 90° with 5° intervals

Recommended Range ..... 0 to 45°

Switch B ..... 0 to 90°

Recommended Range ..... 45° to 90°

Switching Hysteresis ..... 2°

### Position Feedback

GEB16x Models

Voltage Output 0 to 10 Vdc

Maximum output current ±mA

### Feedback Potentiometer

GEB142.1U0 to 1000 ohm <10 mA

#### Agency Certifications

UL60730  
cUL CAN/CSA E60730  
CE Confromity for Residential, Commercial and Industrial Environments  
Low Voltage Directive 2006/95/EC  
EN 60 730-2-14 (type 1)  
EMC 2004/108/EC  
Emmissions EN 61000-6-3

**Pre-cabled Connection** 18 GA, 3 ft (0.9m) length

**Dimensions** 7.56-in H x 3.23-in W x 2.36-in D  
( 192 mm H x 82 mm W x 60 mm D)

### Shipping Weight

Non-Switch Models 2.4 lbs (1.0 kg)

Switch Models 2.9 lbs (1.3 kg)

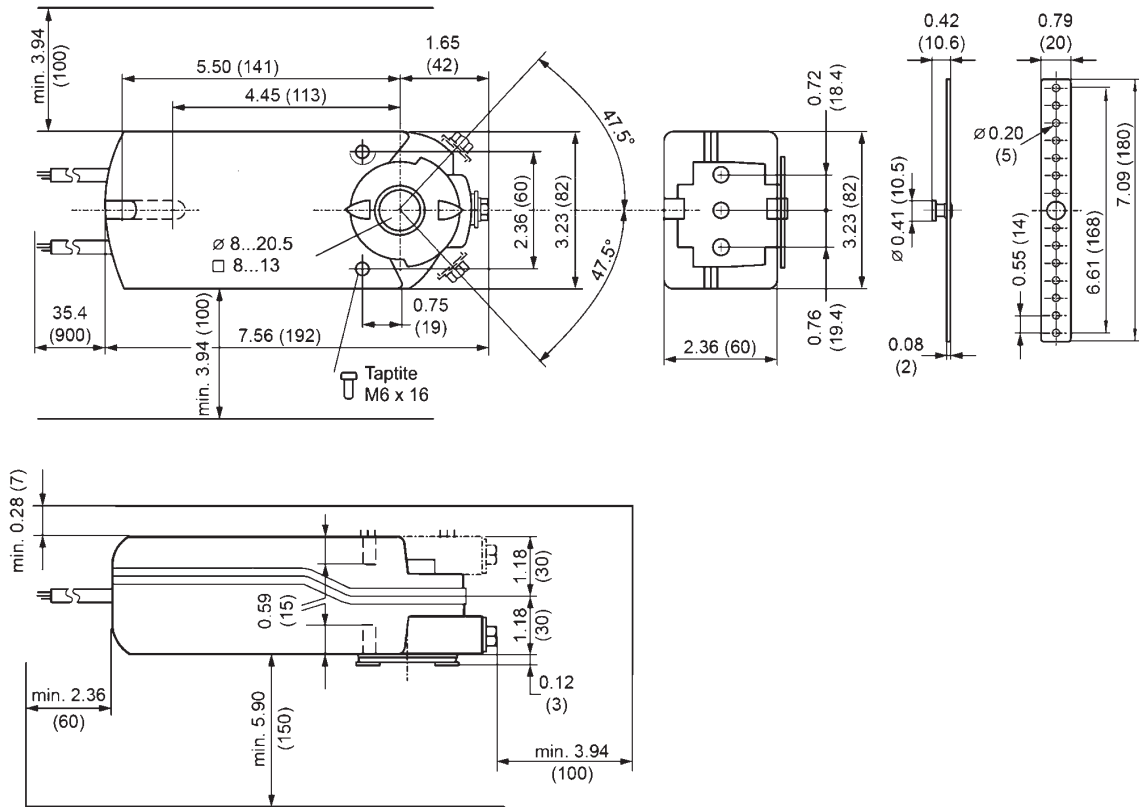
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Damper Actuators

## Product Ordering

Voltage	Description	Cabling	Part No.			
			Standard	Dual Aux. Switches Only	Dual Aux. Switches & Offset/ Span Only	Feedback Potentiometer
24 Vac/Vdc	On/Off & Floating Control	Plenum Cable	<b>GEB141.1P</b>	—	—	<b>GEB142.1U</b>
		Standard	<b>GEB141.1U</b>	<b>GEB146.1U</b>	—	—
	Modulating Control 0 (2) to 10 Vdc	Plenum Cable	<b>GEB161.1P</b>	—	—	—
		Standard	<b>GEB161.1U</b>	<b>GEB166.1U</b>	<b>GEB164.1U</b>	—
100 to 240 Vac	On/Off & Floating Control	Plenum Cable	<b>GEB341.1U</b>	—	—	—
	Modulating Control 0 (2) to 10 Vdc	Standard	<b>GEB361.1U</b>	—	—	—

## GEB Series OpenAir Damper Actuators



Dimensions shown in inches (mm).



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# We're **happy** to assist you

Our customer support team is ready to assist you with general inquiries, ordering, fulfillment, shipping questions, and more.

Call your dedicated support specialist at 800-516-9964 from 6:30 am–5:30 pm Central time Monday–Friday.

Additionally, product information and order support is available online for your convenience at [usa.siemens.com/iMall](https://usa.siemens.com/iMall).

**SIEMENS**



## Rotary Electronic Damper Actuator Non-Spring Return

### Easily Replaces:

- Belimo SM/AM Series



### 221 lb.-in. Torque

0 to 10 Vdc, Modulating Control  
Floating Control



GBB Series Non-Spring Return  
Electronic Damper Actuator.

### Description

Designed for control of building HVAC dampers, the OpenAir GBB Series Direct-coupled 24 Vac Non-Spring Return Electronic Damper Actuators are available in 0 to 10 Vdc and floating control.

### Features

- Brushless motor technology with stall protection
- Self-centering shaft coupling
- Rugged all metal housing
- Quiet, low-power operation
- Accepts shaft diameters up to 1" (25 mm)
- Manual override
- Assembled in the U.S.A.
- UL, cUL and CE listed
- Modulating actuators contain built-in feedback

### Options

- Independently adjustable dual auxiliary switches
- Adjustable offset and span
- Potentiometer built in for floating controls

### Applications

The OpenAir GBB Series Damper Actuators are used in constant or variable air volume installations for the control of return air, mixed air, exhaust, and face and bypass dampers that require up to 221 lb.-in. (25 Nm) torque.

Models are available with either an appliance cable for wiring in conduit or a plenum-rated cable for applications where conduit is not required.

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Damper Actuators

# Specifications

**Operating Voltage** ..... 24 Vac ± 20%

**Frequency** ..... 50 to 60 Hz

**Power Consumption**  
 0 to 10 Vdc ..... 8 VA  
 Floating ..... 7 VA

**Input Signal (8–2)**  
 Voltage-input ..... 0 to 10 Vdc (max. 35 Vdc)  
 Input Resistance ..... 100 K Ohms

**Position Output Signal (9–2)**  
 Voltage-output ..... 0 to 10 Vdc  
 Max. Output Current ..... ±1 mA

**Equipment Rating for Operating Voltage** ..... Class 2

**Runtime for 90° Opening or Closing**  
 60 Hz ..... 125 sec.  
 50 Hz ..... 150 sec.

**Nominal Angle of Rotation** ..... 90°

**Max. Angular Rotation** ..... 95°

**Dual Auxiliary Switch**  
 Contact Rating  
 Standard Cable ..... 6 A resistive, 2 A General Purpose  
 Plenum Cable ..... 4 A resistive, 2 A General Purpose  
 Voltage  
 Standard Cable ..... 24 to 250 Vac  
 Plenum Cable ..... 24 Vac  
 Switch Range  
 Switch A ..... 0° to 90° with 5° intervals  
 Recommended Range ..... 0° to 45°  
 Switch B ..... 0° to 90° with 5° intervals  
 Recommended Range ..... 45° to 90°  
 Switching Hysteresis ..... 2°

**Position Feedback** ..... 0 to 1000 Ohm <10 mA

**Torque** ..... 221 lb.-in. (25 Nm)

**Temperature**  
 Operating ..... -25°F to 130°F (-32°C to 55°C)  
 Storage and Transport ..... -40°F to 158°F (-40°C to 70°C)

**Humidity** ..... 95% RH, non-condensing

**Agency Approvals** ..... UL873  
 cUL C22.2 No. 24-93  
 CE

**Shaft Size** ..... 3/8 to 1-in. (8 to 25 mm) Dia. ●  
 1/4 to 5/8-in. (6 to 16 mm) Sq. ■

**Min. Shaft Length** ..... 3/4-in. (20 mm)

**Housing Enclosure** ..... NEMA 2\*

**Material** ..... Die-cast aluminum alloy

**Cable Length** ..... 3 ft. (0.9 m)

**Dimensions** ..... 12" H x 4.75" W x 2.88" D  
 (305 mm H x 121 mm W x 73 mm D)

**Shipping Weight** ..... 4.4 lb. (2.0 kg)

\*Refer to Installation Instructions for acceptable mounting positions.

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Refer to page B-17 for Dimensions.

Damper Actuators

## Product Ordering

Input Signal	Cabling	Part No.				
		Standard	Span/Offset Adjustable	Dual Aux. Switches & Span/Offset Adjustable	Dual Aux. Switches Only	Position Feedback
0 to 10 Vdc	Standard	GBB161.1U	GBB163.1U	GBB164.1U	GBB166.1U	—
	Plenum Cable	GBB161.1P	GBB163.1P	GBB164.1P	GBB166.1P	—
Floating	Standard	GBB131.1U	—	—	GBB136.1U	GBB132.1U
	Plenum Cable	GBB131.1P	—	—	GBB136.1P	GBB132.1P

## Electronic Damper Actuator Non-Spring Return

### Easily Replaces:

- Belimo GM Series



### 310 lb.-in. Torque

0 to 10 Vdc, Modulating Control  
Floating Control



GIB Series Non-Spring Return Electronic Damper Actuator.

### Description

The OpenAir GIB Series Direct-coupled 24 Vac Non-Spring Return Electronic Actuators are designed for modulating and floating control of building HVAC dampers.

### Features

- Visible position indication
- Unique self-centering shaft coupling
- Rugged all metal housing
- Shaft diameters up to 1-inch (25 mm)
- All modulating types include built-in feedback
- Brushless motor technology
- Assembled in the U.S.A.
- Manual Override
- Tandem mount capability with standard GIB actuators
- Modulating actuators contain built-in feedback

### Options

- Independently adjustable dual auxiliary switches
- Adjustable offset and span
- Potentiometer built in for floating control

### Applications

The OpenAir GIB Series Damper Actuators are used in constant or variable air volume installations for the control of return air, mixed air, exhaust, and face and bypass dampers requiring up to 310 lb.-in. (35 Nm) torque.

Models are available with either an appliance cable for wiring in conduit or a plenum-rated cable for applications where conduit is not required.

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Damper Actuators

# Specifications

**Operating Voltage (1–2)** ..... 24 Vac ±20%

**Frequency** ..... 50/60 Hz

**Power Consumption**

0 to 10 Vdc ..... 8 VA

Floating ..... 7 VA

**Input signal (8–2)**

Voltage-Input ..... 0 to 10 Vdc

Input Resistance ..... 100K Ohms

**Position Output Signal (9–2)**

Voltage-Output ..... 0 to 10 Vdc

Max. Output Current ..... 1 mA

**Equipment Rating for Operating Voltage, Input Signal, and Position Output Signal** ..... Class 2

**Control Signal Adjustment**

Offset (Start Point) ..... Between 0 to 5 Vdc

Factory Setting ..... 0 V

Span ..... Between 2 to 30 Vdc

**Dual Auxiliary Switch**

Contact Rating

Standard Cable ..... 6 A resistive, 2 A General Purpose

Plenum Cable ..... 4 A resistive, 2 A General Purpose

Voltage

Standard Cable ..... 24 to 250 Vac

Plenum Cable ..... 24 Vac

Switch Range

Switch A ..... 0° to 90° with 5° intervals

Recommended Range Usage ..... 0 to 45°

Factory Setting ..... 5°

Switch B ..... 0° to 90° with 5° intervals

Recommended Range Usage ..... 45° to 90°

Factory Setting ..... 85°

Switching Hysteresis ..... 2°

**Position Feedback** ..... 0 to 1000 Ohm <10 mA

**Function**

Torque ..... 310 lb.-in. (35 Nm)

Runtime for 90° Opening or Closing

60 Hz ..... 125 sec

50 Hz ..... 150 sec

Nominal Angle of Rotation ..... 90°

Max. Angular Rotation ..... 95°

Noise Level ..... <45 dBA

**Shaft Dimensions** ..... 3/8 to 1-in. (8 to 26 mm) Dia. ●

1/4 to 5/8-in. (6 to 16 mm) Sq. ■

**Min. Shaft Length** ..... 3/4-in. (20 mm)

**Housing**

Enclosure ..... NEMA 2\*

Material ..... Die-cast Aluminum alloy

**Temperature**

Operation ..... -25°F to 130°F (-32°C to 55°C)

Storage and Transport ..... -40°F to 158°F (-40°C to 70°C)

**Humidity** ..... 95% RH, non-condensing

**Agency Approvals** ..... UL873

cUL C22.2 No. 24-93

CE

**Pre-cabled Connection** ..... AWG 18

**Cable Length** ..... 3 ft. (0.9 m)

**Dimensions** ..... 12" H x 4.75" W x 2.88" D

(305 mm H x 121 mm W x 73 mm D)

**Shipping Weight** ..... 4.4 lb. (2.0 kg)

\*Refer to the Installation Instructions for acceptable mounting positions.

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Refer to page B-17 for Dimensions.

Damper Actuators

## Product Ordering

Input Signal	Cabling	Part No.				
		Standard	Span/Offset Adjustable	Dual Aux. Switches & Span/Offset Adjustable	Dual Aux. Switches Only	Position Feedback
0 to 10 Vdc	Standard	GIB161.1U	GIB163.1U	GIB164.1U	GIB166.1U	—
	Plenum Cable	GIB161.1P	GIB163.1P	GIB164.1P	GIB166.1P	—
Floating	Standard	GIB131.1U	—	—	GIB136.1U	GIB132.1U
	Plenum Cable	GIB131.1P	—	—	GIB136.1P	GIB132.1P

## Electronic Damper Actuator

Designed for UL Listed Fire/Smoke and Smoke Control Dampers

**20 lb-in Torque**  
 2 position, 15 second run time  
 15 second Spring Return Time



GJD Series Electronic Damper Actuator

### Description

The OpenAir direct coupled, fast-acting, two-position, spring return electronic actuators are available as 24 Vac/dc, 120 Vac, and 230 Vac models. They are intended for use on UL-listed smoke control and combination fire/smoke rated dampers.

### Features

- Electronic Fusible Link (EFL) capability with three temperature ratings: 165° F (74° C), 252° F (100° C), and 250° F (121° C)
- Reversible fail-safe spring return
- Plenum rated plastic housing
- Pre-cabled lead wires
- 30-second drive/15 second return operation at rated torque, temperature and voltage
- 5 Year warranty
- Made in the USA
- Compact design for tight-fitting spaces

### Options

- Optional built-in Auxiliary Switches: fixed switch points at 5° and 85° rotation

### Applications

The GJD Series Spring Return Fire and Smoke Damper Actuator is used for the control of dampers requiring up to 20 lb-in driving torque. It is intended for control of UL listed smoke control dampers or combination fire/smoke HVAC dampers. This actuator is designed to meet the 2002 revisions to the UL555/555S and the AMCA Standard 520 applications.

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Damper Actuators



Siemens offers a 5-year warranty on damper actuators  
 \* Intelligent VAV actuators offer a 2-year warranty.

## Specifications

<b>Operating Voltage</b> .....	24Vac ±20%
	24 Vdc +20%, -10%
	120 Vac ±10%
	230 Vac ±10%
<b>Frequency</b> .....	50/60 Hz
<b>Power Consumption</b> .....	24Vac/dc / 120Vac
Running .....	~ 10 VA/ 5W
Holding .....	~ 5 VA/ 3W
<b>Power Consumption</b> .....	230 Vac
Running .....	~ 12 VA/ 5W
Holding .....	~ 7 VA/ 3W
<b>Torque</b>	
Running .....	20 lb-in (2 Nm) (minimum)
Minimum Stall .....	35 lb-in (4 Nm)
<b>Runtime for 90°</b>	
Operating with motor at 60hz .....	30 seconds nominal
Closing (on power loss) with spring return .....	15 seconds nominal
<b>Nominal Angle of Rotation</b> .....	95°
<b>Life Expectancy</b> .....	Minimum 20,000 full stroke cycles
<b>Damper Shaft Size</b> .....	0.5-inch (12.7 mm) round
<b>Min. Shaft Length</b> .....	1.4-inch (36 mm)

<b>Housing</b>	
Enclosure .....	NEMA 1/ IP40
Material .....	Plenum-Rated Plastic
<b>Temperature</b>	
Operation .....	0°F to 130°F (-18°C to 55° C)
	One time 250°F (121°C) 1/2 hour per UL555S
Storage and Transport .....	- 40°F to 158°F (-40°C to 70°C)
Humidity .....	Maximum 95% rh non-condensing
Teflon Cable .....	400°F (200°C)
<b>Agency Certifications</b> .....	UL60730
	cUL CSA 60730
	CE Conformity for Residential, Commercial and Industrial Environments
	Australian RCM Conformity
<b>Pre-cabled Connection</b> .....	19/30 strand 18 GA, 3 ft (0.9m)
<b>Dimensions</b> .....	5.61-in H x 2.83-in W x 2.48-in D
	(142.6 mm H x 72 mm W x 63 mm D)
<b>Shipping Weight</b>	
Single Pack .....	1.32 lbs (0.60 kg)

## Product Ordering

Description	Part No.		
	24Vac	120Vac	230Vac
Standard	GJD121.1U	GJD221.1U	GJD321.1U
Aux Switches 5° and 85°	GJD126.1U	GJD226.1U	GJD326.1U

\* All GJD actuators come with built-in capability to have an Electronic Fusible Link directly connected

## Compatible Electronic Fusible Links

Temperature Range	Part No.
165°F (74°C)	ASK791.165
212°F (100°C)	ASK791.212
250°F (121°C)	ASK791.250

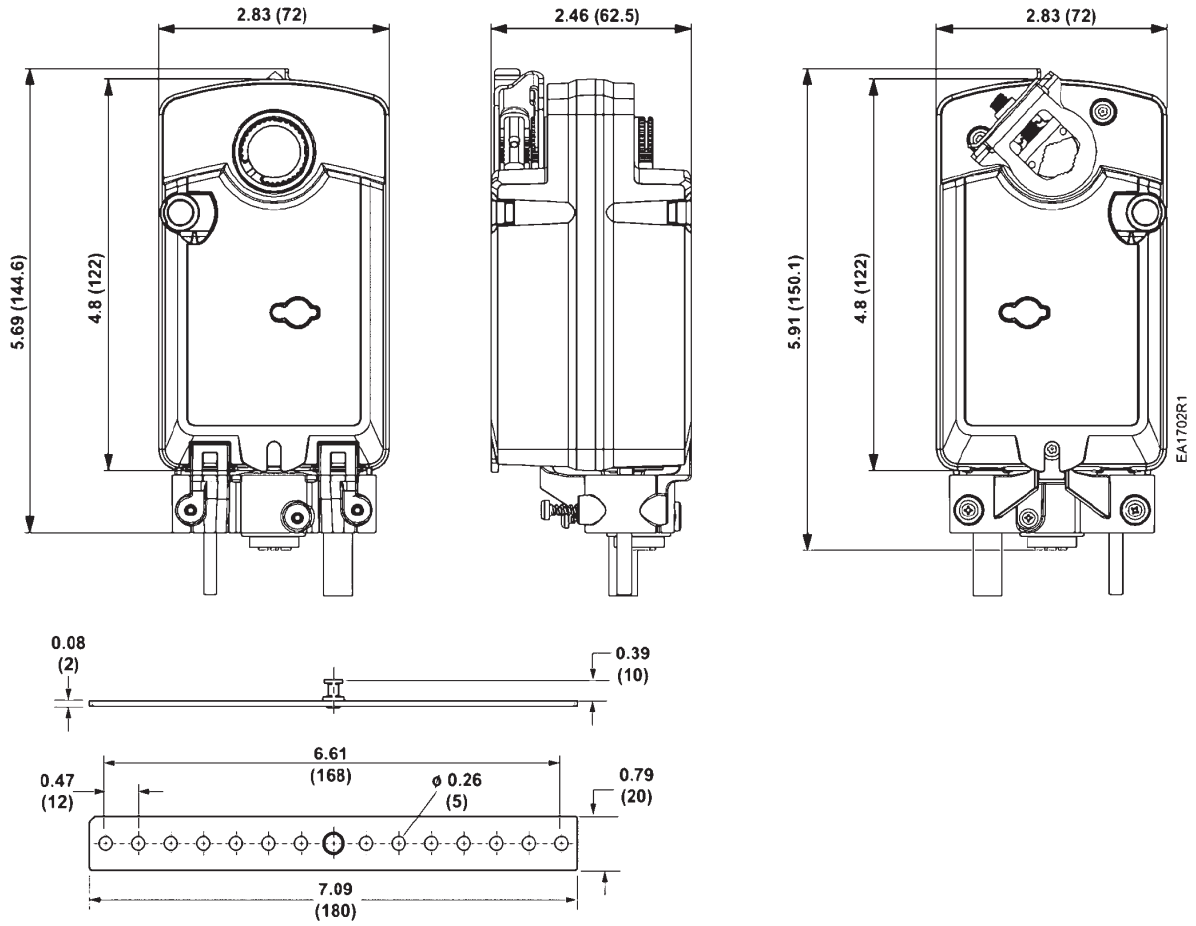
\* Determine and order appropriate actuator before selecting an EFL



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Damper Actuators

## GJD Series OpenAir Damper Actuators



Dimensions shown in inches (mm).



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# Technical support

Our Technical Support Center is open 7:00 am–6:00 pm Central time, Monday–Friday. Outside of normal operating hours, we provide an on-call service for emergency support situations via our Dallas Customer Support Center.

When you need assistance

- Call 800-877-7545, option 2
- Email [support.us.i-bt@siemens.com](mailto:support.us.i-bt@siemens.com)
- For Siemens Partners and team members, access support here: [usa.siemens.com/supportrequest](https://usa.siemens.com/supportrequest)

**SIEMENS**



## Electronic Damper Actuator

Designed for UL Listed Fire/Smoke and Smoke Control Dampers

**30 lb-in Torque**  
2 position, 30 second run time  
15 second Spring Return Time



GRD Series Electronic Damper Actuator

### Description

The OpenAir direct coupled, fast-acting, two-position, spring return electronic actuators are available as 24 Vac/dc, 120 Vac, and 230 Vac models. They are intended for use on UL-listed smoke control and combination fire/smoke rated dampers.

### Features

- Electronic Fusible Link (EFL) capability with three temperature ratings: 165° F (74° C), 252° F (100° C), 250° F (121° C), and 350° F (177° C)
- Reversible fail-safe spring return
- High temperature polymer housing
- Pre-cabled lead wires
- 30-second drive/15 second return operation at rated torque, temperature and voltage
- 5 Year warranty
- Made in the USA
- Compact design for tight-fitting spaces

### Options

- Optional built-in Auxiliary Switches: fixed switch points at 5° and 85° rotation

### Applications

The GRD Series Spring Return Fire and Smoke Damper Actuator is used for the control of dampers requiring up to 30 lb-in driving torque. It is intended for control of UL listed smoke control dampers or combination fire/smoke HVAC dampers. This actuator is designed to meet the 2002 revisions to the UL555/555S and the AMCA Standard 520 applications.

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Damper Actuators

## Specifications

<b>Operating Voltage</b> .....	24 Vac ±20%
	24 Vdc +20%, -10%
	120 Vac ±10%
	230 Vac ±10%
<b>Frequency</b>	
24Vac/dc & 120 Vac .....	50/60 Hz
230 Vac .....	60 Hz
<b>Power Consumption</b> .....	24 Vac/dc
Running .....	~ 14 VA/ 8W
Holding .....	~ 4 VA/ 2W
<b>Power Consumption</b> .....	120 Vac
Running .....	~12 VA
Holding .....	~4 VA
<b>Power Consumption</b> .....	230 Vac
Running .....	~ 12 VA
Holding .....	~ 4 VA
<b>Torque</b>	
Running .....	30 lb-in (3.4 Nm) (minimum)
Minimum Stall .....	80 lb-in (9 Nm)
<b>Runtime for 90°</b>	
Operating with smotor at 60hz .....	30 seconds nominal
Closing (on power loss) with spring return .....	15 seconds nominal
<b>Nominal Angle of Rotation</b> .....	95°

<b>Life Expectancy</b> .....	Minimum 20,000 full stroke cycles
<b>Damper Shaft Size</b> .....	0.5-inch (12.7 mm) round
<b>Min. Shaft Length</b> .....	1.4-inch (36 mm)
<b>Housing</b>	
Enclosure .....	NEMA 1/ IP40
Material.....	High temperature polymer
<b>Temperature</b>	
Operation.....	0°F to 140°F (-18°C to 55° C)
	One time 350°F (177°C) 1/2 hour per UL555S
Storage and Transport.....	- 40°F to 158°F (-40°C to 70°C)
Humidity .....	Maximum 95% rh non-condensing
Teflon Cable .....	400°F (200°C)
<b>Agency Certifications</b> .....	UL60730
	cUL CSA 60730
	CE Conformity for Residential, Commercial and Industrial Environments
	Australian RCM Conformity
<b>Pre-cabled Connection</b> .....	19/30 strand 18 GA, 3 ft (0.9m)
<b>Dimensions</b> .....	8.5-in H x 3.5-in W x 3-in D
	(215.9 mm H x 88.9 mm W x 76.2 mm D)
<b>Shipping Weight</b>	
Single Pack .....	~ 4.0 lbs (1.8 kg)

## Product Ordering

Description	Part No.		
	24Vac	120Vac	230Vac
Standard	GRD121.1U	GRD221.1U	GRD321.1U
Aux Switches 5° and 85°	GRD126.1U	GRD226.1U	GRD326.1U

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Damper Actuators

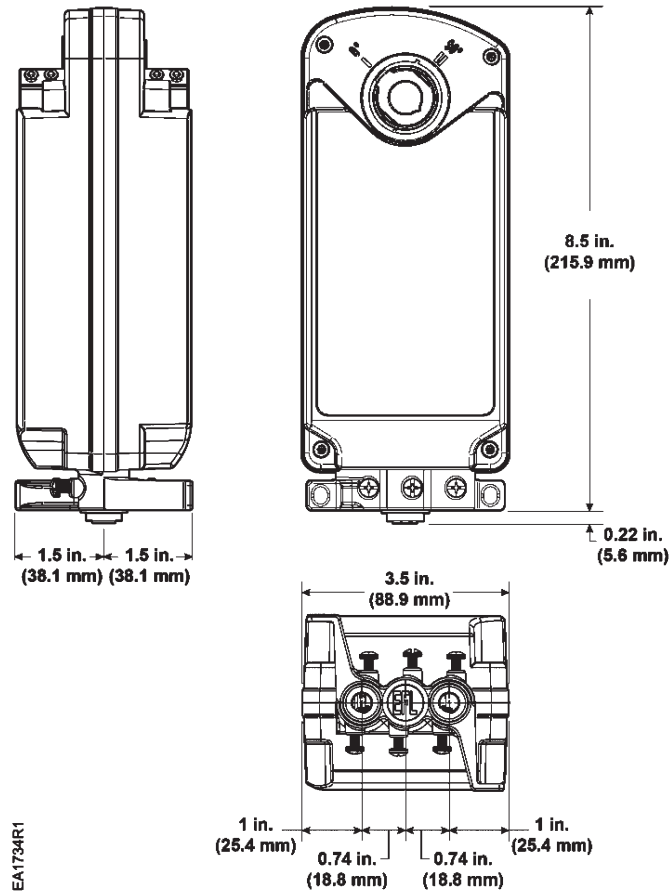
## Compatible Electronic Fusible Links

Temperature Range	Part No.
165°F (74°C)	ASK791.165
212°F (100°C)	ASK791.212
250°F (121°C)	ASK791.250
350°F (177°C)	ASK791.350

\* Determine and order appropriate actuator before selecting an EFL



## GRD Series OpenAir Damper Actuators



Dimensions shown in inches (mm).



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## Electronic Damper Actuator

Designed for UL Listed Fire/Smoke and Smoke Control Dampers

**80 lb-in Torque**  
 2 position, 30 second run time  
 15 second Spring Return Time



GKD Series Electronic Damper Actuator

### Description

The OpenAir direct coupled, fast-acting, two-position, spring return electronic actuators are available as 24 Vac/ dc, 120 Vac, and 230 Vac models. They are intended for use on UL-listed smoke control and combination fire/ smoke rated dampers.

### Features

- Electronic Fusible Link (EFL) capability with three temperature ratings: 165° F (74° C), 252° F (100° C), 250° F (121° C), and 350° F (177° C)
- Reversible fail-safe spring return
- High temperature polymer housing
- Pre-cabled lead wires
- 30-second drive/15 second return operation at rated torque, temperature and voltage
- 5 Year warranty
- Made in the USA
- Compact design for tight-fitting spaces

### Options

- Optional built-in Auxiliary Switches: fixed switch points at 5° and 85° rotation

### Applications

The GKD Series Spring Return Fire and Smoke Damper Actuator is used for the control of dampers requiring up to 80 lb-in driving torque. It is intended for control of UL listed smoke control dampers or combination fire/ smoke HVAC dampers. This actuator is designed to meet the 2002 revisions to the UL555/555S and the AMCA Standard 520 applications.

B-57

Damper Actuators



Siemens offers a 5-year warranty on damper actuators  
 \* Intelligent VAV actuators offer a 2-year warranty.

## Specifications

<b>Operating Voltage</b> .....	24Vac ±20% 120 Vac ±10% 230 Vac ±10%
<b>Frequency</b>	
24Vac/dc.....	50/60 Hz
120 Vac & 230 Vac.....	60 Hz
<b>Power Consumption</b> .....	24Vac/dc
Running.....	~ 26 VA
Holding.....	~ 8 VA
<b>Power Consumption</b> .....	120Vac
Running.....	26 VA
Holding.....	8 VA
<b>Power Consumption</b> .....	230 Vac
Running.....	~ 26 VA
Holding.....	~ 8 VA
<b>Torque</b>	
Running.....	80 lb-in (2 Nm) (minimum)
Minimum Stall.....	130 lb-in (14.6 Nm)
<b>Runtime for 90°</b>	
Operating with motor at 60hz.....	30 seconds nominal
Closing (on power loss) with spring return.....	15 seconds nominal
<b>Nominal Angle of Rotation</b> .....	95°

<b>Life Expectancy</b> .....	Minimum 20,000 full stroke cycles
<b>Damper Shaft Size</b> .....	0.5-inch (12.7 mm) to 1-inch (25 mm) round
<b>Min. Shaft Length</b> .....	3.0-inch (76.2 mm)
<b>Housing</b>	
Enclosure.....	NEMA 1/ IP40
Material.....	Plenum-Rated Plastic
<b>Temperature</b>	
Operation.....	0°F to 130°F (-18°C to 55° C) One time 350°F (121°C) 1/2 hour per UL555S
Storage and Transport.....	- 40°F to 158°F (-40°C to 70°C)
Humidity.....	Maximum 95% rh non-condensing
Teflon Cable.....	400°F (200°C)
<b>Agency Certifications</b> .....	UL60730 cUL CSA 60730 CE Conformity for Residential, Commercial and Industrial Environments Australian RCM Conformity
<b>Pre-cabled Connection</b> .....	19/30 strand 18 GA, 3 ft (0.9m)
<b>Dimensions</b> .....	10.7-in H x 3.4-in W x 3.8-in D (272.8 mm H x 101.5 mm W x 96.4 mm D)
<b>Shipping Weight</b>	
Single Pack.....	~ 9.0 lbs (4.1kg)

## Product Ordering

Description	Part No.		
	24Vac	120Vac	230Vac
Standard	GKD121.1U	GKD221.1U	GKD321.1U
Aux Switches 5° and 85°	GKD126.1U	GKD226.1U	GKD326.1U

B-58

Damper Actuators

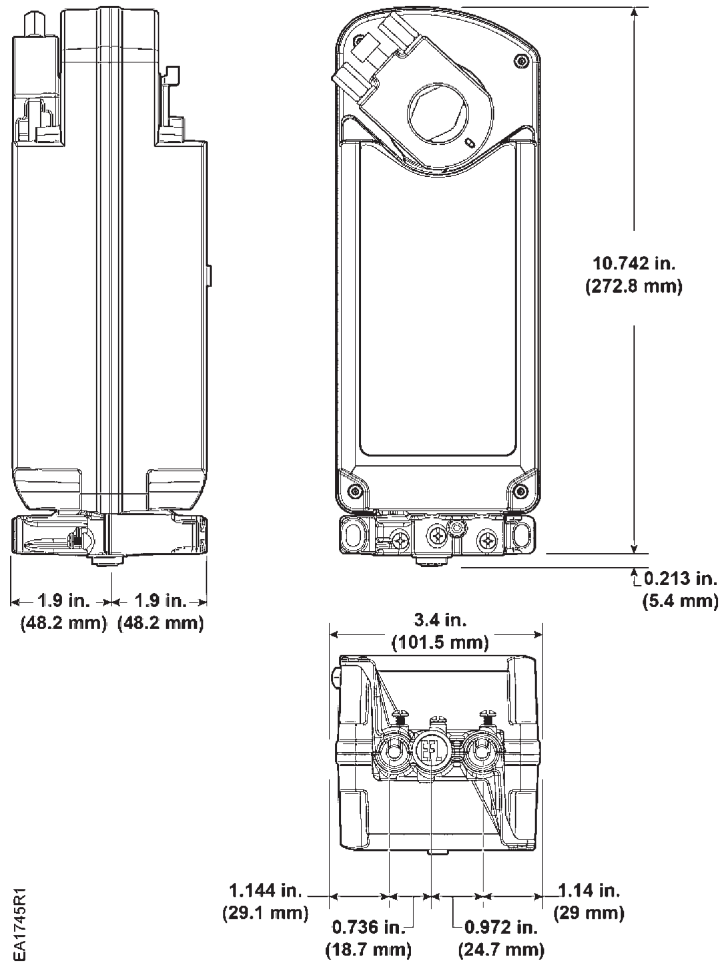
## Compatible Electronic Fusible Links

Temperature Range	Part No.
165°F (74°C)	ASK791.165
212°F (100°C)	ASK791.212
250°F (121°C)	ASK791.250
350°F (177°C)	ASK791.350

\* Determine and order appropriate actuator before selecting an EFL



## GKD Series OpenAir Damper Actuators



Dimensions shown in inches (mm).



B-60

# EngineeringAdvantage Program Webinar Series

Buildings are becoming more and more complex. Structures that used to be passive now have to meet higher demands for efficiency, safety, sustainability and comfort. While digitization enables new ways of connecting and operating buildings, cost and time pressures create resistance for the adoption of these new technologies. We experience the same challenges as you and would like to help you overcome them.

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**SIEMENS**



## Electronic Damper Actuator

Designed for UL Listed Fire/Smoke and Smoke Control Dampers

**200 lb-in Torque**  
2 position, 30 second run time  
15 second Spring Return Time



GVD Series Electronic Damper Actuator

### Description

The OpenAir direct coupled, fast-acting, two-position, spring return electronic actuators are available as 24 Vac/ dc, 120 Vac, and 230 Vac models. They are intended for use on UL-listed smoke control and combination fire/ smoke rated dampers.

### Features

- Electronic Fusible Link (EFL) capability with three temperature ratings: 165° F (74° C), 252° F (100° C), 250° F (121° C), and 350° F (177° C)
- Reversible fail-safe spring return
- High temperature polymer housing
- Pre-cabled lead wires
- 30-second drive/15 second return operation at rated torque, temperature and voltage
- 5 Year warranty
- Made in the USA
- Compact design for tight-fitting spaces

### Options

- Optional built-in Auxiliary Switches: fixed switch points at 5° and 85° rotation

### Applications

The GVD Series Spring Return Fire and Smoke Damper Actuator is used for the control of dampers requiring up to 200 lb-in driving torque. It is intended for control of UL listed smoke control dampers or combination fire/ smoke HVAC dampers. This actuator is designed to meet the 2002 revisions to the UL555/555S and the AMCA Standard 520 applications.

B-61

Damper Actuators

## Specifications

<b>Operating Voltage</b> .....	24Vac ±20%
	120 Vac ±10%
	230 Vac ±10%
<b>Frequency</b>	
24Vac/dc.....	50/60 Hz
120 Vac & 230 Vac.....	60 Hz
<b>Power Consumption</b> .....	24Vac/dc
Running.....	~ 35 VA
Holding.....	~ 9 VA
<b>Power Consumption</b> .....	120Vac
Running.....	~ 35 VA
Holding.....	~ 9 VA
<b>Power Consumption</b> .....	230 Vac
Running.....	~ 35 VA
Holding.....	~ 9 VA
<b>Torque</b>	
Running.....	200 lb-in (23 Nm) (minimum)
Minimum Stall.....	280 lb-in (32 Nm)
<b>Runtime for 90°</b>	
Operating with motor at 60hz.....	30 seconds nominal
Closing (on power loss) with spring return.....	15 seconds nominal
<b>Nominal Angle of Rotation</b> .....	95°

<b>Life Expectancy</b> .....	Minimum 20,000 full stroke cycles
<b>Damper Shaft Size</b> .....	0.5-inch (12.7 mm) to 1-inch (25 mm)round
<b>Min. Shaft Length</b> .....	3.0-inch (76.2 mm)
<b>Housing</b>	
Enclosure.....	NEMA 1/ IP40
Material.....	Plenum-Rated Plastic
<b>Temperature</b>	
Operation.....	0°F to 130°F (-18°C to 55° C)
	One time 350°F (121°C) 1/2 hour per UL555S
Storage and Transport.....	- 40°F to 158°F (-40°C to 70°C)
Humidity.....	Maximum 95% rh non-condensing
Teflon Cable.....	400°F (200°C)
<b>Agency Certifications</b> .....	UL60730
	cUL CSA 60730
	CE Conformity for Residential, Commercial and Industrial Environments
	Australian RCM Conformity
<b>Pre-cabled Connection</b> .....	19/30 strand 18 GA, 3 ft (0.9m)
<b>Dimensions</b> .....	10.7-in H x 3.4-in W x 3.8-in D
	(272.8 mm H x 101.5 mm W x 96.4 mm D)
<b>Shipping Weight</b>	
Single Pack.....	~ 9.0 lbs (4.1kg)

## Product Ordering

Description	Part No.		
	24Vac	120Vac	230Vac
Standard	GVD121.1U	GVD221.1U	GVD321.1U
Aux Switches 5° and 85°	GVD126.1U	GVD226.1U	GVD326.1U

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Damper Actuators

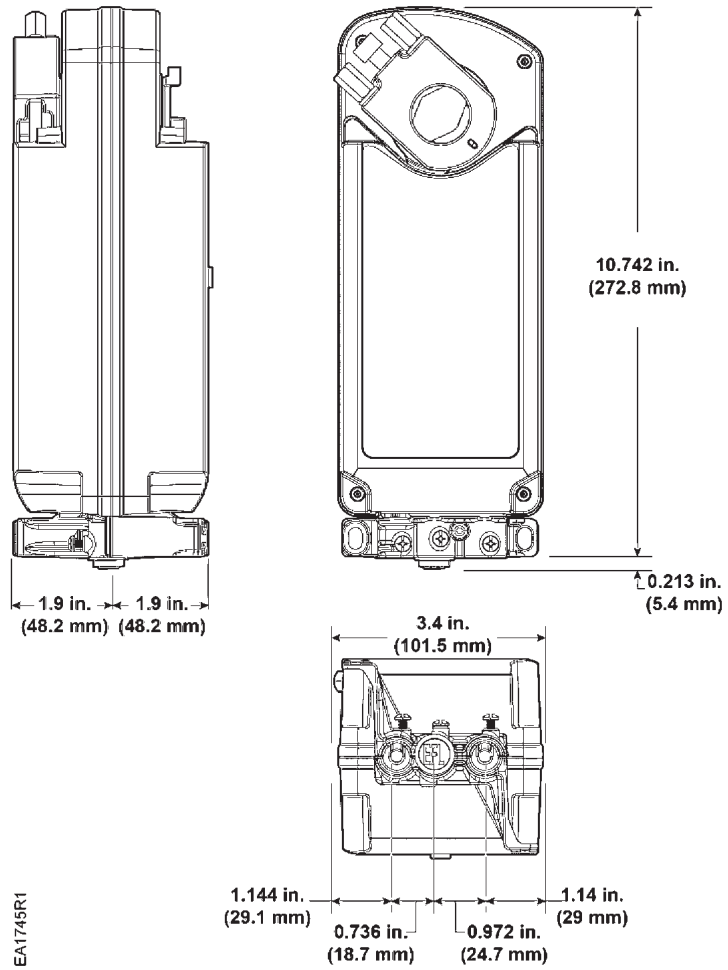
## Compatible Electronic Fusible Links

Temperature Range	Part No.
165°F (74°C)	ASK791.165
212°F (100°C)	ASK791.212
250°F (121°C)	ASK791.250
350°F (177°C)	ASK791.350

\* Determine and order appropriate actuator before selecting an EFL



## GVD Series OpenAir Damper Actuators



Dimensions shown in inches (mm).

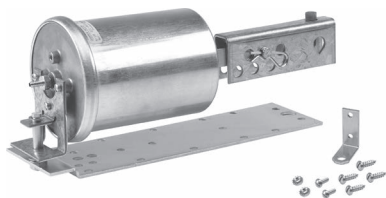
# OpenAir Part No. Nomenclature

Global Actuator Program		G	C	A	1	6	1	.	1	P
<b>Type</b>	Laboratory Fail In Place 53 Lb-in	A								
	Non-Spring Return 221 Lb-in	B								
	Spring Return 160 Lb-in	C								
	Non-Spring Return 44 Lb-in	D								
	Non-Spring Return 177 Lb-in	E								
	Non-Spring Return 310 Lb-in	I								
	Fire and Smoke 20 Lb-in	J								
	Fire and Smoke 80 Lb-in	K								
	Non-Spring Return 88 Lb-in	L								
	Spring Return 62 Lb-in	M								
	Laboratory Fail Safe 53 Lb-in	N								
	Spring Return 35 Lb-in	P								
	Spring Return 20 Lb-in	Q								
	Fire and Smoke 30 Lb-in	R								
	Non-Spring Return 20 Lb-in	S								
	Fire and Smoke 200 Lb-in	V								
<b>Running Time</b>	90 Sec. At 50/60 Hz	A								
	150(125) Sec. At 50/60 Hz	B								
	60 Sec. At 50/60 Hz	C								
	15 Sec/30 Sec. At 50/60 Hz	D								
	108 (90) Sec. At 50/60 Hz	E								
	2 Sec. At 50/60 Hz	P								
<b>Voltage</b>	24Vac/Vdc or 24Vac	1								
	120 Vac	2								
	230Vac / 100 to 240 Vac	3								
<b>Functionality</b>	2pt (On/Off)	2								
	3pt (Floating)	3								
	2pt (On/Off), 3pt (Floating)	4								
	Modulating 0-10 Vdc/2-10 Vdc/Signal Inversion	5								
	Modulating 0-10 Vdc	6								
	2pt (On/Off), 3pt (Floating), 0-10Vdc, 2-10 Vdc, 4-20mA, 0-20mA	9								
<b>Optional Features</b>	Standard Version	1								
	Potentiometer 1k Ω	2								
	Signal Adjustable	3								
	Switches + Signal Adjustable	4								
	Switches	6								
<b>Action</b>	Rotary self-center. Shaft Adapter	1								
	Over-sized Shaft Adapter	3								
<b>Cabling</b>	Universal Appliance Cable	U								
	Plenum Cable	P								
	6' Plenum Cable	Q								
	Post Header Amp	N								
	Terminal Strip	T								
<b>Packaging</b>	Bulk Packaging	/B								
	Multi-packs	/M10								
	Multi-packs	/M24								
	Multi-packs	/M8								

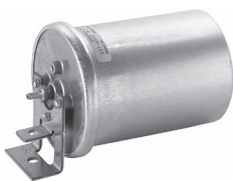
B-64

Damper Actuators

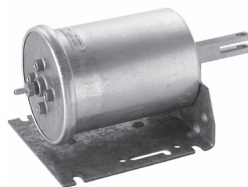
## No. 3 Pneumatic Actuator



331-4311 Actuator, clevis and rocker arm.  
Mounting for extended shaft.



331-4312 Actuator with  
pivot mounting bracket.



331-4314 Actuator with fixed  
mounting bracket and clevis.

### Description

Designed with a 2-3/8-inch (60 mm) stroke, the No. 3 Pneumatic Actuator is a rugged, metal-fabricated device that provides gradual or positive actuation of HVAC dampers. The actuator is available in a variety of spring ranges for energy optimizing and sequencing with other devices.

### Features

- Ozone-resistant rolling rubber diaphragm
- Variety of installation options, including:
  - Fixed bracket mounting
  - Direct front mounting
  - Pivot mounting for extended shaft
- Available with positioning relay

### Applications

Recommended for control of mixing box dampers or air valves and damper control for unit ventilators, unit conditioners and small HVAC systems. The No. 3 Pneumatic Actuator is also available with 2-3/4-inch (70 mm) stroke in the three spring ranges.

For more information, contact your local Siemens Building Technologies representative.

B-65

Damper Actuators

Nominal Spring Rating	Max. Thrust lb. (N)				Gradual Operation	Torque Rating lb.-in (Nm)		
	Full Stroke Forward			Spring Return (No Stroke) 0 psi (0 kPa)		2-position Operation or with Positioner		
	15 psi (103 kPa)	18 psi (124 kPa)	25 psi (172 kPa)			15 psi (103 kPa)	18 psi (124 kPa)	25 psi (172 kPa)
3 to 7 psi (21 to 48 kPa)	64 (285)	88 (391)	144 (641)	24 (107)	10 (1.1)	20.2 (2.3)	20.2 (2.3)	20.2 (2.3)
5 to 10 psi (35 to 69 kPa)	40 (178)	64 (285)	120 (534)	40 (178)	10 (1.1)	33.6 (3.8)	33.6 (3.8)	33.6 (3.8)
8 to 13 psi (55 to 90 kPa)	16 (71)	40 (178)	96 (427)	64 (285)	10 (1.1)	53.8 (6.1)	53.8 (6.1)	53.8 (6.1)

With maximum hysteresis of 2.5 psi (17.2 kPa) @ 90° rotation.



\* Intelligent VAV actuators offer a 2-year warranty.

## Specifications

**Effective Diaphragm Area** ..... 8 in.<sup>2</sup> (51.5 cm<sup>2</sup>)  
**Stroke** ..... 2-3/8-in. (60 mm)  
**Max. Air Pressure** ..... 30 psi (210 kPa)  
**Nominal Spring Ranges** ..... 3 to 7 psi (21 to 50 kPa)  
   5 to 10 psi (35 to 69 kPa)  
   8 to 13 psi (55 to 90 kPa)

**Ambient Temperature Range**

Operating..... -20°F to 160°F (-29°C to 71°C)  
 Storage..... -20°F to 160°F (-29°C to 71°C)

**Materials**

Housing (totally enclosed) ..... Aluminum  
 Stem ..... Plated Steel  
 Diaphragm ..... Ozone-resistant EPT rubber  
 Spring ..... Steel  
 Bearing ..... Delrin

**Air Connection** ..... 1/8" NPT Female with a straight dual barb fitting for 1/4" (6 mm) OD tubing


**Type of Mounting** ..... Front, bracket, pivot, extended shaft

**Shipping Weight (Actuator only)** ..... 1.3 lb. (0.58 kg)

## Product Ordering

No. 3 Actuator Description	Mounting Style	No. 3 Part Number		
		Nominal Spring Range		
		3-7 psi (21-48 kPa)	5-10 psi (35-69 kPa)	8-13 psi (55-90 kPa)
Actuator, Basic	Front	331-4310 <sup>1</sup>	331-4510 <sup>1</sup>	331-4810 <sup>1</sup>
Actuator, Basic, for "332" models with Positioning Relay, (difference is elbow air fitting)	Front	—	—	331-4809 <sup>1</sup>
Actuator, Bracket	Fixed	331-4313	331-4513	331-4813
Actuator, Bracket, Clevis	Fixed	331-4314	—	331-4814
Actuator, Bracket, Ball Joint Connector	Fixed	—	331-4531	331-4831
Actuator, Bracket, Ball Joint Connector with Positioning Relay	Fixed with Positioning Relay	—	—	332-4831
Actuator, Integral Pivot	Pivot	331-4312	331-4512	331-4812
Actuator, Integral Pivot with Pivot Post. Mounted on plate for Extended Shaft <sup>2</sup> with Clevis and Crank Arm for 3/8" (10 mm), 7/16" (11 mm), or 1/2" (13 mm) diameter shaft.	Extended Shaft <sup>2</sup>	331-4311	331-4511	331-4811
Actuator, Integral Pivot with Pivot Post. Mounted on plate for Extended Shaft <sup>2</sup> with Clevis and Crank Arm for 3/8" (10 mm), 7/16" (11 mm), 1/2" (13 mm) diameter shaft.	Extended Shaft <sup>2</sup> with Positioning Relay	—	—	332-4811

**If the actuator is inoperative, replace the entire actuator.**



The No. 3 damper actuator part numbers noted above all utilize pneumatic damper actuators that are UL Recognized Components for fire/smoke applications under UL's Damper Actuator category EMKU2, referencing standards UL555 and UL555S. This category covers pneumatic damper actuators used in fire dampers and leakage rated dampers for smoke control.

**Ordering Notes:**

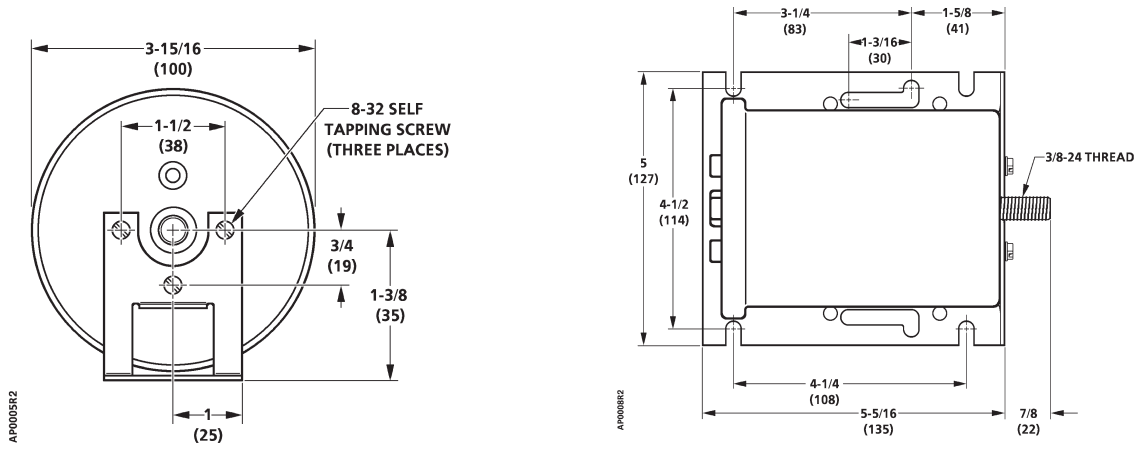
<sup>1</sup> These No. 3 pneumatic basic damper actuator devices are UL component recognized. These same basic damper actuator devices are used in all of the actuator assemblies following the base model in each column.

<sup>2</sup> When the actuator is ordered with Extended Shaft Mounting, the mounting plate, pivot post and hardware, clevis, damper crank, rocker arm and all screws/nuts are included. Order other frame mounting accessories as required if not supplied by damper manufacturer.


B-66

Damper Actuators

## Dimensions



Dimensions shown in inches (mm).

A photograph of two young girls sitting at a desk in a classroom, looking at a tablet together. The girl on the left has blonde hair in a bun and is wearing a pink patterned shirt. The girl on the right has dark hair and is wearing a light blue shirt. They are both smiling and looking at the tablet. The background is a blurred classroom setting with blue chairs and a chalkboard.

B-68

# More **fresh air** matters

Fresh air may be invisible, but you will feel its impact: it turns rooms into spaces that give room for thought, productivity and well-being.

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**SIEMENS**



## No. 4 Pneumatic Actuator



331-2929 No. 4  
Pneumatic Actuator  
for frame mounting.



331-2904 No. 4  
Pneumatic Actuator with  
pivot mounting bracket.



331-2973 No. 4  
Pneumatic Actuator with clevis, and crank.  
Universal Mounting Plate for extended shaft  
or frame mounting.



331-2974 No. 4  
Pneumatic Actuator with  
non-pivot bracket for unit ventilator.

### Description

Designed with a 4-inch (102 mm) stroke, the No. 4 Pneumatic Actuator is a rugged, metal-fabricated device that provides gradual or positive actuation of HVAC and fire/smoke dampers.

### Features

- Replaceable diaphragm
- Positioning relay (optional)
- Forward travel stops (optional)
- Hesitation model (provides minimum ventilation without separate damper/actuator)
- Variety of spring ranges for sequencing with other control devices
- Stainless steel actuator shaft

### Applications

Recommended for control of outdoor, return air, exhaust, face and bypass, fan discharge, and static pressure control dampers, the No. 4 Pneumatic Actuator also is excellent for controlling specialized dampers and air valves in terminal units, such as unit ventilators and mixing boxes.

The No. 4 actuator hesitation model is frequently used to operate the outdoor air damper on unit ventilators and mixing boxes.

An actuator marked with an asterisk (\*) is a component recognized under UL's Damper Actuator category (EMKU2) for use on fire dampers and leakage-related dampers.

Nominal Spring Rating	Max. 121 Thrust lb. (N)				Torque Rating lb.-in (Nm)			
	Full Stroke Forward			Spring Return (No Stroke) 0 psi (0 kPa)	Gradual Operation	2-position Operation or with Positioner		
	15 psi (103 kPa)	18 psi (124 kPa)	25 psi (172 kPa)			15 psi (103 kPa)	18 psi (124 kPa)	25 psi (172 kPa)
3 to 7 psi (21 to 48 kPa)	88 (391)	121 (538)	198 (881)	33 (147)	30 (3.4)	46 (5.2)	46 (5.2)	46 (5.2)
3 to 13 psi (21 to 90 kPa)	22 (98)	55 (245)	132 (587)	33 (147)	30 (3.4)	46 (5.2)	46 (5.2)	46 (5.2)
5 to 10 psi (35 to 90 kPa)	55 (245)	88 (391)	165 (734)	55 (245)	30 (3.4)	77 (8.7)	77 (8.7)	77 (8.7)
8 to 13 psi (55 to 90 kPa)	22 (98)	55 (245)	132 (587)	88 (391)	30 (3.4)	123 (14)	123 (14)	123 (14)
2 to 3, 8 to 13 psi (14 to 20, 55 to 90 kPa) Hesitation	22 (98)	55 (245)	132 (587)	22 (98)	23 (2.6)	—	—	—

#### Table Notes:


With maximum hysteresis of 2.5 psi (17.2 kPa) @ 90° rotation.

## Specifications

Effective Diaphragm Area .....	11 in. <sup>2</sup> (71 cm <sup>2</sup> )
Stroke .....	4-in. (102 mm)
Stroke (hesitation models) .....	3-in. (76 mm)
Max. Air Pressure .....	30 psi (207 kPa)
Nominal Spring Ranges .....	3 to 7 psi (21 to 48 kPa) 3 to 13 psi (21 to 90 kPa) 5 to 10 psi (35 to 69 kPa) 8 to 13 psi (55 to 90 kPa)
Nominal Spring Range (hesitation model) .....	2 to 3, 8 to 13 psi (14 to 21, 55 to 90 kPa)
Temperature Range	
Operating.....	-20°F to 200°F (-29°C to 93°C)
Storage.....	-20°F to 200°F (-29°C to 93°C)

<b>Materials</b>	
Housing (totally enclosed) .....	Steel, electro-coated epoxy
Shaft .....	Stainless Steel
Diaphragm .....	EDPM Rubber
Spring .....	Steel
Bearing .....	Delrin
<b>Air Connection</b> .....	1/8" NPT Female with a dual barb elbow fitting for 1/4" (6 mm) OD tubing
<b>Type of Mounting</b> .....	Front, bracket, pivot; universal (extended shaft or frame mount)
<b>Shipping Weight (Actuator only)</b> .....	3.66 lb. (1.66 kg)

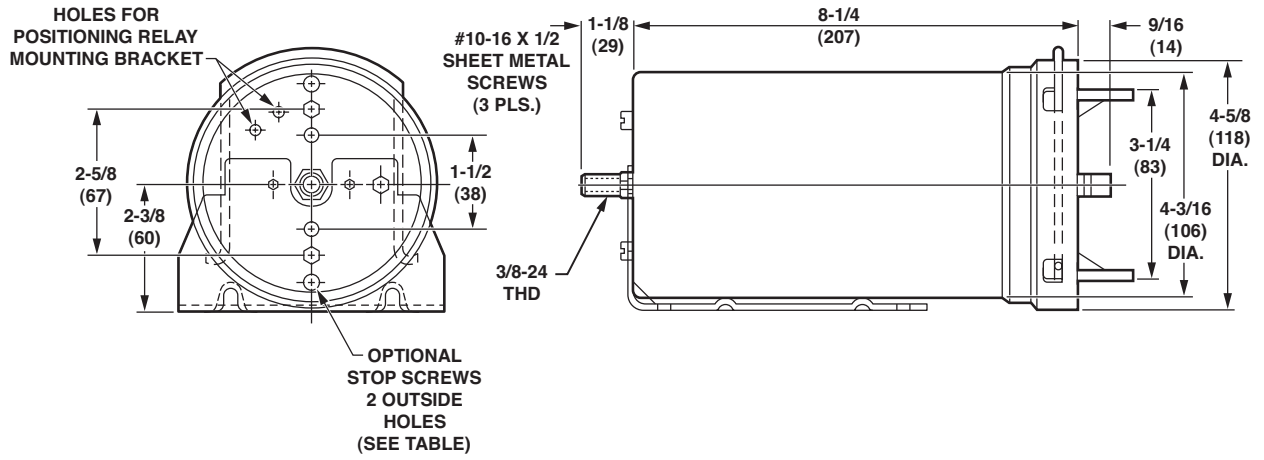
## Product Ordering

No. 4 Actuator Description <sup>3</sup>	Mounting Style	No. 4 Actuator Part Number				
		Nominal Spring Range				
		3-7 psi (21-48 kPa)	3-13 psi (21-90 kPa)	5-10 psi (35-69 kPa)	8-13 psi (55-90 kPa)	Hesitation Model 2-3, 8-13 psi (14-21, 55-90 kPa)
Actuator, Basic with Integral Pivot	Pivot	331-2904 <sup>1</sup>	331-2905 <sup>1</sup>	331-2906 <sup>1</sup>	331-2961 <sup>1</sup>	—
Actuator, Basic with Integral Pivot and Positioning Relay	Pivot	—	—	—	332-2961	—
Actuator with Integral Pivot, Clevis and Clevis Pin for use with frame mounting accessory	Pivot	331-2929	331-2930	—	331-2968	—
Actuator, Mounting Screws (Non-Pivot)	Front	—	—	—	331-2963	—
Actuator, Bracket (Non-Pivot) with 2-3/8" (60 mm) stroke for unit ventilator	Fixed	—	—	—	—	331-2974
Actuator, Mounting Plate, Ball Joint Connector	Fixed	—	331-3018	—	331-3017	—
Actuator, Integral Pivot with Pivot Post. Mounted on plate for Extended Shaft <sup>2</sup> with Clevis and Crank Arm for 3/8" (9.5 mm), 7/16" (11 mm) or 1/2" (13 mm) diameter shaft. Parts for frame mounting (blade drive) included with kit.	Universal Kit <sup>2</sup>	331-3000	331-3001	331-3002	331-2973	—
Actuator, Integral Pivot with pivot post and Positioning Relay. Mounted on plate for extended shaft with Clevis and Crank for 3/8" (10 mm), 7/16" (11 mm), 1/2" (13 mm) diameter shaft. Parts for frame mounting (blade drive) included with kit.	Universal Kit <sup>2</sup> with Positioning Relay	—	—	—	332-2973	—
<b>If the actuator is inoperative, replace the entire actuator.</b>						
	The No. 4 damper actuator part numbers noted above all utilize pneumatic damper actuators that are UL Recognized Components for fire/smoke applications under UL's Damper Actuator category EMKU2, referencing standards UL555 and UL555S. This category covers pneumatic damper actuators used in fire dampers and leakage rated dampers for smoke control.					

### Ordering Notes:

- These No. 4 pneumatic basic damper actuator devices are UL component recognized. These same basic damper actuator devices are used in all of the actuator assemblies following the base model in each column.
- When the actuator is ordered with Universal Kit Mounting, the mounting plate, pivot post and hardware, clevis, damper crank, rocker arm, and all screws/nuts are included. Order other frame mounting accessories as required if not supplied by damper manufacturer.
- The No. 4 pneumatic damper actuator contains a replaceable diaphragm with EPDM rubber. See Siemens document #129-089 to replace.

## Dimensions



Dimensions shown in inches (mm).

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Damper Actuators



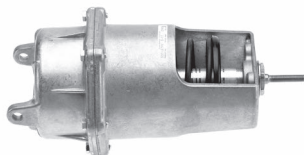
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# Building Technology Webinars

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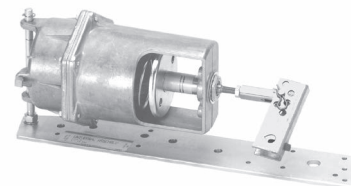
## No. 6 Pneumatic Actuator



331-2792 and 331-3060 No. 6  
Pneumatic Actuator,  
pivot mounting type.



331-2856 No. 6  
Pneumatic Actuator and  
clevis for frame mounting.



331-3011 No. 6 Pneumatic Actuator,  
clevis, crank and rocker arm. Universal mounting for  
extended shaft or frame mounting.

### Description

Designed with a 4-inch (102 mm) stroke, the No. 6 Pneumatic Actuator is a rugged, metal-fabricated device that provides gradual or positive actuation of HVAC and fire/smoke dampers.

### Features

- Replaceable diaphragm
- Variety of spring ranges for sequencing with other control devices
- High torque

### Options

- Positioning relay
- Forward travel stops

### Applications

Recommended for multiple applications, the No. 6 Pneumatic Actuator is excellent for control of outdoor air, return air, mixed air, exhaust, face and bypass, fan discharge, multisection, static pressure control, fan inlet vanes and other special applications.

An actuator marked with an asterisk is recognized under UL's Damper Actuator category (EMKU2) for use on fire dampers and leakage-rated dampers.

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Damper Actuators

Nominal Spring Rating	Max. Thrust lb. (N)				Gradual Operation	Torque Rating lb.-in (Nm)		
	Full Stroke Forward			Spring Return (No Stroke) 0 psi (0 kPa)		2-position Operation or with Positioner		
	15 psi (103 kPa)	18 psi (124 kPa)	25 psi (172 kPa)			15 psi (103 kPa)	18 psi (124 kPa)	25 psi (172 kPa)
3 to 8 psi (21 to 55 kPa)	125 (556)	179 (796)	304 (1352)	54 (240)	50 (5.6)	75 (8.5)	75 (8.5)	75 (8.5)
3 to 13 psi (21 to 90 kPa)	36 (160)	89 (396)	214 (952)	54 (240)	50 (5.6)	75 (8.5)	75 (8.5)	75 (8.5)
8 to 13 psi (55 to 90 kPa)	36 (160)	89 (396)	214 (952)	144 (640)	50 (5.6)	202 (22.8)	202 (22.8)	202 (22.8)

#### Table Notes:

With maximum hysteresis of 2.5 psi (17.2 kPa) @ 90° rotation.




\* Intelligent VAV actuators offer a 2-year warranty.

## Specifications

Effective Diaphragm Area	17.9 in. <sup>2</sup> (115 cm <sup>2</sup> )
Stroke	4-in. (102 mm)
Max. Air Pressure	30 psi (207 kPa)
Nominal Spring Ranges	3 to 8 psi (21 to 55 kPa)
	3 to 13 psi (21 to 90 kPa)
	8 to 13 psi (55 to 90 kPa)
Temperature Range	
Operating	-20°F to 200°F (-29°C to 93°C)
Storage	-20°F to 200°F (-29°C to 93°C)

<b>Materials</b>	
Housing	Aluminum
Stem	Type 416 Stainless Steel
Diaphragm	Silicone Rubber
Spring	Steel
Bearing	Bronze Oilite
<b>Air Connection</b>	1/8" NPT Female
<b>Type of Mounting</b>	Pivot; Universal (extended shaft or frame mount)
<b>Shipping Weight (Actuator only)</b>	9.0 lb. (4.08 kg)

## Product Ordering

No. 6 Actuator Description <sup>3</sup>	Mounting Style	No. 6 Actuator Part Number		
		Nominal Spring Range		
		3-8 psi (21-55 kPa)	3-13 psi (21-90 kPa)	8-13 psi (55-90 kPa)
Actuator, Basic, Integral Pivot	Pivot	331-2793 <sup>1</sup>	331-2794 <sup>1</sup>	331-3060 <sup>1</sup>
Actuator, Integral Pivot and Forward Travel Stops	Pivot	—	—	331-2988
Actuator with Clevis	Pivot	331-2857	331-2858	331-2856
Actuator with Clevis and Positioning Relay	Pivot	—	—	332-2856
Actuator, Integral Pivot with pivot post. Mounted on plate for Extended Shaft <sup>2</sup> mounting with Clevis and Crank for 3/8" (10 mm), 7/16" (11 mm) or 1/2" (13 mm) diameter shaft.	Extended Shaft <sup>2</sup>	331-3012	331-3013	331-3011
Actuator, Integral Pivot with pivot post. Mounted on plate for Extended Shaft <sup>2</sup> mounting with Clevis and Crank for 3/8" (10 mm), 7/16" (11 mm) or 1/2" (13 mm) diameter shaft.	Extended Shaft Kit <sup>2</sup> with Positioning Relay	—	—	332-3011
<b>If the actuator is inoperative, replace the entire actuator.</b>				
	The No. 6 damper actuator part numbers noted above all utilize pneumatic damper actuators that are UL Recognized Components for fire/smoke applications under UL's Damper Actuator category EMKU2, referencing standards UL555 and UL555S. This category covers pneumatic damper actuators used in fire dampers and leakage rated dampers for smoke control.			

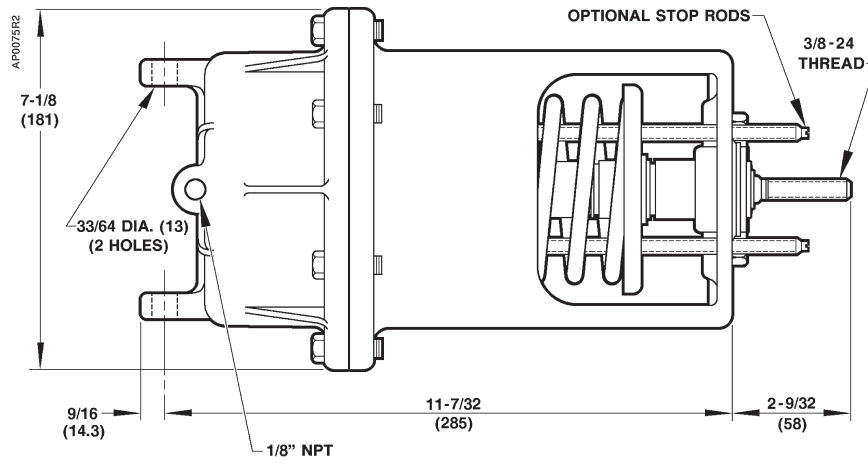
### Ordering Notes:

- These No. 6 pneumatic basic damper actuator devices are UL component recognized. These same basic damper actuator devices are used in all of the actuator assemblies following the base model in each column.
- When the actuator is ordered with universal mounting, the mounting plate, pivot post and hardware, clevis, damper crank, rocker arm, and all screws/nuts are included. Order other frame mounting accessories as required if not supplied by damper manufacturer.
- Siemens No. 6 Pneumatic Damper Actuator contains a replaceable diaphragm with silicone rubber. See Siemens document #129-089 for replacement instruction for this diaphragm.

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Damper Actuators

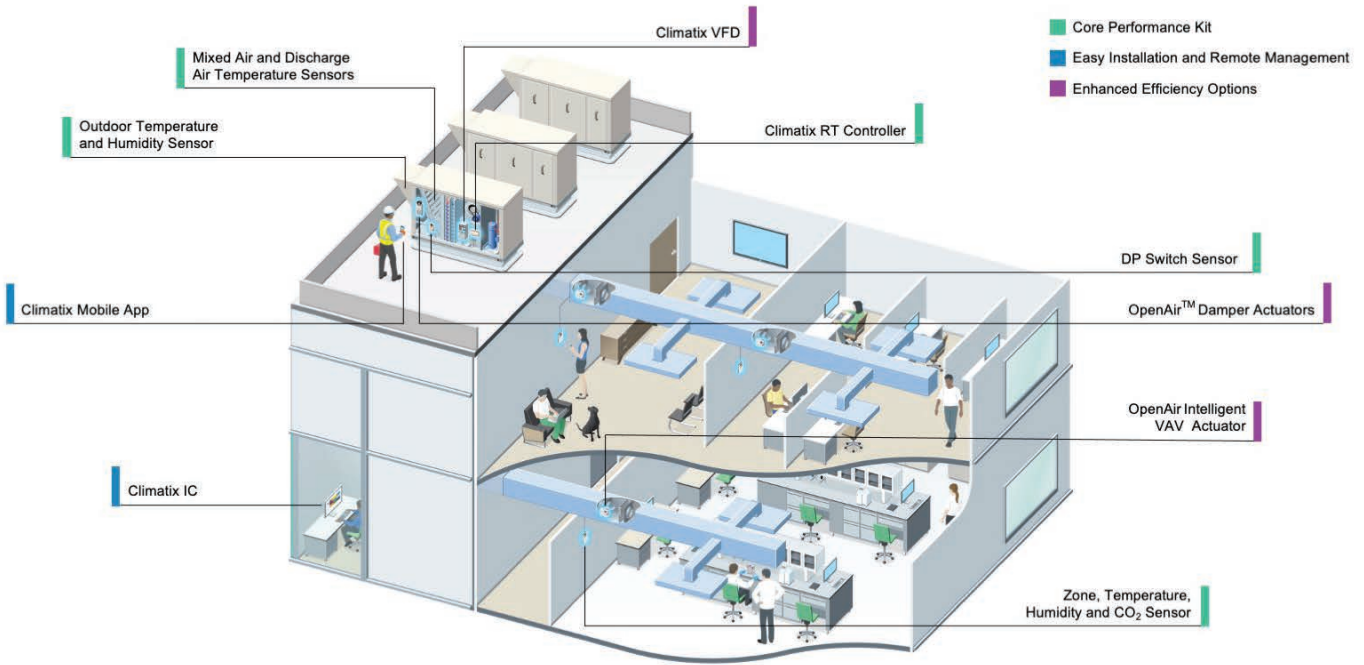
## Dimensions



Dimensions shown in inches (mm).

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Damper Actuators



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# Climatix RTU Solution — Designed to make contractors more efficient and faster

The Climatix RTU solution is designed to be used with minimal interaction. The kit you order includes the Climatix RT controller paired with zone sensors for demand-controlled ventilation plus sensors for temperature, humidity and differential pressure. This kit addresses core RTU performance optimization. You have the option to include the Climatix VFD for enhanced efficiency and OpenAir™ damper actuators for reliable, long-lasting fresh air management.

Visit [usa.siemens.com/rtu](http://usa.siemens.com/rtu) to learn more.

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Refer to Valve Accessories & Service Kits, A-289, for Rack & Pinion Linkage.

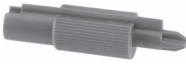


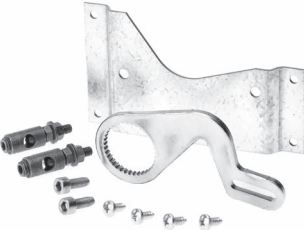
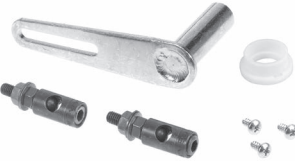


## Accessories & Service Kits

	Description	VAV Compact Series		Qty	Part No.
		GDB GLB	DXR1		
<b>OpenAir</b>					
	<b>Handheld commissioning tool for VAV compact controllers.</b> Commissioning tool for setting parameters and mass configuring actuators. Displays setpoints and actual values	●		1	AST20
	<b>Interface converter for ACS931 PC commissioning tool.</b> Interface converter USB/PPS2 for connecting a Siemens VAV compact controller to the ACS931 PC tool. For configuration and maintenance.	●		1	AST22
	<b>Mini USB to Standard USB adapter.</b> USB Adapter to mini-USB adapter for smart HMI stick.		●	1	POL-HMI-MUSB
	<b>Smart HMI stick.</b> USB - WLAN adapter for temporary WLAN connectivity during commissioning workflow with mobile devices.		●	1	POL903.00/100

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Damper Actuators

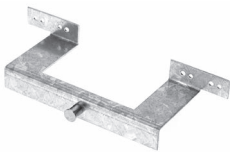
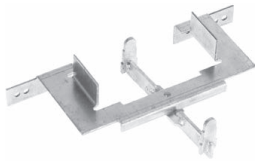
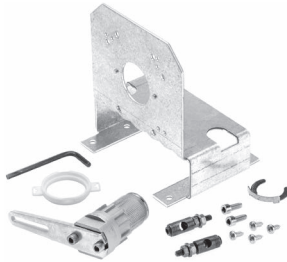



## Accessories & Service Kits

	Description	Series			Quantity	Part No.
		GDE GLB	GEB GMA	GCA GIB GGB		
<b>OpenAir</b>						
	<b>Adjustment Tool.</b>		●		1	985-098P10
	<b>Hex Key.</b>	●			Pkg. of 24	985-054P24
	<b>Crank Arm Kit.</b> Allows a direct-coupled actuator to provide an auxiliary linear drive; can be used to simultaneously drive a set of opposing or adjacent dampers with a single actuator.		●		1	ASK71.13
				●	1	ASK71.3
	<b>Crank Arm Kit with Bracket.</b> For use in applications where the actuator can be rigidly surface-mounted and a linear stroke output is required.		●		1	ASK71.14
				●	1	ASK71.4
	<b>Rotary to Linear Kit.</b> For use with GDE, GLB, and GDB actuators.	●			1	ASK71.5
	<b>Rotary to Linear Kit with Universal Mounting Bracket.</b> For use with GDE, GLB, and GDB actuators	●			1	ASK71.6
	<b>Universal Crank Arm.</b> For linear applications requiring connection to damper shaft when ball joint connection is not possible. • Shaft sizes 3/8 to 1"	●	●	●	1	ASK71.9

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Damper Actuators





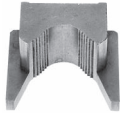

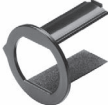
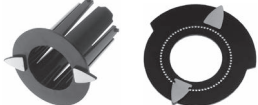



# Accessories & Service Kits

	Description	Series			Quantity	Part No.
		GDE GLB	GEB GMA	GCA GIB GBB		
<b>OpenAir</b>						
	<b>Tandem Mount Bracket.</b> Provides an extended anti-rotation pin which allows dual mounting of 2-position, floating and GCA15 actuators, and all GIB actuators.			●	1	ASK73.1
	<b>Tandem Mount Bracket.</b> For dual mounting of modulating (0 to 10 V) GCA16X actuators.			●	1	ASK73.2U
	<b>Floor Mount Kit.</b> For airstream applications and where a foot-mounted actuator can be used. Ideal replacement of a Honeywell MOD motor. Includes crank arm, Teflon support-bearing ring, and mounting fasteners.			●	1	ASK71.1U
	<b>Frame Mount Kit.</b> For direct mounting to damper frame. Includes a crank arm to generate a linear stroke, a Teflon support-bearing ring to minimize side-loading on the actuator's output bearing, and other mounting fasteners.			●	1	ASK71.2U
	<b>Combined Foot/Frame Mount Kit.</b>		●		1	ASK71.11
	<b>Damper Push Rods.</b> 5/16" (8 mm) dia.	●	●	●		
	• 12" (30 cm) Length				1	338-041
	• 15" (38 cm) Length				1	338-042
	• 18" (46 cm) Length				1	338-043
	• 24" (61 cm) Length				1	338-044
	• 36" (91 cm) Length				1	338-045
	• 48" (122 cm) Length				1	338-046

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Damper Actuators


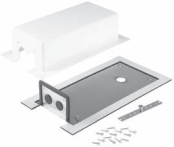





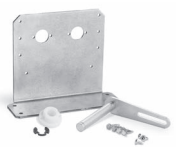

## Accessories & Service Kits

	Description	Series			Quantity	Part No.
		GDE GLB	GEB GMA	GCA GIB GGB		
<b>OpenAir</b>						
	<b>Anti-rotation Bracket.</b>	●			Pkg. of 24	<b>985-055P24</b>
	• Mounting Screws	●			Pkg. of 48	<b>985-053P48</b>
	<b>Anti-rotation Bracket.</b>			●	1	<b>985-006</b>
	<b>Anti-rotation Bracket.</b>		●			<b>985-092</b>
	<b>Standard Shaft Adapter.</b> Replacement for a standard self-centering shaft adapter.			●	1	<b>985-004</b>
	• up to a 1" (25 mm) D • up to 3/4" (20 mm) D		●		1	<b>985-093</b>
	<b>Over-sized Shaft Adapter.</b> Accepts up to 1.05" (27 mm) diameter shaft and can be used for jackshafts that are slightly oversized. <i>Note: When used with a GIB, accepts shaft diameters from 3/4 to 1-1/20" (19 to 27 mm).</i>			●	1	<b>ASK74.1U</b>
	<b>Replacement Shaft Adapter Clip.</b>		●		Pkg. of 20	<b>985-242P20</b>
				●	Pkg. of 20	<b>985-241P20</b>
	<b>5/8 to 3/4" (10 mm to 19 mm) Actuator Shaft Insert.</b> For use with GIB and Over-sized Shaft Adapter, ASK74.1U.			●	Pkg. of 20	<b>985-052P20</b>
	<b>3/8" (8 to 10 mm) Actuator Shaft Insert.</b> For use with GDE, GLB, and GDB actuators.	●			Pkg. of 10	<b>ASK78.3U</b>
	<b>1/2" (13 mm) Shaft Guide.</b> Note: This part is factory-installed with all GDE/GLB damper actuators.	●			Pkg. of 25	<b>985-101P25</b>
	<b>Standard Position Indicators.</b> For use with GDE, GLB, and GDB actuators.	●			Pkg. of 10	<b>985-051P10</b>
			●		Pkg. of 10	<b>985-094P10</b>
				●	Pkg. of 10	<b>985-003</b>
	<b>1/2" (13 mm) Conduit Adapters.</b> For use with select GDE and GLB standard actuators. See data sheet for more info.	●			1	<b>ASK76.1U</b>
		●			Pkg. of 20	<b>ASK76.1UP20</b>
	<b>1/2" (13 mm) Conduit Adapters.</b>			●	Pkg. of 20	<b>985-008P20</b>
	<b>1/2" (13 mm) Conduit Adapter – Male.</b>			●	Pkg. of 25	<b>985-035P25</b>

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Damper Actuators

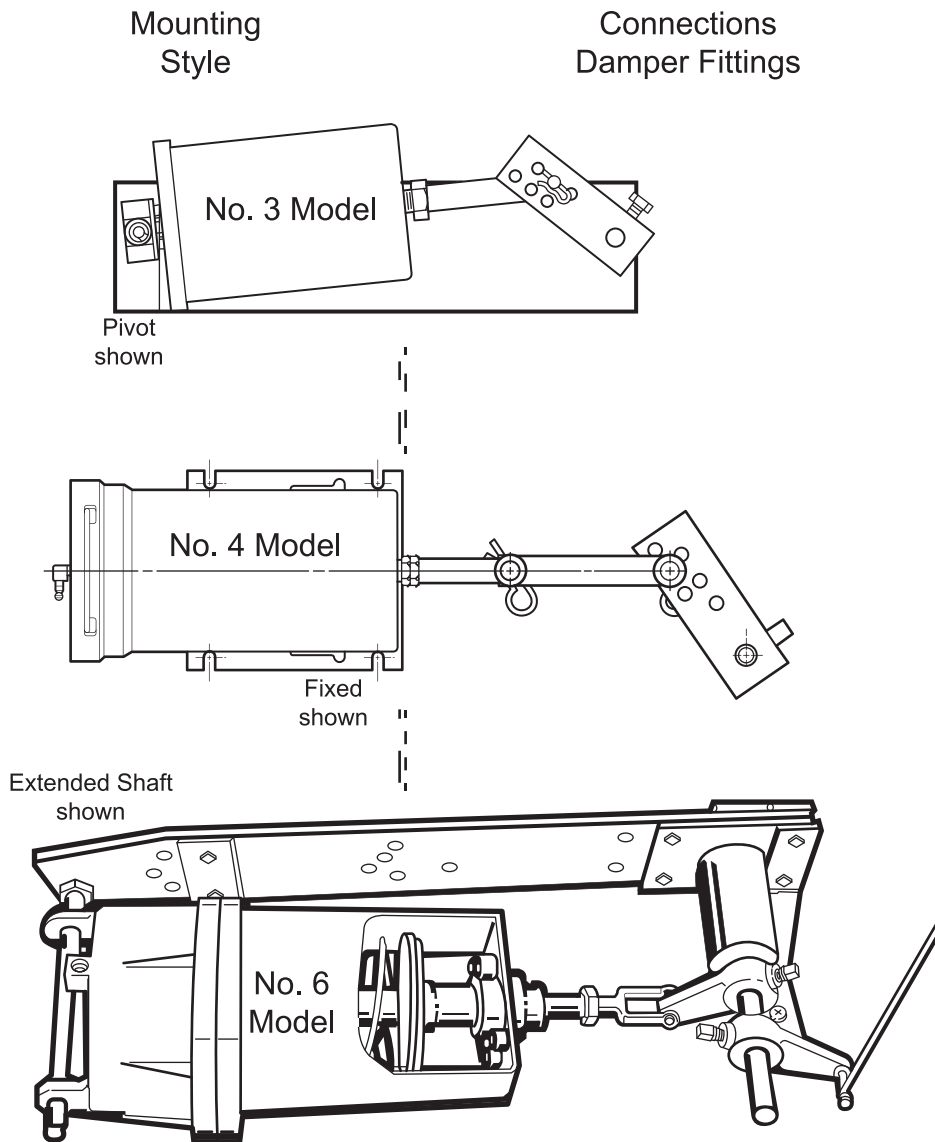
## Accessories & Service Kits

	Description	Series				Quantity	Part No.
		GDE GLB	GEB GMA	GCA GIB GGB	GPC GQD		
<b>OpenAir</b>							
	<b>NEMA 4X Rated Weathershield.</b> Includes the NEMA Type 4X Weathershield Enclosure Assembly and NEMA 4X Cover, plus 3 anti-rotation brackets that accommodate all control adaptor types, and all the screws and standoffs needed to mount kit to equipment.	●	●	●	●	1	<b>ASK75.7U</b>
	<b>NEMA 3R Rated Weathershield.</b> Includes cover, base plate with factory-installed gasketing, 15TEK self-drilling screws, and anti-rotation (mounting) bracket. Knockouts for connection of 1/2" conduit also included; NEMA 3R rated.		●			1	<b>ASK75.3U</b>
				●		1	<b>ASK75.1U</b>
	<b>NEMA 3R Rated Heater and Weathershield.</b> Includes weathershield listed above and heater assembly for operation in temps as low as -58°F; NEMA 3R rated.		●			1	<b>985-107</b>
				●		1	<b>985-106</b>
	<b>Heater Assembly.</b> Includes replacement heater assembly.		●			1	<b>985-108</b>
				●		1	<b>985-105</b>
	<b>External Auxiliary Switch Kit.</b> Includes dual switch package rated to 250 Vac, mounting screws and adapter rings. Mounts to the actuator, not damper shaft.		●	●		1	<b>ASC77.2U</b>
	<b>500 Ohm Restrictor Kit.</b> Converts 4-20 mA signal to 2 to 10 Vdc.	●	●	●		1	<b>985-124</b>
	<b>0 to 10 Vdc Input Cable, 3 ft.</b> For use with GDE161.1N only.	●				Pkg. of 12	<b>985-133</b>
	<b>Daisy Chain Cable, 12 ft.</b> For use with GDE131.1N and GDE161.1N only.	●				Pkg. of 12	<b>985-134</b>
	<b>Daisy Chain Cable, 25 ft.</b> For use with GDE131.1N and GDE161.1N only.	●				Pkg. of 12	<b>985-135</b>
	<b>Universal Indirect Mounting Kit.</b> Floor or frame mounting with the GQD actuator series.				●	1	<b>ASK80.1</b>
	<b>Rotation Limiter Kit.</b> Limits the rotation angle of the GQD actuator from the standard 90°.				●	Pkg. of 10	<b>ASK74.11</b>


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Damper Actuators

### Damper Actuator Accessories Location Diagram



## Accessories & Service Kits


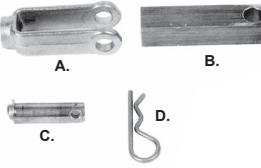


	Description	Used with Pneumatic Actuator Models			Quantity	Part No.
		No. 3	No. 4	No. 6		
<b>Connection Hardware and Damper Fittings</b>						
	<b>Damper Shaft Crank.</b> Adjustable radius, 3/4" (19 mm) to 4-5/8" (117 mm), for 3/8" (10 mm) diameter dampershaft.	●	●		1	331-805
	<b>Damper Shaft Crank.</b> Selectable radius, 45°, 60°, and 90° angular rotation, for 3/8" (10 mm) to 1/2" (13 mm) diameter damper shaft.	●	●		1	331-941
	• 1/2"				1	333-182
	• 5/8"				1	333-183
	• 3/4"				1	333-181
	<b>Cast Iron Crank and Set Screws.</b> For 1/2" (6 mm) OD shaft.			●	1	333-078
	<b>Linkage Kit.</b> 4" (102 mm) link and crank. For 3/8 inch (10 mm) to 1/2 inch (13 mm) diameter damper shafts.	●	●	●	1	331-958
	<b>Linkage Kit.</b> 4" (102 mm) rod, ball joint and crank. For 3/8 inch (10 mm) to 1/2 inch (13 mm) diameter damper shafts.	●	●	●	1	331-947
	<b>Ball Joint Connector.</b>	●	●		1	331-656
	<b>Pivot Post Kit.</b> For use with No. 3 actuator. 1/4-28 x 7/16 inch bolt and nut 5/16 inch rod receiver.	●			1	331-657

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Damper Actuators



## Accessories & Service Kits

	Description	Used with Pneumatic Actuator Models			Quantity	Part No.
		No. 3	No. 4	No. 6		
<b>Connection Hardware and Damper Fittings</b>						
	<b>Ball Joint Connector Linkage Kit.</b> For Trane and Nesbitt units <ul style="list-style-type: none"> <li>• 3/8-24 ball joint connector</li> <li>• 1/4-20 ball joint connector</li> <li>• 8 inch (202 mm) long, 5/16 inch push rod</li> <li>• Bracket, lockwashers, nuts</li> </ul>	●	●		1	331-671
	<b>Clevis and Components for Frame Mounting.</b> <ul style="list-style-type: none"> <li>• Forged Steel Clevis, 2 in. long (A)</li> </ul>	●	●	●	1	331-653
	<ul style="list-style-type: none"> <li>• 5/8" Square Steel Clevis, 2.6 in. long (B)</li> </ul>				1	333-207
	<ul style="list-style-type: none"> <li>• Clevis Pin (C)</li> </ul>				1	331-293
	<b>Steel Pivot Post.</b> For additional clearance (long length) for actuator. Includes steel pivot post lockwasher, nuts (2), and E-rings (2).		●	●	1	333-045
	<b>Travel Stop Kit.</b> For field assembly. Reduce travel from 4" (102 mm) down to 2-29/32"(73 mm). For Model 3 only.	●	●		1	333-197







## Accessories & Service Kits

	Description	Used with Pneumatic Actuator Models			Quantity	Part No.
		No. 3	No. 4	No. 6		
<b>Actuator Shaft Extensions and Damper Push Rods</b>						
	<b>Actuator Shaft Extension Kit.</b> Includes push rod, 1/4"-28 ball joint connector, coupling and screws.	●	●		1	331-674
	<b>Actuator Shaft Extension Kit.</b> Includes shaft/clevis adapter (2 required), clevis adapter rod and nuts.  Field-assembled actuator shaft extension kit with field fabricated 1/2" NPT threaded pipe (not provided).  Threaded female adapters are 1/2"-14 NPT and 3/8"-24 UNS threads.		●	●	1	333-030
	<b>Long Actuator Shaft Extension Rod.</b> 10-1/8" (257 mm)	●	●	●	1	331-434A
	<b>Damper Shaft Extension.</b> 1/2" (13 mm) diameter damper shaft extension rod. Rod is 2-1/4" (57 mm) long.	●	●	●	1	331-631
	<b>Damper Shaft Extension.</b> 1/2" (13 mm) diameter damper shaft extension rod. Rod is 9" (229 mm) long.	●	●	●	1	333-043-03
	<b>Adapter.</b> For 3/8" (10 mm) diameter damper shafts. Use with 333-042, Shaft Extension.	●	●	●	1	331-632

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Damper Actuators


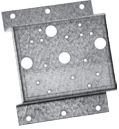

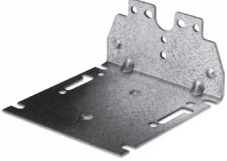




## Accessories & Service Kits

	Description	Used with Pneumatic Actuator Models			Quantity	Part No.
		No. 3	No. 4	No. 6		
<b>Actuator Shaft Extensions and Damper Push Rods</b>						
	<b>Long Shaft Extension.</b> For a 1/2" (13 mm) hollow damper shaft.		●		1	333-184
	<b>Shaft Extension.</b> 1" (25 mm) diameter shaft extension 11-5/8" (295 mm) long for Ruskin dampers. Includes 1" (25 mm) diameter crank and 2 roll pins for assembly.		●	●	1	333-194
	<b>Flange Bearing.</b> 1/2" (13 mm) damper shaft bearing for universal mounting plate, 331-623.		●	●	1	331-862
	<b>Damper Push Rods.</b> 5/16" (8 mm) dia.	●	●	●		
	• 12" (30 cm) Length				1	338-041
	• 15" (38 cm) Length				1	338-042
	• 18" (46 cm) Length				1	338-043
	• 24" (61 cm) Length				1	338-044
	• 36" (91 cm) Length				1	338-045
	<b>Adjustable Yoke End Adapter.</b> • 1/2-20 thread to 1/2 inch NPT				1	331-351
	<b>No. 3 Pivot Post Kit.</b> For extended shaft mounting plate.	●			1	331-006
	• E-ring				2	
	• Lockwasher				2	
	• Nut				2	
	<b>Frame Mounting Lug Kit.</b>	●	●	●	1	331-004
	• Screw				2	
	• Nut				2	

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Damper Actuators

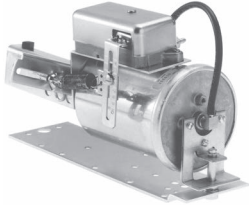

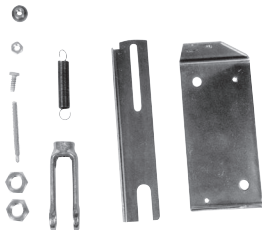

## Accessories & Service Kits

	Description	Used with Pneumatic Actuator Models			Quantity	Part No.
		No. 3	No. 4	No. 6		
<b>Actuator Shaft Extensions and Damper Push Rods</b>						
	<b>Extended Shaft Mounting Plate.</b> May also require pivot post, clevis, crank and miscellaneous mounting hardware. 3" (76 mm) W x 10-1/2" (267 mm) L.	●			1	331-033
	<b>Offset Mounting Bracket.</b> For mounting the universal mounting lug, pivot post, clevis, crank, and miscellaneous mounting hardware.		●	●	1	333-176
	<b>Universal Mounting Plate.</b> May also require frame mounting lug, pivot post, clevis, crank and miscellaneous mounting hardware.		●	●		
					1	331-623
					1	331-623A
	<b>Actuator Side Mounting Bracket.</b> For side mounting of No. 3 or No. 4 actuators.	●	●		1	331-916
	<b>Pivot Mounting Kit.</b> Pivot mounting bracket and screws included (3).	●			1	333-148
	<b>Remote Mounting Kit.</b> For use with actuator/clevis assembly. Allows connection to damper shaft when damper shaft and actuator pivot post are mounted on different planes. Field fabricated 3/8" (10 mm) diameter push rod not included. Cut to length as needed.		●	●	1	331-618
	<b>Right Angle Mounting Plate.</b> For mounting actuator to floor. <i>Order separately.</i>		●	●	1	333-208
	<b>Copper to Polyethylene Tubing Adapters.</b> 24" length. Adapts 1/4 inch (6 mm) OD poly tubing to 1/4 inch (6 mm) OD copper tubing. Eliminates the need for compression fitting.	●	●	●	Pkg. of 50	141-426

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Damper Actuators



## Accessories & Service Kits

	Description	Used with Pneumatic Actuator Models			Quantity	Part No.
		No. 3	No. 4	No. 6		
<b>Positioning Relay and Relay Mounting Kits</b>						
	<p><b>Positioning Relay.</b> A compact, pneumatic device designed to provide positive positioning of a pneumatic actuator. The positioned provides supply air pressure against the actuator diaphragm to initiate stem or shaft movement. The actuator spring reverses the stem or shaft movement.</p>	●	●	●	1	147-2000
	<p><b>Positioning Relay Actuator Mounting Kit for No. 3 Damper Actuator.</b> Can also be factory-assembled to extended shaft mounted actuators. If using cast iron crank, it must be replaced with a <b>331-941</b> crank. (mfg. after 1/93)</p>	●			1	147-104
	<p><b>Positioning Relay Mounting Kit for No. 4 Damper Actuator.</b></p>		●		1	147-314
	<p><b>Positioning Relay Mounting Kit for No. 6 Damper Actuator.</b></p>			●	1	147-276

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Damper Actuators

## Accessories & Service Kits

	Description	Used with Pneumatic Actuator Models			Quantity	Part No.
		No. 3	No. 4	No. 6		
<b>Replacement 147 Feedback Springs for Positioning Relay</b>						
	<b>Small Red.</b> Travel Range: 3/4" (19 mm) to 1" (25 mm) • VP 591 8 in. Valve Act. (147-333) • Flowrite Series 599 8-inch (599-00426) • Flowrite Series 599 12-inch (599-00423) • Flowrite 8-inch models 1 and 2 (147-277) • VP 591/3 Flowrite Valve Act. (147-311) • Super Flowrite Valves, 1/2" – 4"				1	147-290
	<b>2" Red.</b> Travel Range: 2-3/8" (60 mm) to N/A • No. 3 Damper Actuator (147-104)	●			1	147-105
	<b>Long Zinc Plate.</b> Travel Range: 3" (76 mm) to 3-1/4" (83 mm) • No. 6 Damper Actuator (147-276)			●	1	147-292
	<b>Blue.</b> Travel Range: 4" (102 mm) to 4-1/4" (108 mm) • No. 6 Damper Actuator (147-276)			●	1	147-293
	<b>Zinc Pl. or Yell. Chr.</b> Travel Range: 4" (102 mm) to 6" (152 mm) • No. 4 Damper Actuator (147-314)		●		1	147-313
<b>Actuator Service and Repair Accessories</b>						
	<b>No. 4 Cast Aluminum Housing, Standard.</b> Legacy actuators with part numbers lower than or equal to 331-2885.		●		Pkg. of 5	333-072
	<b>No. 4 Diaphragm for High Ambient Temperature.</b> For newer models with part numbers 331-2888 and higher (Up to 400°F diaphragm).		●		Pkg. of 5	333-071
	<b>No. 6 Standard Replacement Diaphragm.</b>			●	Pkg. of 5	333-572

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Damper Actuators

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PRODUCT	PRODUCT CODE	RESOURCE DOCUMENTS	PAGE #
<b>Variable Frequency Drives</b>			
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<b>Climatix VFD</b>			
Climatix Variable Frequency Drives	RT	A6V12394104	<b>C-5</b>



There's about 5,000 points on a VFD. They get crazy. **I had one.** One point. I clicked one button. I was done."

— HVAC Technician



# Increase IEER by 20% with Climatix VFDs

C-2

Climatix controller-driven VFD simplifies setup for energy efficiency made easy.

Designed specifically for use in new or existing rooftop unit fan applications, Climatix VFDs provide the energy efficiency needed. They are easily integrated, compact and cost-effective. With other VFDs, setup may include programming 80+ parameters.

With Climatix, the controller is preset with the key parameters for RTU operation and only requires VFD configuration with 10 or fewer parameters for Induction Motors; 25 or fewer for Permanent Magnet motors.

The Climatix mobile app completes programming with a press of the button. Combine with Climatix IC remote monitoring and you always know the exact VFD setting and RTU fan performance.

Visit [usa.siemens.com/climatix-vfd](http://usa.siemens.com/climatix-vfd) to learn more.

Download  
Climatix  
mobile app



Download on the  
App Store



GET IT ON  
Google Play



**SIEMENS**



## Variable Frequency Drives



The Climatix VFD is designed for use with the Climatix RTU solution and provides the simplest commissioning and system integration in the industry. Commissioned with an easy to use mobile app, this VFD is perfect to meet the latest roof top unit efficiency requirements. The rooftop unit sequence of operations is specially programmed into the Climatix RT controller enabling contractors to save hundreds of hours in training and commissioning. Learn it in a day and be on your way to simplified service and maintenance for more rooftop units.

The Climatix VFD Microdrive has just the right functionality to simplify rooftop unit efficiency for fans up to 30HP. The Climatix VFD key features include:

- First HVAC VFD Solution Mobile App
- Commissioning in 5 min or less
- Standard Safe Torque Off
- Conformal Coated PCB's to protect against dust and moisture accumulation
- Real time status monitoring with pre-configured Climatix IC dashboard.



# C-4 Rooftop unit performance made easy with the Climatrix RTU Solution

The Climatrix RTU solution simplifies maintenance and management of rooftop units to make life easy. It's a pre-engineered package specially designed to optimize RTU performance out of the box. No special controller programming is required — it's done for you. The sensors you need are included in one kit that works with any manufacturer's rooftop unit with up to three cooling compressors and two stages of heating.

Visit [usa.siemens.com/rtu](http://usa.siemens.com/rtu) to learn more.



Download  
Climatrix  
mobile app



Download on the  
App Store



GET IT ON  
Google Play



**SIEMENS**

## Climatix Variable Frequency Drives



### Description

The Climatix VFD series is designed specifically for use in new or existing rooftop unit fan applications to provide the energy efficiency needed in an easily integrated, compact, cost-effective VFD. It leverages the Climatix RT controller to simplify commissioning, monitoring, and troubleshooting.

### Features

#### Compact Form

Designed to fit nicely in tight spaces with a size 40% smaller than other VFDs – ideal for RTU retrofits.

#### Conformal Coated PCBs

Durable in harsh environments, the Climatix VFD printed circuit boards are built to withstand dust and moisture build-up.

#### Ease of Use

- Easy commissioning with Climatix mobile app
- Compatible with existing induction motor or permanent magnet motors
- VFD configuration for induction motors with 10 or fewer parameters (25 or fewer for permanent magnet motors)
- Real-time status monitoring with pre-configured Climatix IC dashboards
- Easy access to boards via screwless front cover
- Removeable fan for easy maintenance
- Flexible mounting options for easy installation

#### Additional Features

- Built-in Safe Torque Off (STO)
- Multi-motor control – up to 4 motors
- Built-in PID
- Phase loss protection
- Plenum rated
- DC braking
- Operating temperature -4° to 122° F (-20° to 50° C) without derating
- Certifications: UL, CE, RCM, TUV (SIL 2), RoHS, REACH

#### Accessories

- Replacement fan kit VFD frames B-E
- EMC filter
- Remote mounting kit
- Line / load reactors
- DC choke

# Specifications

**Input Voltages and Power Ranges (3-phase)**  
 0.25-1 HP 115VAC (-15% +10%) 1-ph  
 0.25-3 HP 230VAC (-15%+ +10%) 1-ph  
 0.25-20 HP 230VAC (-15%+ +10%) 3-ph  
 0.5-30 HP 460VAC (-15%+ +10%) 3-ph

**Input Frequency**.....50/60 HZ  
**Output Frequency**..... 0 – 599 Hz  
**Max Output Frequency**.....Standard model: 599.00 Hz /  
 High speed model: 1500.0 Hz  
 (with derating, V/F control only)

**Overload Capacity**..... Normal duty: 120% 60s, 150% 3s  
 Heavy duty: 150% 60s, 200% 3s

**Carrier Frequency**.....2-15 KHz (Default 4)  
**Speed Control Mode**..... 1 : 50 ( V/f, SVC control for IM, Heavy duty)  
 1 : 20 ( SVC control for PM, Heavy duty)

**Starting Torque**.....150% / 3 Hz (V/f, SVC control for IM, Heavy duty)  
 100% / (1/20 of motor rated frequency)  
 (SVC control for PM, Heavy duty)

**Ambient Operating Temperature**.....-4° – +122° F (-20° - +50° C)  
 -4° – +140° F (-20° - +60° C) with derating

**Storage Temperature**.....-4° – +122° F (-20° - +50° C)  
 140° (60° C) with derating

**Relative Humidity**  
 Operation.....Max 90%  
 Storage/Transportation.....Max 95%

**Altitude**..... 1000m/3280ft (>1000m w/ derating)

**Vibration**..... IEC60068-2-6: 2Hz~13.2Hz: 1mm, peak-peak  
 13.2Hz~55Hz: 0.7G~2.0G  
 55Hz~512Hz: 2.0G

**Enclosures Class**..... IP20, IP21 Kit Future release

**Motor Compatibility**.... Induction motors (IM), interior permanent magnet (IPM) motors, and surface permanent magnet (SPM) motors

**Braking**.....DC Injection Braking

**Protections**..... Over-current, Over-voltage, Over-temperature, Phase loss, Stall prevention

**Certifications**..... UL, cUL, CE, RoHS, REACH, C-Tick

# Catalog Number Builder

Example Product Number	R	T	0	0	1	X	-	1	1	N
<b>Family</b>										
Rooftop										
<b>Power Rating</b>										
0002 – 0.25 HP										
0005 – 0.50 HP										
001X – 1 HP										
002X – 2 HP										
003X – 3 HP										
005X – 5 HP										
0075 – 7.5 HP										
010X – 10 HP										
015X – 15 HP										
020X – 20 HP										
025X – 25 HP										
030X – 30 HP										
Separator										
<b>Voltage</b>										
11 – 115V 1-ph										
21 – 230V 1-ph										
23 – 230V 3-ph										
43 – 460V 3-ph										
53 – 575V 3-ph										

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Variable Frequency Drives

## Product Ordering

Voltage	HP	Phase	Rated Output Current (A)	Frame	Product Information	Part Number
115	0.25	1	1.6	A1	VFD 115V, 1-PH; 0.25HP	RT0002-11N
	0.5	1	2.5	A3	VFD 115V, 1-PH, 0.5HP	RT0005-11N
	1	1	4.8	C1	VFD 115V, 1-PH, 1HP	RT001X-11N
230	0.25	1	1.6	A1	VFD 230V, 1-PH, 0.25HP	RT0002-21N
	0.5	1	2.8	A3	VFD 230V, 1-PH, 0.5HP	RT0005-21N
	1	1	4.8	B2	VFD 230V, 1-PH, 1HP	RT001X-21N
	2	1	7.5	C1	VFD 230V, 1-PH, 2HP	RT002X-21N
	3	1	11.0	C1	VFD 230V, 1-PH, 3HP	RT003X-21N
	0.25	3	1.6	A1	VFD 230V, 3-PH, 0.25HP	RT0002-23N
	0.5	3	2.8	A2	VFD 230V, 3-PH, 0.5HP	RT0005-23N
	1	3	4.8	A5	VFD 230V, 3-PH, 1HP	RT001X-23N
	2	3	7.5	B1	VFD 230V, 3-PH, 2HP	RT002X-23N
	3	3	11.0	C1	VFD 230V, 3-PH, 3HP	RT003X-23N
	5	3	17.0	C1	VFD 230V, 3-PH, 5HP	RT005X-23N
	7.5	3	25.0	D1	VFD 230V, 3-PH, 7.5HP	RT0075-23N
	10	3	33.0	E1	VFD 230V, 3-PH, 10HP	RT010X-23N
	15	3	49.0	E1	VFD 230V, 3-PH, 15HP	RT015X-23N
20	3	65.0	F1	VFD 230V, 3-PH, 20HP	RT020X-23N	
460	0.5	3	1.5	A4	VFD 460V, 3-PH, 0.5HP	RT0005-43N
	1	3	2.7	A5	VFD 460V, 3-PH, 1HP	RT001X-43N
	2	3	4.2	B1	VFD 460V, 3-PH, 2HP	RT002X-43N
	3	3	5.5	C1	VFD 460V, 3-PH, 3HP	RT003X-43N
	5	3	9.0	C1	VFD 460V, 3-PH, 5HP	RT005X-43N
	7.5	3	13.0	D1	VFD 460V, 3-PH, 7.5HP	RT0075-43N
	15	3	17.0	E1	VFD 460V, 3-PH, 15HP	RT015X-43N
	10	3	25.0	D1	VFD 460V, 3-PH, 10HP	RT010X-43N
	20	3	32.0	E1	VFD 460V, 3-PH, 20HP	RT020X-43N
	25	3	38.0	F1	VFD 460V, 3-PH, 25HP	RT025X-43N
575	1	3	1.7	A5	VFD 575V, 3-PH, 1HP	RT001X-53N
	2	3	3.0	B1	VFD 575V, 3-PH, 2HP	RT002X-53N
	3	3	4.2	C1	VFD 575V, 3-PH, 3HP	RT003X-53N
	5	3	6.6	C1	VFD 575V, 3-PH, 5HP	RT005X-53N
	7.5	3	9.9	D1	VFD 575V, 3-PH, 7.5HP	RT0075-53N
	10	3	12.2	D1	VFD 575V, 3-PH, 10HP	RT010X-53N

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Variable Frequency Drives

## Available Horsepower & Voltage Options

Input Voltage	HP	0.25	0.5	1	2	3	5	7.5	10	15	20	25	30	40
575V 3-ph	Motor output (HP)													
460V 3-ph														
230V 3-ph														
260V 1-ph														
115V 1-ph														

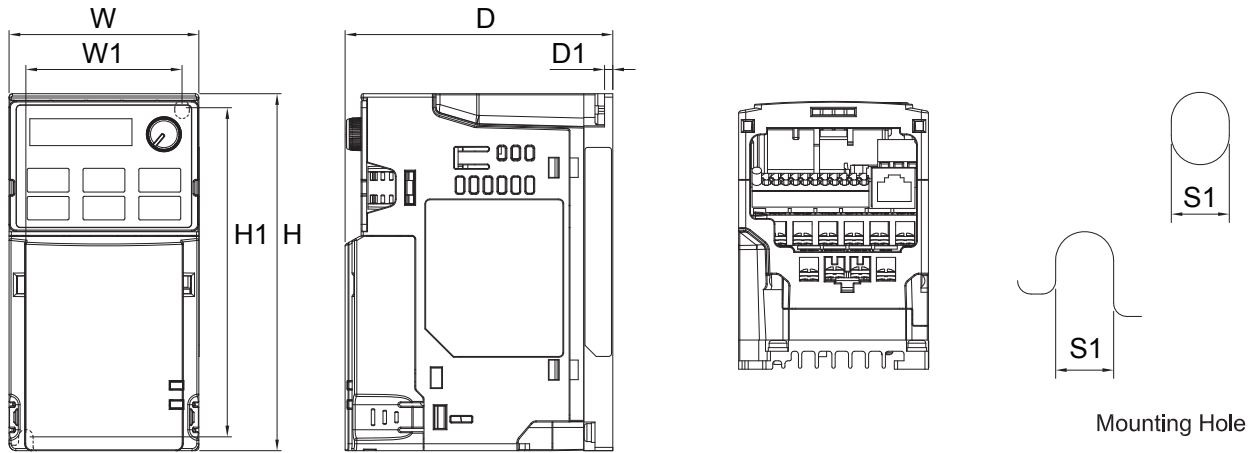
## Climatix VFD Accessories

Item	Description	Part Number
Conduit Kit	NEMA1 Kit, Frame A3, A4, A5	RT-CONDUIT-FRA
	NEMA1 Kit, Frame B1, B2, B3	RT-CONDUIT-FRB
	NEMA1 Kit, Frame C1, C2	RT-CONDUIT-FRC
	NEMA1 Kit, Frame D1, D2	RT-CONDUIT-FRD
	NEMA1 Kit, Frame E1, E2	RT-CONDUIT-FRE
	NEMA1 Kit, Frame F1, F2	RT-CONDUIT-FRF
Din Rail Kit	DIN Rail Kit, Frame A or B	RT-MNTK-FRAB
	DIN Rail Kit, Frame C	RT-MNTK-FRC
Grounding Plate Kit	Grounding Plate Kit Frame A	RT-EP-FRA
	Grounding Plate Kit Frame B	RT-EP-FRB
	Grounding Plate Kit Frame C	RT-EP-FRC
	Grounding Plate Kit Frame D	RT-EP-FRD
	Grounding Plate Kit Frame E	RT-EP-FRE
	Grounding Plate Kit Frame F	RT-EP-FRF
EMC Filter	EMC Filter,10A,230V,3PH	RT-EMCF-10AM23A
	EMC Filter,11A,230V,1PH	RT-EMCF-11AM21A
	EMC Filter,12A,460V,3PH	RT-EMCF-12AM43B
	EMC Filter,23A,460V,3PH	RT-EMCF-23AM43B
	EMC Filter,24A,230V,3PH	RT-EMCF-24AM23B
	EMC Filter,27A,230V,1PH	RT-EMCF-27AM21B
	EMC Filter,33A,230V,3PH	RT-EMCF-33AM23B
	EMC Filter,6A,460V,3PH	RT-EMCF-6A0M43A
	EMC Filter,6A,575V,3PH	RT-EMCF-6A0M63B
	EMC Filter,16A,575V,3PH	RT-EMCF-16AM63B
Replacement Fan Kit	RT Fan Kit for Frame B	RT-FANKIT-FRB
	RT Fan Kit for Frame C	RT-FANKIT-FRC
	RT Fan Kit for Frame D	RT-FANKIT-FRD
	RT Fan Kit for Frame E	RT-FANKIT-FRE
	RT Fan Kit for Frame F	RT-FANKIT-FRF

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Variable Frequency Drives

## Dimensions



## Dimensions and Weights

Frame Size	W	H	D	W1	H1	D1	S1
A1			3.78 (96.0)				
A2			4.33 (110.0)				
A3	2.68 (68.0)	5.04 (128.0)	4.92 (125.0)	2.2 (56.0)	4.65 (118.0)	0.12 (3.0)	0.2 (5.2)
A4			5.08 (129.0)				
A5			5.63 (143.0)				
B1			5.63 (143.0)			0.25 (6.4)	
B2	2.83 (72.0)	5.59 (142.0)	5.63 (143.0)	2.36 (60.0)	5.53 (130.0)	0.12 (3.0)	0.20 (5.2)
B3			6.26 (159.0)			0.17 (4.3)	
C1	3.43 (87.0)	6.18 (157.0)	5.98 (152.0)	2.87 (73.0)	5.69 (144.5)	0.2 (5.0)	0.22 (5.5)
C2			7.05 (179.0)				
D1	4.29 (109.0)	8.15 (207.0)	6.06 (154.0)	3.70 (94.0)	7.63 (193.8)	0.24 (6.0)	0.22 (5.5)
D2			7.36 (187.0)				
E1	5.12 (130.0)	9.84 (250.0)	7.83 (185.0)	4.53 (115.0)	9.32 (236.8)	0.24 (6.0)	0.22 (5.5)
E2			8.62 (219.0)				
F1	6.89 (175.0)	11.81 (300.0)	7.56 (192.0)	6.06 (154.0)	11 (279.50)	0.26 (6.5)	0.33 (8.4)
F2			9.61 (244.0)				



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# Transforming building energy efficiency

Unlock your full energy savings potential and remove the guess work out of improving your building's energy efficiency. Partner with us for simple solutions to transform your building from a liability into an asset. From monitoring energy usage to controlling energy costs, we can provide guidance on how to optimize existing HVAC equipment to turn buildings into a high-performing business asset.

Visit [usa.siemens.com/energyefficiency](https://usa.siemens.com/energyefficiency) to learn more.



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RDY2000BN Room Comfort Controller with BACnet	RDY2000BN	149-215	<b>D-5</b>
<b>Non-Communicating Thermostats</b>			
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Siemens offers a 5-year warranty on thermostats.



# Save energy while maintaining a constant room climate

D-2

The Siemens line of room thermostats offer a range of products for simple to more complex buildings. These products are designed to optimize a constant room environment and achieve more energy savings. Make building operations effortless with basic climate control to advanced BACnet integration into building automation systems. Our thermostats are engineered for easy installation, easy operation and reliability which leads to fewer callbacks.

Visit [usa.siemens.com/thermostats](http://usa.siemens.com/thermostats) to learn more.



**Versatile Product Portfolio**  
Thermostats for every HVAC application



**Quality**  
Rigorous testing to meet Siemens high standards



**Less Effort**  
Easy to install and maintenance-free



**Indoor Air Quality**  
Ensure healthy indoor climates



**Maximize Comfort**  
Ensure occupant comfort and productivity



**System Performance**  
Optimize building efficiency



## RDB160BNU Commercial Fan Coil Unit Room Thermostat with BACnet MS/TP Communication



RDB160BNU Fan Coil Room Thermostat

### Description

The Siemens RDB160BNU is designed for commercial Fan Coil Unit applications with low voltage (24 VAC) control circuitry and features BACnet MS/TP communication capability. The RDB160BN has a tailored combination of on/off and modulating output signals, making it versatile to control 16 different types of Fan Coil Units.

The RDB160BNU Fan Coil Unit Thermostat enables various control strategies including Comfort, Standby (Economy), and Mold Protection. A built-in temperature sensor or external room/return air temperature sensor enables room temperature control. Analog, universal, and digital inputs are also available and can be configured to further enhance the operation and reduce the energy consumption.

### Features

- BTL listed MS/TP ensures compatibility with any BACnet system
- Pre-programmed, pre-configured control programs
- Set-up Wizard enables rapid system configuration
- No special tools required for installation or commissioning
- Controls Fan Coil Units with:
  - 1, 2, 3-speed or DC 0...10 V fans
  - on/off, 3-position or DC 0...10 V valve actuators
  - on/off electric heaters

- Built-in temperature sensor in addition to configurable inputs enable advanced room controls based on external room/return air temperature, supply air temperature limitation, heating/cooling changeover, window contact, and occupancy sensor.\*
- Changeover between heating and cooling mode (automatic with local temperature sensor, digital input, or through Building Automation System)
- \* Requires purchase of external sensor(s).

### Applications

The versatile wall mounted RDB160BNU Commercial Fan Coil Room Thermostat is suitable for applications where communication to a Building Automation System is required such as offices, healthcare, education, retail, shopping malls or other commercial facilities.

The RDB160BNU can control fan coil units of the following types:

- 2-pipe system
- 2-pipe system with electric heater
- 4-pipe system\*

\* The RDB160BNU can control Fan Coil Units with up to 2 DC 0...10 V control outputs i.e.: the control of a DC fan, DC cooling valve, and DC heating valve is not possible.

# Specifications

## Power Supply

Supply voltage ..... 18...30 V AC, Class 2  
 Frequency ..... 50...60 Hz  
 Power Consumption ..... 2.5 VA

## Ambient and Environmental Conditions

Ambient temperature ..... 32...122°F (0...50°C)  
 Ambient humidity ..... Max. 90 % RH  
 Storage temperature ..... -4...158°F (-20...+70°C)  
 Protection class ..... IP20

## Communication

Communication ..... BACnet MS/TP  
 Communication speed ..... 9600, 19200, 38400, 76800 bps

## Operational Data

Built-in temperature sensor 32...122°F (0...50°C) NTC linearized 15 kΩ  
 Accuracy ..... ±0.9°F (±0.5°C) at 59...86°F (15...30°C)  
 Setpoint range ..... 41° to 95°F (5° to 35°C)

## Inputs

Analogue input (AI1) ..... PT1000 sensor, 0...50°C  
 Universal input (UI1) ..... Analogue input (AI), PT1000 sensor,  
 0...100°C or digital input (DI) potential-free contact  
 Digital input (DI1) ..... Potential-free contact  
 Common (C) power output - for UI and DI only ..... 24 V DC, max.  
 10 mA, short circuit-protected

## Outputs

Digital outputs (DO) ..... 24 V AC, max. 0.5 A  
 Universal outputs (UO) ..... Digital output (DO) 24 V AC, max. 2.0 A  
 or analogue output (AO), 0...10 V DC, max. 5 mA

## General

Mounting ..... indoor, wall  
 Display ..... Backlit LCD  
 Material ..... casing Polycarbonate, PC  
 Color ..... Signal white RAL 9003  
 Dimensions ..... 3.74 x 3.74 x 1.10" (95 x 95 x 28 mm)  
 Net weight ..... 3.88 ounces (110 g)

## Standards, Directives, and Approvals

UL ..... UL 916  
 CE ..... EMC Directive  
 BTL ..... BACnet Testing Laboratory

# Product Ordering

Description	Part No.
Commercial Fan Coil Unit Thermostat with BACnet MS/TP Communication	S55770-T437

## RDY2000BN Commercial Room Thermostat with BACnet Communication



RDY2000BN Commercial Room Thermostat.

### Description

Our advanced, yet straightforward, addition to the Siemens controller family affordably automates stand-alone buildings. The Siemens Series RDY2000BN is designed for light commercial HVAC systems applications with 24 Vac control circuitry and features BACnet communication capability. The RDY2000BN extends a building automation system's coverage to packaged rooftop and heat pump HVAC unit systems with the comfort and control functionality found in direct digital control (DDC) systems.

It can operate as a stand-alone unit or networked to perform complex HVAC control, monitoring, and energy management functions as well as communicate with other devices and the management level.

### Features

- BTL listed MS/TP ensures compatibility with any BACnet system
- Easy integration into Tridium systems with prebuilt AX graphics
- Seamless integration into Siemens BAS systems with pre-defined application profiles and graphics that help speed up installation
- Built-in flexible control programs for conventional and heat pump applications
- Controls conventional systems with up to 3 stages heating and 3 stages cooling
- Controls heat pumps with 1 or 2 compressors and up to 2-stage auxiliary heat
- Built-in temperature and humidity sensor in addition to configurable inputs enables advanced room controls based on humidity, CO<sub>2</sub>, occupancy, remote or averaging temperature.
- Set-up Wizard enables rapid system configuration

- No special tools required for installation or commissioning
- Seven-day, six-event (2- or 4-event) occupancy scheduling
- Sleek design with backlit 5-inch LCD touch screen

### Hardware Features

- Standard 24 Vac HVAC interface: Y1, Y2, G, W1, W2 and O/B
  - Three selectable relay outputs enable control strategies for humidity/dehumidification control, ventilation, economizer enable and occupancy notification
  - Four configurable inputs\*:
    - Digital input
    - Resistive temperature input
    - 0 to 10V input
- \*Requires purchase of external sensor(s).

### Applications

The RDY2000BN is designed for light commercial HVAC systems with 24 Vac control circuitry. Compatible with forced air, hydronic and steam systems fired by gas, oil or electricity. Built-in temperature and humidity sensor in addition to configurable inputs enables advanced room controls based on humidity, CO<sub>2</sub>, occupancy, remote or averaging temperature. Selectable relays enable control strategies for humidity/dehumidification control, ventilation, economizer enable and occupancy notification.

- Controls conventional systems with up to 3 stages heating and 3 stages cooling.
- Controls heat pumps with 1 or 2 compressors and up to 2-stage auxiliary heat.



# Specifications

## Power Supply

**Operating Voltage** .....24 Vac ± 20%, Class 2, 4A maximum  
**Frequency** ..... 50/60 Hz  
**Power Consumption Including Connected Field Devices**... Max. 96 VA

## 24 Vac Supply for Field Devices

**Output relay ratings** .....Pilot duty, 1A maximum per output,  
 4A maximum total

## Ambient Conditions and Protection Classification

**Enclosure** ..... NEMA 1  
**Transport**..... Temperature -13° to 158°F (-25° to 70°C)  
 Air humidity up to 95% (non-condensing)  
**Operation**..... Temperature 23° to 122°F (-5° to 50°C)  
 Air humidity Up to 95% (non-condensing)  
**Setpoint range** .....45° to 95°F (7° to 35°C)

## Standards, Directives, and Approvals

**UL**..... UL 916  
**cUL**..... CSA C22.2 No. 205  
**CE**..... EMC Directive  
**ICES** ..... Canada  
**NOM-NYCE**..... Mexico  
**Regulatory Compliance Mark**..... Australia  
**Federal Communications Commission**..... Complies with the limits  
 for a Class B digital device,  
 pursuant to Part 15 of the FCC rules.  
**BTL**..... BACnet Testing Laboratory  
**Shipping Weight** ..... 14 ounces (0.4 kg)

# Product Ordering

Description	Part No.
Commercial Thermostat with BACnet Communication	<b>RDY2000BN</b>
Remote Wall Mounted Temperature Sensor	<b>QAA2230.EWNN</b>
Remote Wall Mounted Temperature & Humidity Sensor	<b>QFA32SS.EWNN</b>
Duct Mounted Temperature Sensor	<b>QAM2030.010</b>
Wall Mounted CO <sub>2</sub> Sensor	<b>QPA2000</b>
Wall Mounted Temperature + Humidity + CO <sub>2</sub> Sensor	<b>QPA2062</b>
Outdoor Air Temperature Sensor	<b>QAC2030</b>
Surface Mount Pipe Temperature Sensor	<b>QAD2030</b>

# RDY2000 Room Comfort Controller



RDY2000 Room Comfort Controller.

## Description

The Siemens Series RDY2000 Room Comfort Controller is designed for light commercial HVAC systems that utilize 24 Vac control circuitry. It is compatible with forced air, hydronic, or steam systems fired by gas, oil or electricity. The thermostat can control up to 3 stages of heating and 3 stages of cooling in a conventional system and heat pumps systems with up to 2 compressors and 2 stages of auxiliary/emergency heat. The RDY2000 is capable of interfacing with remote sensors and devices to completely manage all aspects of room comfort, including temperature, humidity, and air quality.

## Hardware Features

- Compatible with conventional and heat pump applications
- Controls conventional systems with up to 3 stages of heating and 3 stages of cooling
- Controls heat pump systems with 1 or 2 compressors and up to 2 stages of auxiliary heat
- On-board temperature & humidity sensors
- Standard HVAC relay outputs
  - Compressor 1 (Y1)
  - Compressor 2 (Y2)
  - Fan (G)
  - Heating 1 (W1)
  - Heating 2 (W2)
  - Reversing Valve (O/B)
- 3 Configurable relay outputs (configurable via installer set-up menu)
  - Humidification
  - De-humidification
  - Economizer
  - Occupancy
  - ERV/HRV activation
- Configurable input #3 is a dry contact – can be powered with 24VAC via jumper
- 4 Configurable inputs (configurable via installer set-up menu)
- Remote temperature sensor
  - Outdoor temperature
  - Supply / return temperature(s)
  - Indoor temperature (remote or averaging)
- Remote humidity sensor
- CO2 sensor
- Occupancy sensor

## Control Features

- Set-up Wizard enables rapid system configuration
- Fully programmable scheduling function
  - 5+2 / 5+1+1 / 7-day capability
  - 2 or 4 periods per day
- Multiple options for determining occupancy
  - Scheduled occupancy
  - CO2 level vs. setpoint\*
  - Occupancy / motion detection\*
- Real time clock retains time & date for up to 48 hours upon loss of input power
- System configuration data is stored indefinitely upon loss of input power
- Interlocks and timers specifically designed for equipment protection
- Password protected installer set-up menu deters unauthorized changes
- Programmable fan enables fresh air circulation when not in heating/cooling mode
- Selectable lockout levels to minimize tampering with setpoints and schedule
- Programmable service reminders for humidifier pad, UV lamp, and air filter

\*Requires purchase of external sensor.

## General Features

- Sleek, unobtrusive design with backlit 5" LCD resistive touch screen
- Separable backplate with wiring terminals and mounting holes configured to match most conduit box configurations (screws and anchors included for drywall mounting)
- Designed for horizontal layout
  - 5-1/2" W x 4-1/3" H x 1-1/6" D
  - 11.5 oz.

## Product Ordering

Description	Part No.
Room Comfort Controller	RDY2000
Remote Wall Mounted Temperature Sensor	QAA2230.EWNN
Remote Wall Mounted Temperature & Humidity Sensor	QFA32SS.EWNN
Duct Mounted Temperature Sensor	QAM2030.010
Wall Mounted CO <sub>2</sub> Sensor	QPA2000
Wall Mounted Temperature + Humidity + CO <sub>2</sub> Sensor	QPA2062
Outdoor Air Temperature Sensor	QAC2030
Surface Mount Pipe Temperature Sensor	QAD2030



## RDG110U and RDG160TU Commercial Fan Coil Room Unit and Heat Pump Thermostats



RDG110U Commercial Fan Coil Room Unit and Heat Pump Thermostat.



RDG160TU Commercial 3-speed Fan Coil Room Unit.

### Description

The RDG110U and RDG160TU Commercial Fan Coil Room Unit and Heat Pump Thermostats enable various control strategies including Comfort, Energy Saving, or Freeze Protection. A built-in temperature sensor or external room/return air temperature sensor enables room temperature control. Multifunctional inputs can be configured for keycard input, window contacts or external sensors.

The RDG160TU is a Commercial 3-speed Fan Coil Room Unit Thermostat that offers a 7-day program with 8 programmable timers to switch over between Comfort and Economy modes.

### Features

- 2 multifunctional inputs, configurable for:
  - Operating mode switchover contact (keycard, window contact, and so on)
  - Sensor for automatic heating/cooling mode changeover
  - External room temperature or return air temperature sensor
  - Supply air temperature sensor (RDG160TU)
  - Dew point sensor
  - Electric heater enable
  - Fault sensing
- 1 digital input, configurable for:
  - Operating mode switchover contact (keycard, window contact, and so on)
  - Sensor for automatic heating/cooling mode changeover
  - Dew point switch
  - Electric heater enable
  - Fault sensing
- Configurable relay function (RDG160TU)
  - Disables external equipment during Protection mode
  - Enables external equipment (for example, pump) during H/C demand
  - Output H/C sequence

- Automatic or manual heating and cooling mode changeover
- SPDT relays for valves and SPST relays for 1- to 3-speed fans (RDG110U)
- Modulating or digital outputs for modulating valves, ECM fans, or 1- to 3-speed fans (RDG160TU)
- Purge function when used with 2-port valve in 2-pipe H/C changeover system
- Simple application configuration using DIP switches
- Minimum and maximum supply air temperature limits (RDG160TU)
- Floor heating temperature limit
- Easy operation mode selection with interactive controls
- Filter reminder
- Backlit display with intuitive layout simplifies user interaction during commissioning and daily operation

### Applications

The very versatile, wall-mounted RDG110U and RDG160TU Commercial Fan Coil Room Unit and Heat Pump Thermostats are for low voltage, stand-alone applications, such as in hospitality, dormitory or light commercial facilities.

- 2 pipe Fan Coil with electric heater or radiator
- 4 pipe Fan Coil
- Chilled / heated ceiling with heater or radiator
- Simple DX heat or cool

## Specifications

### Power Supply

Operating Voltage ..... 24 Vac/24 Vdc, Class 2  
 Frequency ..... 50/60 Hz  
 Power Consumption Including Connected Field Devices .... Max. 2 VA

### Multifunctional Inputs

#### X1-M/X2-M

Temperature Sensor Input Type ..... NTC 3K  $\Omega$  at 77°F (25°C)  
 (Recommended Temperature Sensor: QAH11.1)  
 Temperature Range ..... 32° to 120°F (0° to 49°C)  
 Cable Length ..... Maximum 262 feet (80m)

#### Digital Input

Operating Action ..... Selectable (NO/NC)  
 Contact Sensing ..... DC 0 to 5V, Maximum 5 mA

#### D1-GND

Operating action ..... Selectable (NO/NC)  
 Contact sensing ..... DC 6 to 15V, 3 to 6 mA

#### Function Input

..... External Temperature Sensor,  
 Changeover Sensor, Mode Switch Contact,  
 Dew Point Contact, Electric Heater Enable, Fault Contact

### Outputs

#### RDG110U

Fan Control Q1, Q2, Q3-G0 ..... 24 Vac  
 Current Min., Max. Resistive or Inductive ..... AC 5 mA to 5A (4A)  
 Control Output ..... 24 Vac  
 Y11-G0/Y21-G0 ..... AC 5 mA to 5A (3A)

#### RDG160TU

Q1/Q2/Q3/G-G0 (relay) ..... 24 Vac Class 2  
 Use as 3-speed fan control  
 Rating Min., Max. Resistive or Inductive ..... 5 mA to 5A (4A)  
 Use as actuator control (Q1, Q2)  
 Q1 Rating Min., Max. Resistive or Inductive ..... 5 mA to 1A  
 Q2 Rating Min., Max. Resistive or Inductive ..... 5 mA to 5A (4A)  
 Max. Total Load Current Q1 + Q2 + Q3 ..... 5A  
 Use as External Load Control (Q1, Q2, Q3)  
 Rating Min., Max. Resistive Or Inductive Each ..... 5 mA to 1A  
 ECM Fan Control Y50 – G0 Max. .... DC 0 to 10V  $\pm$  5 mA  
 Actuator Control Y10-G0/Y20-G0 (G) ..... DC 0 to 10V  $\pm$  1 mA

### Operational Data

#### Switching Differential, Adjustable

Heating Mode ..... 4°F (2°C); 1° to 12°F (0.5° to 6°C)  
 Cooling Mode ..... 2°F (1°C); 1° to 12°F (0.5° to 6°C)

#### Setpoint Setting and Range

Comfort Mode ..... 70°F (21°C); 41° to 104°F (5° to 40°C)  
 Energy Saving Mode ..... 59°F (15°C) or 86°F (30°C) OFF;  
 41° to 104°F (5° to 40°C)  
 Protection ..... 46°F (8°C) OFF; 41° to 104°F (5° to 40°C)

#### Multifunctional Inputs X1/X2/D1

..... Selectable  
 Input X1 ..... External Temperature Sensor  
 Input X2 ..... Changeover Sensor  
 Input D1 ..... Operating Mode Switchover

#### Built-in Room Temperature Sensor

Measuring Range ..... 32° to 120°F (0° to 49°C)  
 Accuracy at 77°F (25°C) .....  $< \pm 1^\circ\text{F}$  (0.5°C)  
 Temperature Calibration Range .....  $\pm 6^\circ\text{F}$  (3°C)

#### Settings and Display Resolution

Setpoints ..... 1°F (0.5°C)  
 Current Temperature Value Displayed ..... 1°F (0.5°C)

### Operation

Climatic conditions ..... Class 3K5

Temperature ..... 32° to 122°F (0° to 50°C)

Humidity .....  $< 95\%$  rh

Connection Terminals ..... 1 x 14 Gauge (1 x 0.4 through 2.5 mm<sup>2</sup>)  
 or 2 x 16 Gauge (2 x 0.4 through 1.5 mm<sup>2</sup>)

Housing Front Color ..... RAL 9003 White

Weight ..... 0.77 lb (0.350 kg)

### Agency Standards

EU Conformity (CE) ..... CEIT3181XX

RCM Conformity ..... CEIT3181en\_CI

UL Listing ..... UL 916 PAZX

cUL ..... CSA-C22.2 No. 205 PAZX7

Federal Communications Commission ..... Complies with the  
 Limits for a Class B Digital Device,  
 Pursuant to Part 15 of the FCC Rules

Safety Class ..... III as per EN 60529

Degree of Protection Housing ..... IP30 as per EN 60529

Pollution Class ..... Normal

## Product Ordering

Description	Part No.
24V Wall-mounted Thermostat Fan Coil Unit and Heat Pump	RDG110U
24V Wall-mounted Thermostat Fan Coil Unit, 3-speed/ECM Fan	RDG160TU

## RDG400 Commercial VAV Thermostat



RDG400 Commercial VAV Thermostat.

### Description

Siemens RDG400 is a versatile Single Duct VAV Thermostat Controller for low voltage stand-alone applications such as in hospitality, dormitory or light commercial applications.

Multifunctional inputs can be configured for keycard input, window contacts or external sensors. Select from various control strategies including Comfort, Energy Saving, or Freeze Protection. A backlit display with intuitive layout simplifies user interaction during commissioning and daily operation.

Siemens also offers a broad selection of sensors and actuators that comprise cost-efficient application bundles that are compatible with the RDG400.

### Features

- Room temperature control using built-in temperature sensor or external room temperature/return air temperature sensor
- Three multifunctional inputs, configurable for:
  - Operating mode switchover contact (keycard, window contact, and so on)
  - Sensor for automatic heating/cooling mode changeover
  - External room temperature or return air temperature sensor
  - Dew point sensor
  - Fault sensing
- Automatic or manual heating and cooling mode changeover
- Supports electric heater
- Simple application configuration using DIP switches
- Minimum and maximum setpoint limitation
- Floor heating temperature limit
- Easy operation mode selection with intuitive controls
- Button lock (automatic or manual)

### Applications

Commercial VAV applications include single-duct; single-duct with auxiliary heater; single-duct and radiator/floor heating; and single-duct heating and cooling coil.

- Single-duct:
  - DC 0 to 10V damper actuator; 3-position damper actuator
- Single-duct with auxiliary heater:
  - DC 0 to 10V damper actuator and ON/OFF, PWM or 3-position auxiliary heater, 3-position damper actuator and DC 0 to 10V auxiliary heater
- Single-duct and radiator/floor heating:
  - DC 0 to 10V damper actuator and ON/OFF, PWM or 3-position radiator, 3-position damper actuator, and DC 0 to 10V radiator
- Single-duct heating and cooling coil:
  - DC 0 to 10V damper actuator and ON/OFF, PWM or 3-position heating and cooling, 3-position damper actuator, and DC 0 to 10V heating and cooling

# Specifications

## Power Supply

Operating Voltage ..... 24 Vac/24 Vdc, Class 2  
 Frequency ..... 50/60 Hz  
 Power Consumption Including Connected Field Devices .... Max. 2 VA

## Multifunctional Inputs

**X1-M/X2-M**  
 Temperature Sensor Input Type ..... NTC 3K Ω at 77°F (25°C)  
 (Recommended Temperature Sensor: QAH11.1)  
 Temperature Range ..... 32° to 120°F (0° to 49°C)  
 Cable Length ..... Maximum 262 feet (80m)

**Digital Input**  
 Operating Action ..... Selectable (NO/NC)  
 Contact Sensing ..... DC 0 to 5V, Maximum 5 mA

**D1-GND**  
 Operating action ..... Selectable (NO/NC)  
 Contact sensing ..... DC 6 to 15V, 3 to 6 mA

**Function Input** ..... External Temperature Sensor,  
 Changeover Sensor, Mode Switch Contact,  
 Dew Point Contact, Electric Heater Enable, Fault Contact

## Outputs

**Control Output Y10-G0** ..... DC 0 to 10V  
 Resolution ..... 39 mV  
 Current ..... Maximum ± 1 mA

**Control Y1, Y2-G** ..... 24 Vac  
 Rating ..... 15 mA to 1A

## Operational Data

**Switching Differential, Adjustable**  
 Heating Mode ..... 6°F (2°C); 1° to 12°F (0.5° to 6°C)  
 Cooling Mode ..... 2°F (1°C); 1° to 12°F (0.5° to 6°C)

**Setpoint Setting and Range**  
 Comfort Mode ..... 70°F (21°C); 41° to 104°F (5° to 40°C)  
 Energy Saving Mode ..... 59°F (15°C) or 86°F (30°C) OFF;  
 41° to 104°F (5° to 40°C)  
 Protection ..... 46°F (8°C)

**Multifunctional Inputs X1/X2/D1** ..... Selectable  
 Input X1 ..... External Temperature Sensor  
 Input X2 ..... Changeover Sensor  
 Input D1 ..... Operating Mode Switchover

## Built-in Room Temperature Sensor

Measuring Range ..... 32° to 120°F (0° to 49°C)  
 Accuracy at 77°F (25°C) ..... < ± 1°F (0.5°C)  
 Temperature Calibration Range ..... ± 6°F (3°C)

## Settings and Display Resolution

Setpoints ..... 1°F (0.5°C)  
 Current Temperature Value Displayed ..... 1°F (0.5°C)

## Operation

**Climatic Conditions** ..... Class 3K5

**Temperature** ..... 32° to 122°F (0° to 50°C)

**Humidity** ..... < 95% rh

**Connection Terminals** ..... 1 × 14 Gauge (1 × 0.4 through 2.5 mm<sup>2</sup>)  
 or 2 × 16 Gauge (2 × 0.4 through 1.5 mm<sup>2</sup>)

**Housing Front Color** ..... RAL 9003 White

**Weight** ..... 0.77 lb (0.350 kg)

## Agency Standards

**EU Conformity (CE)** ..... CEIT3181XX

**RCM Conformity** ..... CEIT3181en\_CI

**UL Listing** ..... UL 916 PAZX

**cUL** ..... CSA-C22.2 No. 205 PAZX7

**Federal Communications Commission** ..... Complies with the  
 Limits for a Class B Digital Device,  
 Pursuant to Part 15 of the FCC Rules

**Safety Class** ..... III as per EN 60529

**Degree of Protection Housing** ..... IP30 as per EN 60529

**Pollution Class** ..... Normal

## Product Ordering

Description	Part No.
24V Thermostat VAV/CAV	RDG400

## Electric Surface Mounted/ High Temperature Limit Control Thermostats



141-0522 Electric Surface Mounted Thermostat.

141-0530 Electric High Temperature Limit Control Thermostat.

### Description

The 141 Electric Surface Mounted / High Temperature Limit Control Thermostats are single setpoint electric thermostats for high or low limit control; surface mounted or duct mounted models available.

### Features

#### Electric Surface Mounted Thermostat

- Can be mounted horizontally, vertically or at an angle
- Visual setpoint indication through cover

#### Electric High Temperature Limit Control Thermostat

- Liquid-filled, rigid bulb sensing unit
- Adjustable high temperature limit stop
- Manual reset to close contacts

### Applications

#### Surface Mounted Thermostat

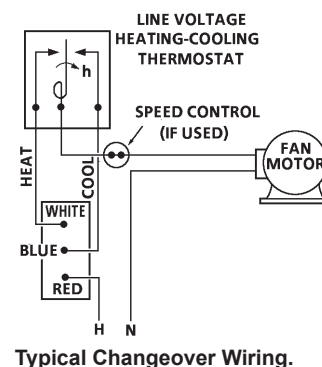
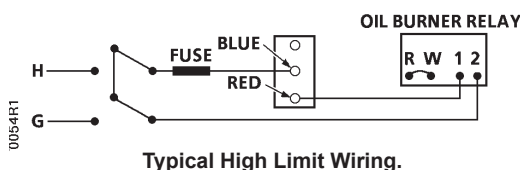
The 141 Surface Mounted Thermostat is ideal as a low or high limit control on unit heaters. Also can be used as a convector or fan coil changeover control for automatically selecting the heating or cooling function based on water temperature.

#### High Temperature Thermostat

The 141 Electric High Temperature Thermostat is normally located in a duct system and wired to shut down air conditioning or ventilating fans when the air temperature exceeds 125°F (52°C), which would occur during a fire.

This thermostat can also be used as a high limit control for a warm air system when a “lockout” type control is desired or required by code.

### Typical Connections





## Electric Line Voltage Remote Bulb Thermostats



141 Electric Line Voltage Remote Bulb Thermostat.

### Description

The 141 Electric Line Voltage Remote Bulb Thermostat is a two-position electric line voltage thermostat with remote bulb.

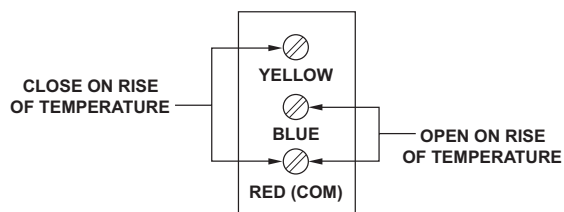
### Features

- Temperature sensitive, liquid-filled sensing element
- Single-pole, double-throw snap-acting switches
- Enclosed switches suitable for low or line voltage power switching
- Gray baked enamel case

### Applications

The 141 Electric Line Voltage Remote Bulb Thermostat is used for temperature control in heating and cooling application, typically to directly operate two-position damper motor actuators, motor actuated valves, relays and similar equipment. Typical applications includes summer-winter change over and the direct control of liquid or air temperatures where two position (ON-OFF) control is acceptable.

### Typical Connections



## Specifications

### Inductive Amps

Full Load Amps	
120 Vac.....	7.4
240 Vac.....	3.7
Locked Rotor Amps	
120 Vac.....	44.5
240 Vac.....	22.2

### Resistive Amps

120 Vac.....	25
240 Vac.....	20

**Dimensions** ..... 2.5" W x 5.38" H x 2.31" D  
(64 mm x 136 mm x 59 mm)

**Shipping Weight** ..... 1.8 lb. (0.82 kg)

## Product Ordering

Temperature Scale Range	Max. Bulb Temp.	Bulb Size	Switch Differential	Part No.
50° to 130°F (10° to 55°C)	130°F (54°C)	.038" Diameter x 4.03" L (9.9 mm Diameter x 102 mm L) Capillary 6' (183 cm)	Adjustable 6° to 30°F (3° to 16°C)	<b>141-0520</b>
100° to 240°F (38° to 110°C)	250°F (121°C)	.029" Diameter x 2.33" L (7.4 mm Diameter x 59.2 mm L) Capillary 6' (183 cm)	Adjustable 7° to 45°F (14° to 25°C)	<b>141-0521</b>



# Electric Low Temperature Detection Thermostats



134 Electric Low Temperature Detection Thermostat.

## Description

The 134 Electric Low Temperature Detection Thermostat is a remote bulb instrument with a Single Pole, Double Throw switch. Any one foot of the capillary element actuates the thermostat switch, making this control ideal for the protection of large coils where air stratification could cause localized freezing conditions.

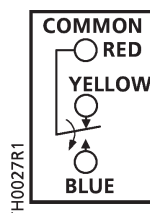
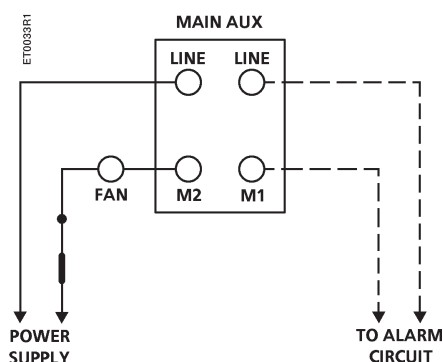
## Features

- Compact and durable construction
- Adjustable concealed, low and high range limit stops with a fixed differential
- Available with manual or automatic reset
- Electroplated copper capillary tube for sensitivity and durability
- Switches 120 V or 20 Vac
- Universal mounting bracket included

## Applications

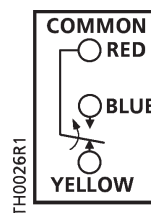
The 134 Electric Low Temperature Detection Thermostats are ideally suited for detecting potential freeze-up conditions of heating coils, cooling coils, liquid heating pipes, and similar applications.

## Typical Connections



OPEN ON RISE

Red to Yellow opens on temp. decrease below setpoint.  
Red to Blue closes on temp. decrease below setpoint.



CLOSE ON RISE

Red to Blue closes on temp. decrease below setpoint.  
Red to Yellow opens on temp. decrease below setpoint.

## Specifications

### Part No. 134-1504

Dimensions ..... 4" W x 3.25" H x 2.5" D  
(102 mm W x 83 mm H x 65 mm D)

Shipping Weight ..... 2.4 lb. (1.1 kg)

### Part No. 134-1510

Dimensions ..... 2.31" W x 3.19" H x 2.31" D  
(59 mm W x 81 mm H x 59 mm D)

Shipping Weight ..... 1.8 lb. (0.8 kg)

### Part No. 134-1511

Dimensions ..... 2.31" W x 3.19" H x 2.31" D  
(59 mm W x 81 mm H x 59 mm D)

Shipping Weight ..... 1.8 lb. (0.8 kg)

## Product Ordering

Temperature Range	Switch Action	Bulb Size	Reset Action	Part No.
15° to 55°F (-9.4° to 12.8°C)	DPST, 4-wire 2 Circuit	1/8" x 20' (3 mm x 6 m)	Manual	<b>134-1504</b>
35° to 45°F (1.7° to 7.2°C)	SPDT	1/8" x 20' (3 mm x 6 m)	Automatic	<b>134-1510</b>
35° to 45°F (1.7° to 7.2°C)	SPDT	1/8" x 20' (3 mm x 6 m)	Manual	<b>134-1511</b>

## Electric Line Voltage Room Thermostats Heating/Cooling



134 Electric Line Voltage Room Thermostat – Heating/Cooling.

### Description

The 134 Electric Line Voltage Room Thermostat is a line voltage On/Off room thermostat for heating and cooling applications.

Models are available with SPST or SPDT contact action and for standard, nominal 1/4 hp / 10 amps noninductive, or heavy duty, nominal 1 hp / 22 amps noninductive applications.

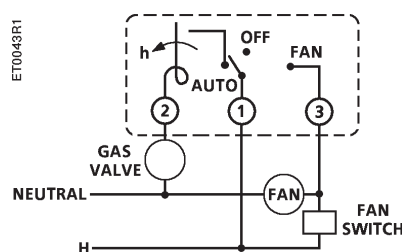
### Features

- Single setpoint dial
- Exposed bimetal thermometer
- Temperature range from 50° to 90°F (10° to 30°C)
- High and low limit stops
- Standard or heavy duty models
- Dual Fahrenheit/Celsius scale plate

### Applications

The 134 Electric Line Voltage Room Thermostat controls heating and cooling applications or year-round air conditioning units in commercial, industrial, or residential installations.

### Typical Connections



## Specifications

### Part No. 134-1083

**Motor Rating**  
 120 Vac .....6.0 A  
 240 Vac .....3.7 A

**Switch Action** .....SPST with "Auto-Off-Fan" switch

**Dimensions** ..... 2.78" W x 5.19" H x 1.88" D  
 (71 mm W x 132 mm H x 48 mm D)

**Shipping Weight** ..... 1.3 lbs. (0.6 kg)

### Part No. 134-1086

**Motor Rating**  
 120 Vac .....6.0 A  
 240 Vac .....3.0 A

**Switch Action** ..... SPST

**Dimensions** ..... 3" W x 4.75" H x 1.44" D  
 (75 mm W x 120 mm H x 36 mm D)

**Shipping Weight** ..... 1.3 lb. (0.6 kg)

### Part No. 134-1084

**Motor Rating**  
 120 Vac .....6.0 A  
 240 Vac .....3.0 A

**Resistive Rating**  
 120 Vac .....10.0 amps  
 240 Vac .....10.0 amps

**Switch Action** ..... SPDT

**Dimensions** ..... 3" W x 4.75" H x 1.44" D  
 (75 mm W x 120 mm H x 36 mm D)

**Shipping Weight** .....1.0 lb. (0.6 kg)

### Part No. 134-1085

**Motor Rating**  
 120 Vac ..... 16.0 Heating/8.0 Cooling  
 240 Vac ..... 8.0 Heating/8.0 Cooling

**Resistive Rating**  
 120 Vac ..... 22.0 Heating  
 240 Vac ..... 22.0 Heating

**Switch Action** ..... SPDT

**Dimensions** ..... 3" W x 4.75" H x 1.44" D  
 (75 mm W x 120 mm H x 36 mm D)

**Shipping Weight** .....1.0 lb. (0.6 kg)

## Product Ordering

Switch Action	Temp. Set Point Range	Temp. Set Point Adjustment	Temperature Difference	Part No.
SPST	40° to 90°F (5° to 30°C)	Concealed	1.8°F (1°C)	<b>134-1083</b>
SPST	40° to 90°F (5° to 30°C)	Concealed	1.8°F (1°C)	<b>134-1086</b>
SPDT	40° to 90°F (5° to 30°C)	Exposed Knob or Concealed <sup>1</sup>	1.8°F (1°C) Heating 2.31°F (1.3°C) Cooling	<b>134-1084</b>
SPDT	40° to 90°F (5° to 30°C)	Exposed Knob or Concealed <sup>1</sup>	3°F (1.7°C) Heating 3.5°F (2°C) Cooling	<b>134-1085</b>

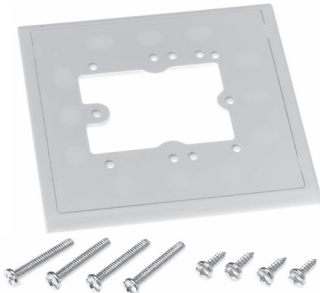





#### Ordering Notes:

1. Each thermostat is shipped with a blank faceplate for use when concealed adjustment is desired.

## Table of Contents

PRODUCT GROUP	PAGE #
<b>RDY</b>	
Mounting Plate	D-22
<b>141</b>	
Remote Bulb Duct Mounting Kit	D-22
Brackets/Clips	D-22
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<b>134</b>	
Brackets/Clips	D-22
Covers/Finish Plates	D-22

## Accessories & Service Kits

	Description	Product Group	Quantity	Part No.
<b>RDY</b>				
	<b>Mounting Plate.</b>	RDY2000 & RDY2000BN	1	<b>ARG70</b>
<b>141 &amp; 134</b>				
	<b>Remote Bulb Duct Mounting Kit.</b>	141 & 134	1	<b>808-517</b>
	<b>Coil Clip.</b>	141	1	<b>356-115</b>
	<b>Capillary Clip.</b>	141 & 134	Box of 100	<b>7421700060</b>
	<b>Well.</b> For 141-0521. 2-3/8" (60 mm)	141	1	<b>141-337</b>
	<b>Electric Thermostat Guard.</b> For electric thermostats no larger than 5 1/4" H x 3/4" W x 2" D. (133 mm H x 19 mm W x 51 mm D). Made of cast aluminum. Allen Key included.	134	1	<b>134-117</b>

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PRODUCT	PRODUCT CODE	SPECIFICATION SHEET	PAGE #
<b>Temperature &amp; Humidity Sensors</b>			
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Immersion Temperature Sensors	536, QAE, 544, AQE	149-919	<b>E-7</b>
Duct Temperature Sensors	535, 536, 540, QAM, 544, 533	149-915	<b>E-11</b>
Flush Mount Room Temperature Sensors	QAA, 544, 536, 540	149-956	<b>E-13</b>
Communicating Room Sensors for use with Siemens TEC Room Controllers	2200 / 2300	149-715 (Communicating)	<b>E-15</b>
Outdoor & Surface Mount Temperature Sensors	QAC, 536, 544, QAP, QAH, 540, QAD	149-918 (Surface) 149-920 (Outdoor)	<b>E-17</b>
Humidity Sensors for Critical Environments and Outdoor Use	QFA3100	149-992	<b>E-19</b>
Duct Humidity Sensors	QFM	149-991	<b>E-21</b>
Room Hygrostats	QFA1000	155-708	<b>E-23</b>
Duct Hygrostats	QFM81	155-707	<b>E-25</b>
Condensation Sensors	QXA	149-931	<b>E-27</b>
<b>Air Quality Sensors</b>			
Room Air Quality Sensors	QNA		<b>E-29</b>
Room Air Quality Sensors	QPA / QSA	149-910 (QPA) / A6V11380355 (QSA)	<b>E-31</b>
Duct Air Quality Sensors	QPM / QSM	149-909 (QPM) / A6V11893002 (QSM)	<b>E-33</b>
<b>Pressure / Differential Pressure / Flow Sensors</b>			
Air Differential Pressure Switches	QBM81	CA1N1552E-P25	
Air Differential Pressure Sensors	QBM3230	A6V12093639	<b>E-35</b>
Air Velocity Sensor	QVM	149-007	<b>E-37</b>
Pitot Tube Kits	536	149-455	<b>E-39</b>
Liquid Differential Pressure Sensors	QBE	149-929	<b>E-41</b>
Liquid Flow Switches	QVE	155-778 (QVE1900U) 155-711 (QVE1901U)	<b>E-43</b>
<b>Miscellaneous Sensors</b>			
Solar Impact Sensor	QLS	155-706	<b>E-45</b>
Modbus Sensors	QAM, QFA, QFM, QPA, QPM, QSA, QBM		<b>E-47</b>
<b>Accessories &amp; Service Kits</b>			<b>E-49</b>



Siemens offers a 5-year warranty on sensors.\*

# Gain insights for **building efficiency and indoor air quality**

Our complete sensor portfolio measures air quality, flow, humidity, pressure and temperature, so you are in control of your entire HVAC system. This ensures occupant comfort while also optimizing building efficiency and indoor air quality. Built to Siemens standards, our sensors provide reliable, accurate performance in any HVAC or building automation system.

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#### Complete Product Portfolio

Sensors for every HVAC application



#### Quality

Rigorous testing to meet Siemens high standards



#### Less Effort

Easy to install and maintenance-free



#### Indoor Air Quality

Ensure healthy indoor climates



#### Maximize Comfort

Ensure occupant comfort and productivity



#### System Performance

Optimize building efficiency

\* Not applicable to PL-link devices, IAQ multi-sensor or Series 2200/3200 units with display.



## Standard Room Temperature Systems



### Description

Series 2200 Room Temperature Sensors provide a simple and accurate means of monitoring room temperature. Units are offered with a variety of output signal formats for compatibility with any building automation system. Basic units feature a blank front to prevent unauthorized access. Full HMI units enable temperature setpoint and override signals to be transmitted to the receiving controller.

### Features

- Universal signal formats for compatibility with any HVAC control system
- Compact, low profile design seamlessly blends into any décor
- Strategically placed ventilation slots optimize airflow for fast response and superior control
- Units with display feature a configurable readout
- Includes installation hardware for mounting on 2" x 4" electrical box or directly to drywall

### Applications

Compatible with any Building Automation System (BAS).

## Specifications

### Measuring Range

Setpoint & Operating .....55° to 95°F (13° to 35°C)

### Accuracy

1k Ω Pt RTD (385a) .....±0.54°F @ 32°F (±0.3°C @ 0°C)  
 1k Ω Ni @ 32F RTD .....±0.72°F @ 32°F (±0.4°C @ 0°C)  
 1k Ω Ni @ 70F RTD .....±0.75°F @ 75°F (±0.4°C @ 24°C)  
 10k Ω Type 2 Thermistor .....±0.4°F @ 77°F (±0.2°C @ 25°C)  
 10k Ω Type 3 Thermistor .....±0.4°F @ 77°F (±0.2°C @ 25°C)  
 100k Ω Thermistor .....±0.36°F @ 77°F (±0.2°C @ 25°C)  
 Analog ..... ±0.9°F (±0.5°C)

Dimensions .....4.5" x 2.75" x 1/18" (115 mm x 70 mm x 30 mm)

Color ..... White

Agency Approvals .....UL (916)

## Product Ordering

Temp Output	Description	Part No.
1k Ω Pt RTD (385a)	Sensing only	QAA2212.EWSN <sup>1</sup>
1k Ω Pt RTD (385a)	Display and Setpoint Adjustment	QAA2212.FWSN <sup>1, 4</sup>
1k Ω Ni @ 32F RTD	Sensing only	QAA2220.EWSN <sup>1</sup>
1k Ω Ni @ 70F RTD	Sensing only	QAA2221.EWSN <sup>1</sup>
1k Ω Ni @ 70F RTD	Display and Setpoint Adjustment	QAA2221.FWSN <sup>1, 4</sup>
10k Ω Type 2 Thermistor	Sensing only	QAA2230.EWSN <sup>1</sup>
10k Ω Type 2 Thermistor	Sensing only with Tool Port	QAA2230.EWSC <sup>1, 2</sup>
10k Ω Type 2 Thermistor	Display and Setpoint Adjustment	QAA2230.FWSN <sup>1, 4</sup>
10k Ω Type 2 Thermistor	Display, Setpoint Adjustment, with Tool Port	QAA2230.FWSC <sup>1, 2, 4</sup>
100k Ω Thermistor	Sensing only	QAA2235.EWSN <sup>1</sup>
Analog	Sensing only	QAA22SS.EWSN <sup>1, 3</sup>
Analog	Display and Setpoint Adjustment	QAA22SS.FWSN <sup>1, 3, 4</sup>

### Ordering Notes:

- 1) For no-logo versions, change "S" in 10th position to "N"
- 2) For use with Siemens TALON® Controllers
- 3) Analog output can be configured as 0-10V or 4-20mA
- 4) Temperature setpoint signal is 0-10V; Override signal is momentary dry contact (1A @ 30 Vdc max.)

## Accessories Ordering

Description	Part No.
Wall Gasket Kit – Package of 10	563-102 GSKT KIT
Room Sensor Wall Plate (3-3/16" x 4-15/16")	AQA2200-2x4
Room Sensor Wall Plate (3-3/16" x 4-15/16") – Package of 10	AQA2200-INTL
OLED Replacement Kit – Package of 5	AQA2232

## Standard Room Humidity and Temperature Sensors



Full HMI.



Blank Front.

### Description

Series 3200 Room Humidity and Temperature Sensors provide a simple and accurate means of monitoring both room humidity and temperature. Units are offered with a variety of output signal formats for compatibility with any building automation system. Basic units feature a blank front to prevent unauthorized access. Full HMI units enable temperature setpoint and override signals to be transmitted to the receiving controller.

### Features

- Single device monitors both relative humidity and temperature
- Universal signal formats for compatibility with any HVAC control system
- Compact, low profile design seamlessly blends into any décor
- Strategically placed ventilation slots optimize airflow for fast response and superior control
- Units with display feature a configurable OLED readout
- Includes installation hardware for mounting on 2" x 4" electrical box or directly to drywall

### Applications

Compatible with any Building Automation System (BAS).

## Specifications

### Measuring Range

Relative Humidity ..... 0 to 100%  
 Temperature (Setpoint & Operating) ..... 55° to 95°F (13° to 35°C)

### Accuracy

Humidity ..... ±2% between 10-90%

### Temperature

1k Ω Pt RTD (385a) ..... ±0.54°F @ 32°F (±0.3°C @ 0°C)  
 10k Ω Type 2 Thermistor ..... ±0.4°F @ 77°F (±0.2°C @ 25°C)  
 10k Ω Type 3 Thermistor ..... ±0.4°F @ 77°F (±0.2°C @ 25°C)  
 Analog ..... ±0.9°F (±0.5°C)

**Dimensions** ..... 4.5" x 2.75" x 1/18" (115 mm x 70 mm x 30 mm)

**Color** ..... White

**Agency Approvals** ..... UL (916)

## Product Ordering

RH Output	Temp Output	Description	Part No.
Analog	1k Ω Pt RTD (385a)	Sensing only	QFA3212.EWSN <sup>1</sup>
Analog	1k Ω Pt RTD (385a)	Display and Setpoint Adjustment	QFA3212.FWSN <sup>1, 2</sup>
Analog	10k Ω Type 2 Thermistor	Display and Setpoint Adjustment	QFA3230.FWSN <sup>1, 2</sup>
Analog	0-10 V/4-20 mA	Sensing only	QFA32SS.EWSN <sup>1</sup>
Analog	0-10 V/4-20 mA	Display and Setpoint Adjustment	QFA32SS.FWSN <sup>1, 2</sup>

### Ordering Notes:

- 1) For no-logo versions, change "S" in 10th position to "N"
- 2) Temperature setpoint signal is 0-10V; Override signal is momentary dry contact (1A @ 30 Vdc max.)

## Accessories Ordering

Description	Part No.
Wall Gasket Kit – Package of 10	563-102 GSKT KIT
Room Sensor Wall Plate (3-3/16" x 4-15/16")	AQA2200-2x4
Room Sensor Wall Plate (3-3/16" x 4-15/16") – Package of 10	AQA2200-INTL
OLED Replacement Kit – Package of 5	AQA2232

## Immersion Temperature Sensors – Various Outputs



Liquid Immersion Temperature Sensor with Thermowell.

### Description

Siemens Immersion Temperature Sensors include a stainless steel thermowell and are offered in a variety of output signals to ensure compatibility with any HVAC control system.

### Features

- Stainless steel well enables sensing element to be removed without draining the system
- Wide variety of output signals available
- Wide operating range makes them suitable for use throughout the HVAC system

**NOTE:** Not for use with potable water.



\* Not applicable to PL-link devices, IAQ multi-sensor or Series 2200/3200 units with display.

# Specifications

**Operating Range** ..... 0° to 250°F (-18° to 120°C)

**System Connection** ..... ½" – 14 NPT

**Accuracy**

**Thermowell Material** ..... 300 Series Stainless Steel

- 1k Ω Pt RTD (385a)..... ±0.54°F @ 32°F (±0.3°C @ 0°C)
- 1k Ω Pt RTD (375a)..... ±0.54°F @ 32°F (±0.3°C @ 0°C)
- 1k Ω Ni @ 32F RTD ..... ±0.72°F @ 32°F (±0.4°C @ 0°C)
- 1k Ω Ni @ 70F RTD ..... ±0.75°F @ 75°F (±0.4°C @ 24°C)
- 10k Ω Type 2 Thermistor..... ±0.4°F @ 77°F (± 0.2°C @ 25°C)
- 10k Ω Type 3 Thermistor..... ±0.4°F @ 77°F (± 0.2°C @ 25°C)
- 100k Ω Thermistor..... ±0.36°F @ 77°F (± 0.2°C @ 25°C)
- 4-20mA..... ±0.54°F @ 32°F (±0.3°C @ 0°C)

## Product Ordering

Output Signal	Probe Length	Range	Part Number
100k Ω	2.5" (63.5 mm)	0° to 250°F (-18° to 121°C)	536-777-25
	4" (101.6 mm)		536-777-40
	6" (152.4 mm)		536-777-60
10k Ω Type II	2.5" (63.5 mm)		QAE2030.005
	4" (101.6 mm)		QAE2030.010
	6" (152.4 mm)		QAE2030.015
1k Ω Ni @ 32F	2.5" (63.5 mm)		QAE2020.005
	4" (101.6 mm)		QAE2020.010
	6" (152.4 mm)		QAE2020.015
1k Ω Pt (375a)	2.5" (63.5 mm)		544-577-25
	4" (101.6 mm)	544-577-40	
	6" (152.4 mm)	544-577-60	
1k Ω Pt (385a)	2.5" (63.5 mm)	QAE2012.005	
	4" (101.6 mm)	QAE2012.010	
	6" (152.4 mm)	QAE2012.015	
4-20 mA	2.5" (63.5 mm)	20° to 70°F (-7° to 21°C)	536-774-25
	4" (101.6 mm)	20° to 70°F (-7° to 21°C)	536-774-40
	6" (152.4 mm)	20° to 70°F (-7° to 21°C)	536-774-60
	2.5" (63.5 mm)	30° to 250°F (-1° to 121°C)	536-767-25
	4" (101.6 mm)	30° to 250°F (-1° to 121°C)	536-767-40
	6" (152.4 mm)	30° to 250°F (-1° to 121°C)	536-767-60
	2.5" (63.5 mm)	32° to 212°F (0° to 100°C)	544-562-25
	4" (101.6 mm)	32° to 212°F (0° to 100°C)	544-562-40
	6" (152.4 mm)	32° to 212°F (0° to 100°C)	544-562-60

## Accessories Ordering

Description	Part No.
Immersion Sensor Repair Kit, 4-20mA, 30° to 250°F	536-767-RK
Immersion Sensor Repair Kit, 4-20mA, 20° to 70°F	536-774-RK
Immersion Sensor Repair Kit, 4-20mA, 20° to 70°F	544-562-RK
Immersion Sensor Repair Kit, 100k Ohm	536-777-RK
Immersion Sensor Repair Kit, Pt 1k Ohm, (375a)	544-577-RK
Immersion Sensor Repair Kit, Pt 1k Ohm, (385a)	AQE2012
Immersion Sensor Repair Kit, Ni 1k Ohm @ 32°F	AQE2020
Immersion Sensor Repair Kit, 10k Ohm, Type 2	AQE2030
Thermowell, 2.5"	AQE2000.005
Thermowell, 4"	AQE2000.010
Thermowell, 6"	AQE2000.015

**Note:**

Repair kit consists of sensing element, transmitter (4-20 mA models only), and assorted hardware.



# More **fresh air** matters

Fresh air may be invisible, but you will feel its impact: it turns rooms into spaces that give room for thought, productivity and well-being.

Creating optimum indoor air quality has many factors to consider including air circulation, inside and outside temperatures, humidity, CO<sub>2</sub> levels, volatile organic compounds (VOCs) and fine dust (PM<sub>2.5</sub>) levels. At the same time, the challenge can be finding the right balance to improve indoor air while achieving energy efficiency and sustainability goals.

Gain better visibility and control of indoor air quality with our sensors, thermostats, automation controls, damper actuators and data management applications. Design the right solution to fit your building's need no matter the size.

Be efficient. Be productive. Be well.

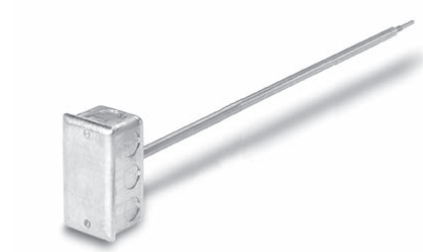
Visit [usa.siemens.com/IAQ](https://usa.siemens.com/IAQ) to learn more.

E-10

**SIEMENS**



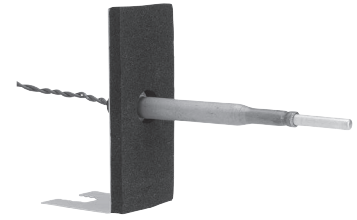
## Duct Temperature Sensors – Various Outputs



Duct Sensor with Rigid Probe.



Duct Sensor with Flexible Probe.



536-811 Bracket Mounted Duct Sensor.

### Description

Siemens Duct Temperature Sensors are available in lengths from 4 inches to 24 feet. A variety of output signals is available to ensure compatibility with any HVAC control system.

### Features

- Wide variety of output signals available
- Wide operating range makes them suitable for use throughout the HVAC system
- Units for large ducts feature flexible probes and probe mounting clips for easy installation

### Specifications

**Operating Range** ..... 0° to 250°F (-18° to 120°C)

#### Accuracy

1k Ω Pt RTD (385a).....	±0.54°F @ 32°F (±0.3°C @ 0°C)
1k Ω Pt RTD (375a).....	±0.54°F @ 32°F (±0.3°C @ 0°C)
1k Ω Ni @ 32F RTD .....	±0.72°F @ 32°F (±0.4°C @ 0°C)
1k Ω Ni @ 70F RTD .....	±0.75°F @ 75°F (±0.4°C @ 24°C)
10k Ω Type 2 Thermistor.....	±0.4°F @ 77°F (±0.2°C @ 25°C)
10k Ω Type 3 Thermistor.....	±0.4°F @ 77°F (±0.2°C @ 25°C)
100k Ω Thermistor.....	±0.36°F @ 77°F (±0.2°C @ 25°C)
4-20mA.....	±0.54°F @ 32°F (±0.3°C @ 0°C)



Siemens offers a 5-year warranty on sensors.\*

\* Not applicable to PL-link devices, IAQ multi-sensor or Series 2200/3200 units with display.

## Product Ordering

Output Signal	Sensing Type	Probe Length	Primary MV Range	Part Number
100k $\Omega$ Thermistor	Point	4 inches (rigid)	-40° to 180°F (-40° to 82°C)	535-741-4
	Point (Bracket Mount)	4 inches (rigid)		536-811
	Point	8 inches (rigid)		535-741-8
		18 inches (rigid)		535-741-18
	Averaging	18 inches (rigid)		540-244-18
		3 feet (flexible)		540-245-36
10k $\Omega$ Type II Thermistor	Point	6 feet (flexible)		540-246-72
		4 inches (rigid)		QAM2030.010
	Point (Bracket Mount)	4 inches (rigid)		QAM2030.010-BR
	Point	8 inches (rigid)		QAM2030.020
		18 inches (rigid)		QAM2030.045
	Averaging	8 feet (flexible)		QAM2030.250
16 feet (flexible)		QAM2030.500		
1k $\Omega$ Ni @ 32F RTD	Point	24 feet (flexible)		QAM2030.750
		4 inches (rigid)		QAM2020.010
		8 inches (rigid)		QAM2020.020
	Averaging	18 inches (rigid)		QAM2020.045
		16 feet (flexible)		QAM2020.500
		24 feet (flexible)	QAM2020.750	
1k $\Omega$ Ni @ 70F RTD	Point	8 inches (rigid)	QAM2021.020	
		18 inches (rigid)	QAM2021.045	
	Averaging	24 feet (flexible)	QAM2021.750	
1k $\Omega$ Pt (375a) RTD	Point	4 inches (rigid)	544-339-4	
		8 inches (rigid)	544-339-8	
		18 inches (rigid)	544-339-18	
	Averaging	18 inches (rigid)	544-343-18	
		2 feet (rigid)	544-343-24	
		3 feet (rigid)	544-343-36	
		4 feet (rigid)	544-343-48	
		8 feet (flexible)	544-342-8	
		16 feet (flexible)	544-342-16	
		24 feet (flexible)	544-342-24	
1k $\Omega$ Pt (385a) RTD	Point	4 inches (rigid)	QAM2012.010	
		8 inches (rigid)	QAM2012.020	
		18 inches (rigid)	QAM2012.045	
	Averaging	8 feet (flexible)	QAM2012.250	
		16 feet (flexible)	QAM2012.500	
		24 feet (flexible)	QAM2012.750	
4-20 mA	Point	4 inches (rigid)	20° to 120°F (-7° to 49°C)	533-376-4
		8 inches (rigid)	533-376-8	
		18 inches (rigid)	533-376-18	
	Averaging	18 inches (rigid)	20° to 120°F (-7° to 49°C)	535-490-18
		2 feet (rigid)	535-490-24	
		3 feet (rigid)	535-490-36	
		4 feet (rigid)	535-490-48	
		8 feet (flexible)	533-380-8	
		16 feet (flexible)	533-380-16	
		24 feet (flexible)	533-380-24	
	Point	4 inches (rigid)	30° to 250°F (-1° to 121°C)	533-377-4
		8 inches (rigid)	30° to 250°F (-1° to 121°C)	533-377-8
		18 inches (rigid)	30° to 250°F (-1° to 121°C)	533-377-18
		4 inches (rigid)	-4° to 122°F (-20° to 50°C)	544-560-4
8 inches (rigid)		-4° to 122°F (-20° to 50°C)	544-560-8	
18 inches (rigid)	-4° to 122°F (-20° to 50°C)	544-560-18		

## Flush Mount Room Temperature Sensors – Various Outputs



Plastic Flush Mount Sensor.



Metal Flush Mount Sensor.



Button Sensor with Wall Plate.



Button Sensor without Wall Plate.

### Description

Flush Mount Room Temperature Sensors provide a resistance signal to the controller that varies proportionally with temperature. The sensors are available with Platinum 1k  $\Omega$  375, NTC 100k  $\Omega$  Type 2, or NTC 10k  $\Omega$  Type 2 passive output signals.

The wall plate version is designed to mount to a 2-inch  $\times$  4-inch electrical box. The tamper-proof screws used to install the sensor to the utility box protects the sensor from removal by unauthorized personnel. The sensors may be painted after installation.

### Features

- Tamper-proof screws
- Can be painted after installation
- Designed for mounting to a 2 x 4 electrical box
- Option of brushed stainless steel finish or beige or white plastic (except for button sensor)

### Applications

Flush mount temperature sensors are used to monitor air temperature throughout the facility. Flush mounted sensors are ideally suited to high traffic areas and in facilities where vandalism / tampering is a concern.

## Specifications

Output Signals ..... Changing Resistance

### 10K Ohm Thermistor

Calibration Point Factory Setting ..... 77°F (25°C)

Accuracy ..... ±0.5°F (±0.3°C)

Resistance Value @ Cal. Temp ..... 10k

### 100K Ohm Thermistor

Calibration Point ..... 77°F (25°C)

Accuracy ..... ±0.36°F (±0.2°C)

Resistance Value @ Cal. Temp ..... 100k Ohm

### 1K Ohm RTD (375 alpha)

Calibration Point ..... 32°F (0°C)

Accuracy ..... ±0.54°F (±0.3°C)

Resistance Value @ Cal. Temp ..... 1K Ohm

## Product Ordering

Application	Description	Output Signal	Part Number	Range
Room Temp	Button Style Room Temp Sensor without Wall Plate	Platinum 1k Ω 375 alpha	<b>QAA1011.AASU</b>	32° to 122° F (0° to 50°C)
	Button Style Room Temp Sensor with Wall Plate		<b>QAA1011.AATU</b>	
	Flush Mount Room Temp Sensor Beige Plastic		<b>544-374A</b>	
	Flush Mount Room Temp Sensor White Plastic		<b>544-374B</b>	
	Flush Mount Room Temp Sensor Metal		<b>544-973</b>	
	Flush Mount Room Temp Sensor Beige Plastic	NTC 100k Ω Type 2	<b>536-784A</b>	
	Flush Mount Room Temp Sensor White Plastic		<b>536-784B</b>	
	Flush Mount Room Temp Sensor Metal		<b>536-984</b>	
	Flush Mount Room Temp Sensor Beige Plastic	NTC 10k Ω Type 2	<b>536-994A</b>	
	Flush Mount Room Temp Sensor White Plastic		<b>536-994B</b>	
Flush Mount Room Temp Sensor Metal	<b>540-984</b>			

## Accessories Ordering

Description	Part No.
Metal Guard for Plastic Flush Mount Sensors (Not for use with button style sensors)	<b>540-538</b>

## Room Units

For Use With Siemens Terminal  
Equipment Controllers (TEC)\*



\*Not compatible with non-Siemens  
controllers/automation systems.

Full HMI.

Blank Front.

Display.

## Description

Siemens 2200/3200 Communicating Room Units connect to the Terminal Equipment Controller via a single RJ-11 cable with RJ-11 plugs on either end for simple installation. Data is transferred quickly and reliably via a proven Siemens protocol.

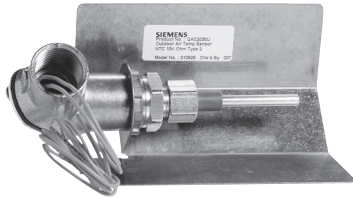
Units are available for temperature only, temperature and humidity, or temperature and humidity and air quality. Full HMI units enable occupant control of temperature setpoint within limits configured by the building management operator, while blank front units prevent users from forcing the system into a potentially inefficient operating strategy.

## Features

- Plug & play with Siemens Terminal Equipment Controllers
- Simple installation with RJ-11 ports on room unit and TEC
- Tool Port enables connection of commissioning and configuration tools
- Strategically placed ventilation slots optimize airflow for fast response and superior control
- Units with display feature a configurable readout
- Includes installation hardware for mounting on 2" x 4" electrical box or directly to drywall



## Outdoor and Surface Mount Temperature Sensors – Various Outputs



Outdoor Temperature Sensor  
– Metal.



Pipe Surface  
Temperature Sensor.



Cable.



Outdoor Temperature Sensor  
– Plastic.

### Description

Standard temperature Sensors monitor and transmit changes in temperature to the building control system. Specific devices within the range are compatible with most North American building automation systems. All sensors incorporate precision temperature sensing elements to accurately and reliably measure temperature.

### Features

- Variety of output signals available
- Outdoor sensors are ruggedly constructed for use in all climates
- Responsive to temperature change
- Accurate and reliable indication of temperature
- Simple installation requires no special tools

### Applications

Outdoor temperature sensors are used to monitor the temperature of outdoor air. This variable is often used in a variety of HVAC control strategies, including outdoor reset and building ventilation.

Pipe surface temperature sensors are often used in place of immersion type sensors, particularly in cases where sensor installation occurs after the system is filled.

Cable temperature sensors provide a quick and economical means of measuring temperature in a variety of locations, including ducts and other difficult to reach spaces.

# Specifications

## Output Signals

Active.....	0 to 10 V or 4 to 20 mA
Passive.....	Pt 1k $\Omega$ (375 alpha)
	Pt 1k $\Omega$ (385 alpha)
	Ni 1k $\Omega$ @32F
	Ni 1k $\Omega$ @70F
	NTC 100k $\Omega$
	NTC 10k $\Omega$ Type II
	NTC 10k $\Omega$ Type III

## Accuracy

NTC Thermistors, mid-range.....	$\pm 1.0^{\circ}\text{F}$ ( $\pm 0.5^{\circ}\text{C}$ )
Pt RTD and Ni RTD, mid-range.....	$\pm 0.75^{\circ}\text{F}$ ( $\pm 0.4^{\circ}\text{C}$ )

# Product Ordering

Mounting Location	Output Signal	Measuring Range	Accuracy	Material	Part Number
Outdoor	0 to 10V	-58° to 122°F (-50° to 50°C)	$\pm 1.6^{\circ}\text{F}$ ( $\pm 0.89^{\circ}\text{C}$ )	Plastic	<b>QAC3161</b>
	100k $\Omega$	-40° to 150°F (-40° to 65°C)	$\pm 0.50^{\circ}\text{F}$ ( $\pm 0.28^{\circ}\text{C}$ ) @ 77°F (25°C)	Metal	<b>536-778</b>
	10k $\Omega$ Type II	-40° to 158°F (-40° to 70°C)	$\pm 0.81^{\circ}\text{F}$ ( $\pm 0.45^{\circ}\text{C}$ ) @ 77°F (25°C)	Plastic	<b>QAC2030</b>
	10k $\Omega$ Type II	-40° to 150°F (-40° to 65°C)	$\pm 0.4^{\circ}\text{F}$ ( $\pm 0.21^{\circ}\text{C}$ ) @ 77°F (25°C)	Metal	<b>QAC2030U</b>
	1k $\Omega$ Ni @ 32F	-40° to 150°F (-40° to 65°C)	$\pm 0.72^{\circ}\text{F}$ ( $\pm 0.4^{\circ}\text{C}$ ) @ 32°F (0°C)	Metal	<b>QAC2020U</b>
	1k $\Omega$ Ni @ 32F	-58° to 158°F (-50° to 70°C)	$\pm 0.36^{\circ}\text{F}$ ( $\pm 0.2^{\circ}\text{C}$ ) @ 32°F (0°C)	Plastic	<b>QAC22</b>
	1k $\Omega$ Pt (375a)	-40° to 150°F (-40° to 65°C)	$\pm 0.54^{\circ}\text{F}$ ( $\pm 0.3^{\circ}\text{C}$ ) @ 32°F (0°C)	Metal	<b>544-578</b>
	1k $\Omega$ Pt (385a)	-40° to 158°F (-40° to 70°C)	$\pm 0.54^{\circ}\text{F}$ ( $\pm 0.3^{\circ}\text{C}$ ) @ 32°F (0°C)	Plastic	<b>QAC2012</b>
	1k $\Omega$ Pt (385a)	-40° to 150°F (-40° to 65°C)	$\pm 0.54^{\circ}\text{F}$ ( $\pm 0.3^{\circ}\text{C}$ ) @ 32°F (0°C)	Metal	<b>QAC2012U</b>
	4 to 20 mA	-58° to 122°F (-50° to 50°C)	$\pm 0.54^{\circ}\text{F}$ ( $\pm 0.3^{\circ}\text{C}$ ) @ 32°F (0°C)	Metal	<b>536-768</b>
4 to 20 mA	-58° to 122°F (-50° to 50°C)	$\pm 1.6^{\circ}\text{F}$ ( $\pm 0.89^{\circ}\text{C}$ )	Plastic	<b>QAC3171</b>	

Mounting Location	Output Signal	Measuring Range	Accuracy	Part Number
Cable	10k $\Omega$ Type II		$\pm 0.81^{\circ}\text{F}$ ( $\pm 0.45^{\circ}\text{C}$ ) @ 77°F (25°C)	<b>QAP1030.200</b>
	Ni 1k Ohm @ 32F	-13° to 203°F (-25° to 95°C)	$\pm 0.72^{\circ}\text{F}$ ( $\pm 0.4^{\circ}\text{C}$ ) @ 32°F (0°C)	<b>QAP22</b>
	Pt 1k Ohm (385a)		$\pm 1.35^{\circ}\text{F}$ ( $\pm 0.75^{\circ}\text{C}$ ) @ 32° to 175°F (0° to 80°C)	<b>QAP2012.150</b>
	3k Ohm Thermistor	32° to 104°F (0° to 40°C)	$\pm 0.54^{\circ}\text{F}$ ( $\pm 0.3^{\circ}\text{C}$ ) @ 77°F (25°C)	<b>QAH11.1*</b>
	100k $\Omega$	-40° to 240°F (-40° to 121°C)	$\pm 0.50^{\circ}\text{F}$ ( $\pm 0.28^{\circ}\text{C}$ ) @ 77°F (25°C)	<b>540-258</b>

\*For use with RDG Series Room Thermostats

Mounting Location	Output Signal	Measuring Range	Accuracy	Material	Part Number
Surface	10k $\Omega$ Type II	-11° to 257°F (-30° to 125°C)	$\pm 0.81^{\circ}\text{F}$ ( $\pm 0.45^{\circ}\text{C}$ ) @ 77°F (25°C)	Plastic	<b>QAD2030</b>
	10k $\Omega$ Type II	-40° to 240°F (-40° to 121°C)	$\pm 0.4^{\circ}\text{F}$ ( $\pm 0.21^{\circ}\text{C}$ ) @ 77°F (25°C)	Metal	<b>QAD2030U</b>
	1k $\Omega$ Ni @ 32F	-40° to 240°F (-40° to 121°C)	$\pm 0.72^{\circ}\text{F}$ ( $\pm 0.4^{\circ}\text{C}$ ) @ 32°F (0°C)	Metal	<b>QAD2020U</b>
	1k $\Omega$ Ni @ 32F	-40° to 240°F (-40° to 121°C)	$\pm 0.72^{\circ}\text{F}$ ( $\pm 0.4^{\circ}\text{C}$ ) @ 32°F (0°C)	Plastic	<b>QAD22</b>
	1k $\Omega$ Pt (375a)	-40° to 240°F (-40° to 121°C)	$\pm 0.54^{\circ}\text{F}$ ( $\pm 0.3^{\circ}\text{C}$ ) @ 32°F (0°C)	Metal	<b>544-089</b>
	1k $\Omega$ Pt (385a)	-11° to 266°F (-30° to 130°C)	$\pm 0.54^{\circ}\text{F}$ ( $\pm 0.3^{\circ}\text{C}$ ) @ 32°F (0°C)	Plastic	<b>QAD2012</b>
	1k $\Omega$ Pt (385a)	-40° to 240°F (-40° to 121°C)	$\pm 0.54^{\circ}\text{F}$ ( $\pm 0.3^{\circ}\text{C}$ ) @ 32°F (0°C)	Metal	<b>QAD2012U</b>
	4 to 20 mA	30° to 250°F (-1° to 121°C)	$\pm 0.54^{\circ}\text{F}$ ( $\pm 0.3^{\circ}\text{C}$ ) @ 32°F (0°C)	Metal	<b>536-780</b>

\*Does not include electrical box

# Cable-Style Sensor Accessories

Description	Part No.
Fixed Mounting Bracket (QAP sensors only, must order multiples of 10)	<b>ARG22.1</b>
Adjustable Mounting Bracket (QAP sensors only, must order multiples of 5)	<b>BPZ:ARG22.2</b>



## Relative Humidity Sensors for Critical Environments and Outdoor Use



**AQY2010**  
Remote Sensing Cable  
Shown with QFA3100.



**QFA3100 Series**  
Outdoor Air Relative Humidity and  
Relative Humidity/Temperature Sensor.



**AQF3100**  
Sunshield for Sensor.  
Sold Separately.

### Description

The QFA Series Outdoor Air Relative Humidity and Relative Humidity/Temperature Sensors monitor and transmit changes in humidity and temperature to the building control systems. Standard models available are 2% and 2% certified, for both humidity only and combination humidity with temperature sensing. Sensors are offered with either 4 to 20 mA or 0 to 10 Volt output signals.

### Features

- 4-20mA, 0-10Vdc, or Modbus RTU output
- High degree of accuracy
- "D" suffix models include LCD Display\*

\* Units with display are not intended for outdoor use.

### Applications

The QFA Series Relative Humidity and Relative Humidity/Temperature Sensors are especially suited for applications where precise, stable humidity sensing is required.

For outdoor applications, an AQF3100 sunshield is required (sold separately).

Certified sensors include a calibration certificate meeting United States FDA requirements for pharmaceutical facilities.



\* Not applicable to PL-link devices, IAQ multi-sensor or Series 2200/3200 units with display.

# Specifications

## General

**Installation**..... 18 AWG cable length shared in conduit with other sensor wiring 750 ft. (229 m) max

**Connections** ..... Screw Terminals

**Voltage Requirement**..... 13.5 to 35 Vdc and 24 Vac ( for sensors with 0-10 Vdc outputs)

**Material Type**..... Polycarbonate plastic

**CE and UL listed**.....UL 873 standard for Temperature Indicating and Regulating Equipment

## Humidity Element

**Operating Range**..... 0 to 100% RH

**Measurement Range** ..... 0 to 95% RH

**Accuracy at Room Temperature (73°F, 20°C)**..... ±2% RH, 0-95% RH

**Operating Temperature** .....-31° to 140°F (-35° to 60°C)

**Temperature Effect**.....Less than 0.1% per degree C

**Sensing Element**..... Capacitive humidity sensing element

**Output Signal**  
RH only units... 4 to 20 mA or 0 to 10 Vdc, 0 -100% Linear, Proportional  
RH & T units... 4 to 20 mA or 0 to 10 Vdc, 0 -100% Linear, Proportional

**Polarity Protection**.....Yes

## Temperature Element (for Combination RH/T Units Only)

Application	Temperature
Operating Temperature Jumper Selectable	32° to 122°F (0° to 50°C) or -31° to 95°F (-35° to 35°C) 32° to 122°F (0° to 50°C) or -31° to 140°F (-35° to 60°C)
Time Constant at 0° to 50°C and 10 to 80% RH	Approx. 20 seconds in moving air
Accuracy	at 59° to 95°F (15° to 35°C): ±0.8 K at 31° to 122°F (-35° to 50°C): ±1 K at 31° to 140°F (-35° to 60°C): ±1 K
Output Signal	4 to 20 mA or 0 to 10 Vdc, 0 -100% linear, proportional, (terminal U2)
Calibration Adjustments	None

## Product Ordering

Application	RH	Description	Part No.
Room/Outdoor Air Humidity	2%	0 to 10 Vdc	QFA3100
Room/Outdoor Air Humidity	2%	4 to 20 mA	QFA3101
Room/Outdoor Air Humidity & Temperature	2%	0 to 10 Vdc / Temp 0 to 10 Vdc	QFA3160
Room Air Humidity & Temperature	2%	0 to 10 Vdc / Temp 0 to 10 Vdc with Display	QFA3160D
Room/Outdoor Air Humidity & Temperature	2%	4 to 20 mA / Temp 4 to 20 mA	QFA3171
Room Air Humidity & Temperature	2%	4 to 20 mA / Temp 4 to 20 mA with Display	QFA3171D
Room Air Humidity & Temperature	2%	Modbus RTU QFA3150/MO	S55720-S535
Room Air Humidity & Temperature	2%	0-10Vdc, Temp 0-10Vdc (Certified) with Display	QFA4160D
Room/Outdoor Air Humidity & Temperature	2%	4 to 20 mA / Temp 4 to 20 mA (Certified)	QFA4171
Room Air Humidity & Temperature	2%	4 to 20 mA / Temp 4 to 20 mA (Certified) with Display	QFA4171D
Room Outdoor Air Humidity & Temperature	2%	0 to 10 Vdc, Temp 0 to 10 Vdc (Certified)	QFA4160
Room Air Humidity & Temperature	2%	0-10Vdc, Temp 0-10Vdc (Certified) with Display	QFA4160D

## Accessories Ordering

Description	Part No.
Weather Shield (required for outdoor use)	AQF3100
Remote Sensing Cable, 10 Foot	AQY2010
Remote Sensing Cable, 30 Foot	AQY2030
Replacement Sensing Element	AQF3150
Replacement Sensing Element – Certified Units	AQF4150
Wall Plate for 2" x 4" Box	ARG70
Replacement Filter	AQF3101

## Duct Relative Humidity / Temperature Sensors



QFM Series Duct Relative Humidity Sensor.



QFM Series Duct Relative Humidity and Relative Humidity/Temperature Sensor.

### Description

The QFM Series Duct Relative Humidity and Relative Humidity/Temperature Sensors monitor and transmit changes in humidity and temperature to the building control systems. Several models are available for humidity only or for humidity and temperature sensing. The humidity only units are available in either 4 to 20 mA or 0 to 10 Volt signal versions. Combination humidity and temperature units are also available in either dual current or voltage versions, transmitting proportional signals back to the controller. Nickel 1000 Ohm (Siemens type) temperature outputs on combination versions are also offered.

### Features

- 4-20mA, 0-10Vdc, or Modbus RTU output
- High degree of accuracy
- Removable, replaceable sensing tip (QFM31xx and QFM41xx)
- Versions with LCD display also available

### Applications

The QFM Series Duct Relative Humidity and Relative Humidity/Temperature Sensors are especially suited for applications where precise, stable humidity sensing is required.

Certified sensors include a calibration certificate meeting United States FDA requirements for pharmaceutical facilities.

# Specifications

## General

**Installation**..... 18 AWG cable length shared in conduit with other sensor wiring 750 ft. (229 m) max

**Connections** ..... Screw Terminals

**Dimensions**  
 Probe..... 0.6" O.D. x 7.2" L (15 mm O.D. x 183 mm L)  
 Housing ..3.1" L x 2.3" W x 1.5" O.D. (80 mm L x 60 mm W x 40 mm D)

**Voltage Requirement**..... 13.5 to 35 Vdc and 24 Vac (for sensors with 0-10 Vdc outputs)

**Input Impedance** (4 to 20 mA versions only) ..... Less than 500 Ohms

**Housing Material Type** .....Polycarbonate plastic, UL 94-5VB rated, suitable for plenum installations

**Housing Protection Class**..... IP 65 (QFM3xxx, QFM4xxx types), IP54 (QFM2xxx types), NEMA 1 (all types)

**Filter Material and Specification** ..... Teflon, 10 micron filter

**Agency Certification**..... UL listed to UL 873 for Temperature Indicating and Regulating Equipment

**CE Conformance** ..... EC Directive on electromagnetic compatibility: 89/336/EEC

## Humidity Element

**Operating Range**..... 0 to 100% RH

**Measurement Range** ..... 0 to 95% RH

**Accuracy at Room Temperature ≈ 73°F (20°C):**  
 QFM21xx:..... ±3% RH (30-70% RH); ±5% Other  
 QFM31xx/QFM41xx ..... ±2% full scale

**Operating Temperature Jumper Selectable**.....32° to 122°F (0° to 50°C) or -31° to 95°F (-35° to 35°C) or -31° to 140°F (-35° to 60°C)

**Temperature Effect**..... Less than 0.1% per degree C

**Sensing Element**..... Capacitive humidity sensing element

**Output Signal**  
 RH only units .....4 to 20 mA and 0 to 10 Vdc, 0-100% Linear, Proportional  
 RH/T units .....0 to 10 Vdc, 0-100% Linear, Proportional

**Polarity Protection**.....Yes

## Temperature Element Specifications (for Combination RH/T Units Only)

	QFM2120	QFM2160 QFM2171	QFM31xx QFM41xx
<b>Operating Temperature</b>	-31° to 140°F (-35° to 60°C)	-31° to 122°F (-35° to 50°C)	-31° to 158°F (-35° to 70°C)
<b>Time Constant</b>	Approximately 20 seconds in moving air		
<b>Accuracy</b>	±0.6K —	—	59° to 95°F (15° to 35°C)
	±0.8K 59° to 95°F (15° to 35°C)	59° to 95°F (15° to 35°C)	31° to 158°F (-35° to 70°C)
	±1.0K 31° to 140°F (-35° to 60°C)	-31° to 122°F (-35° to 50°C)	—
<b>Output Signal</b>	— Nickel 1K @ 32°F Ohm RTD (Siemens)	0 to 10 Vdc (QFMx160) 4 to 20 mA (QFMx171)	
<b>Calibration</b>	None		

## Product Ordering

Application	Description	Part No.
Duct Humidity 5%	0 to 10 Vdc	QFM2100
Duct Humidity 5%	4 to 20 mA	QFM2101
Duct Humidity 5% & Temperature	0 to 10 Vdc / Temp 1K Ohm Nickel RTD (L&S Type)	QFM2120
Duct Humidity 5% & Temperature	0 to 10 Vdc / Temp 0 to 10 Vdc	QFM2160U
Duct Humidity 5% & Temperature	4 to 20 mA / Temp 4 to 20 mA	QFM2171
Duct Humidity 5% & Temperature	Modbus RTU QFM2150/MO	S55720-S467
Duct Humidity 2%	0 to 10 Vdc	QFM3100
Duct Humidity 2%	4 to 20 mA	QFM3101
Duct Humidity 2% & Temperature	0 to 10 Vdc, Temp 0 to 10 Vdc	QFM3160
Duct Humidity 2% & Temperature	0 to 10 Vdc, Temp 0 to 10 Vdc, w/Display	QFM3160D
Duct Humidity 2% & Temperature	4 to 20 mA / Temp 4 to 20 mA	QFM3171
Duct Humidity 2% & Temperature	4 to 20 mA / Temp 4 to 20 mA, w/Display	QFM3171D
Duct Humidity 2% & Temperature	Modbus RTU QFM3150/MO	S55720-S468
Duct Humidity 2% & Temperature	0 to 10 Vdc, Temp 0 to 10 Vdc (Certified)	QFM4160
Duct Humidity 2% & Temperature	4 to 20 mA / Temp 4 to 20 mA (Certified)	QFM4171

## Accessories Ordering

Description	Part No.
Replacement Sensing Element (QFM31xx only)	AQF3150
Replacement Sensing Element – Certified Units	AQF4150
Replacement Filter (QFM31xx only)	AQF3101

## Electronic Room Hygrostats



QFA1000 Electronic Room Hygrostat  
with Concealed Setpoint.



QFA1001 Electronic Room  
Hygrostat with Exposed Setpoint.

### Description

The room hygrostats are used for controlling and monitoring relative humidity in ventilation or air conditioning facilities. They ensure room humidity control within the selectable range of 30 to 90% relative humidity by controlling humidification or dehumidification equipment. They can also be used for monitoring minimum or maximum humidity levels.

### Features

- Hygrostat with SPDT microswitch
- Setpoint knob for the upper switching point
- Mounts directly on the wall or on a recessed conduit box

### Applications

For controlling humidification and dehumidification equipment.

## Specifications

**Setpoint Range** ..... 30 to 90% rh  
**Temperature**  
 Operating Range ..... 32° to 122°F (0° to 50°C)  
**Humidity Measuring Element** ..... Stabilized Plastic Band  
**Control Mode** ..... Two-position  
**Time Constant** ( $v = 0.2 \text{ m/s}$ ) ..... Approx. 5 minutes  
**Setting Accuracy** ..... + 5% rh (can be improved by calibrating on site)  
**Temperature Influence** ..... + 0.5% rh/K  
**Humidity Calibration** ..... at 55% rh, 73°F (23°C)  
**Long-term Stability** ..... Approximately –1.5% rh/a  
**Type of Switch** ..... Potential-free Microswitch (SPDT)  
**Contact Rating**  
 Maximum ..... 5 (3) A, 24 Vac/Vdc  
 Minimum ..... 100 mA, 24 Vac/Vdc

**Degree of Housing Protection** ..... IP 20 to EN 60 529  
**Safety Class** ..... II to EN 60 730  
**Electrical Connection**  
 Screw Terminals ..... For Maximum 2 × 16 AWG  
**Materials and Colors**  
 Base ..... PPS, Fortron, Fiberglass Reinforced, Black  
 Cover ..... PC Lexan 940, Pure White  
 Humidity Measuring Element ..... Plastic  
**Agency Approvals** ..... UL listed for UL873  
 cUL Canadian Standard C22.2 No. 24-93  
 CE conformity  
 EMC directive 89/336/EEC  
**Weight** ..... 3.17 ounces (0.090 kg)

## Product Ordering

Description	Control Range	Type of Control	Part No.
Room	30 to 90% RH	Humidity Switch with Concealed Setpoint	QFA1000
Room	30 to 90% RH	Humidity Switch with Exposed Setpoint	QFA1001

## Accessories Ordering

Description	Part No.
Wall Plate for 2" x 4" Box	ARG70

## Electronic Duct Hygrostats



QFM81.21 Electronic Duct Hygrostat  
with Internal Setpoint.



QFM81.2 Electronic Duct Hygrostat  
with External Setpoint.

### Description

On/off hygrostat with microswitch, and temperature-compensated humidity sensor for temperature-independent humidity measurements.

### Features

- Stabilized sensing strip  
(good linearity, very stable even at high humidity, insensitive to dust and contaminated air)
- Can be mounted in ventilation ducts or rooms

### Applications

For controlling humidification and dehumidification equipment.



\* Not applicable to PL-link devices, IAQ multi-sensor or Series 2200/3200 units with display.

## Specifications

<b>Setpoint Range</b> .....	30 to 90% rh
<b>Control Mode</b> .....	On/off
<b>Type of Switch</b> .....	Potential-free Microswitch (SPDT)
<b>Contact Rating</b>	
Maximum .....	5 (3) A, 24 Vac/Vdc
Minimum .....	100 mA, 24 Vac/Vdc
<b>Temperature Influence</b> .....	Compensated
<b>Long-term Stability</b> .....	Approximately -1.5% rh/a
<b>Balancing</b> .....	At 55% rh, 73°F (23°C)
<b>Time Constant</b> (v = 0.2 m/s) .....	Approx. 3 minutes
<b>Permissible Air Velocity</b> .....	10 m/s
<b>Permissible Ambient Temperature</b>	
Operation .....	32° to 158°F (0° to 70°C)
Storage/transport .....	-22° to 158°F (-30 to 70°C)
<b>Degree of Housing Protection</b>	
FM81.2 .....	IP 30 to EN 60 529
QFM81.21 .....	IP 55 to EN 60 529

<b>Safety Class</b> .....	II to EN 60 730
<b>Electrical Connection</b>	
Screw Terminals .....	20 AWG Minimum 2 x 16 AWG Maximum
<b>Materials and Colors</b>	
Sensing Element .....	Polymer
Casing with Stem .....	PPS, Fortron 1140L6, Fiberglass Reinforced
Cover .....	PC Lexan 940
Transparent Cover (QFM81.21) .....	PC Makrolon 2014R
<b>Agency Approvals</b> .....	
	UL listed for UL873 cUL Canadian Standard C22.2 No. 24-93
<b>Weight</b> .....	Approx. 12 ounces (0.34 kg)

## Product Ordering

Description	Control Range	Type of Control	Part No.
Duct	15 to 95% RH	Humidity Switch with External Setpoint	QFM81.2
Duct	15 to 95% RH	Humidity Switch with Internal Setpoint	QFM81.21

**Note:**

Includes a mounting flange (for duct or wall mounting) and a sealing ring (for duct mounting).



## Condensation Sensors



QXA2100  
Condensation Sensor.



QXA2101 Condensation Sensor  
with Remote Sensing Element.

### Description

The QXA Series Condensation Sensors are used to avoid damage due to condensation on chilled ceilings and in HVAC installations.

On humidity rise, the SPDT contacts switch at approximately 95% RH (+/-4% RH). All feature a fixed switching differential of approximately 5% RH.

All operate on AC/DC 24V and have a NO/NC changeover dry contact relay output.

- 1 Amp @ 24 Vac
- 0.5 Amp @ 24 Vdc

### Features

- Come complete with a strap-on band for pipe diameters from 0.5 to 4 inches (12.7 to 102 mm), and thermal conductive paste

## Specifications

### Power Supply G (G+), G0 (G-)

Operating Voltage..... AC/DC 24V + 20%  
 Frequency ..... 50/60 Hz  
 Power consumption..... Maximum 1 VA

**Switching Point on Humidity Increase** ..... 95% ±4% rh

**Switching Differential (Fixed)**..... Approximately 5% rh

### Response Time in Static Air

From 80 to 99% rh ..... Maximum 3 minutes  
 From 99 to 80% rh ..... Maximum 3 minutes

**Condensation** ..... Maximum 30 minutes

### Output Q11, Q12, Q14

Relay Output ..... NO/NC Changeover Dry Contact  
 Current Range at AC/DC 24V ..... 0.02 to 1 (1) A  
 Starting Current at AC/DC 24V..... < /- 10 A for < /- 20 ms  
 Switching Capacity..... Minimum AC/DC 1V, 1 mA  
 Maximum A/DC, 48V, 0.5 A

**Degree of Protection of Housing** ..... IP 40 to EN 60529

**Safety Class** ..... III to EN 60 730

### Connections

Mechanical ..... Strap-on Band for Pipe Diameter  
 0.39 to 3.94 inches (10 to 100 mm)

Electrical  
 Screw Terminals for ..... (2) 16 AWG or (1) 14 AWG  
 (max 2 x 1.5 mm<sup>2</sup> or 1 x 2.5 mm<sup>2</sup>)

### Environmental Conditions

Operation to ..... IEC 60721-3-3  
 Climatic Conditions ..... Class 3K5  
 Temperature (Housing & Electronics)..... -23° to 122°F (-5° to 50°C)  
 Humidity..... 5 to 95% rh (Non-condensing)  
 Mechanical Conditions ..... Class 3M2

Transport to ..... IEC 60721-3-2  
 Climatic Conditions ..... Class 2K2  
 Temperature (Housing & Electronics)... -13° to 150°F (-25° to 60°C)  
 Humidity ..... <95% rh  
 Mechanical Conditions ..... Class 2M2

**Housing Materials and Colors**..... Thermoplastics, pure-white

### Product Safety

Automatic Electrical Controls for  
 Domestic Use and Similar Applications..... EN 60730-1

### Electromagnetic Compatibility

Immunity ..... EN 61000-6-2  
 Emissions..... EN 61000 6-3

### CE Conformity

Electromagnetic Compatibility ..... 2004/108/EC  
 Low-voltage Directive ..... 2006/95/EC

**Weight** ..... 4.4 ounces (0.126 kg) w/Packaging

## Product Ordering

Description	Part No.
Condensation Sensor	<b>QXA2100</b>
Condensation Sensor with Remote Sensing Element	<b>QXA2101</b>

## Room Air Quality Sensors



BACnet IP/MSTP  
IAQ multi-sensor



LoRaWAN  
IAQ multi-sensor

### Description

The QNA Series IAQ multi-sensors measure everything you need in order to ensure the highest comfort and safety for occupant well-being and productivity. Accurately measure temperature, humidity, PM2.5, CO<sub>2</sub>, TVOCs, noise and light with one device. Complete with BACnet IP/ MSTP and LoRaWAN connectivity for simple connection and installation.

### Features

IAQ multi-sensors acquire the following values in ventilation and air conditioning plants:

- Temperature
- Relative humidity
- CO<sub>2</sub> concentrations
- VOC concentrations
- PM2.5 concentrations
- PM10 estimated value
- Sound pressure
- Illuminance

### Applications

The QNA Series IAQ multi-sensors offer comprehensive indoor air quality measurement and insight into room conditions. They are easy to install and are suitable for any space.

# Specifications

## General

Installation ..... Drywall mounting, conduit box mounting and surface mounting  
 Connections ..... Screw terminals (BACnet MSTP), Ethernet jack (BACnet IP)  
 Dimensions ..... 3.85" H x 3.85" W x 1.35" D (98 mm x 98 mm x 34 mm)  
 Voltage Requirement ..... USB type C / AC/DC 12...24 V  
 Housing Protection Class ..... IP30 according to EN60529

## Carbon Dioxide (CO<sub>2</sub>)

Type ..... nondispersive infrared sensor  
 Range ..... 400 - 5000 ppm  
 Accuracy ..... ±75 ppm or ±10% of reading (whichever is greater)  
 Resolution ..... 1 ppm dedicated sensor, not estimated

## Temperature (°C/°F)

Type ..... complementary metal-oxide semiconductor (CMOS) sensor  
 Range ..... -40 to 125°C (-40 to 257°F)  
 Accuracy ..... ±0.2°C  
 Resolution ..... 0.015°C selectable °For °C display

## Relative Humidity (%RH)

Type ..... complementary metal-oxide- semiconductor (CMOS) sensor  
 Range ..... 0 - 100 %RH  
 Accuracy ..... ±2 %RH  
 Resolution ..... 0.01 %RH

## Backup Battery

Type ..... rechargeable Lithing-Ion battery  
 Capacity and Voltage ..... 2250mAh@3.7V  
 Runtime ..... 5.5 - 9 hours (depending on settings)

## Power Consumption

Operating ..... 1.76W (max: 2.6W, 6.5W w/battery charging)  
 Total ..... less than 1.3kWh per month (operating for 30 days)

## Particulate Matter <2.5 microns (PM2.5) (µg/m<sup>3</sup>)

Type ..... optical laser, light scattering sensor  
 Range ..... 0 - 1,000 µg/m'  
 Accuracy .. ±15 µg/m' (0 - 100 µg/m'), ±15% of reading (100 - 1,000 µg/m')  
 Resolution ..... 1 µg/m' calibrated to cigarette smoke

## Particulate Matter <10 microns (PM10) (µg/m<sup>3</sup>)

Type ..... optical laser, light scattering sensor  
 Range ..... 0 - 1,000 µg/m'  
 Accuracy .. ±15 µg/m' (0 - 100 µg/m'), ±15% of reading (100 - 1,000 µg/m')  
 Resolution ..... 1 µg/m' estimated from PM2.5

## Illuminance (lux)

Type ..... photodiode, integrated ambient and infrared light to digital converter  
 Range ..... 0.96 - 64,000 lux  
 Accuracy ..... ±10%  
 Resolution ..... 0.1 lux

## Sound Pressure Level (dBA)

Type ..... analog MEMS microphone  
 Range ..... 48 - 90 dBA  
 Accuracy ..... ±3 dBA Leq  
 Resolution ..... 0.1 dBA  
 Sensitivity ..... -26 dBFS  
 SNR ..... Typical 61 dBA (20Hz - 20kHz)  
 Sample Rate ..... 46.875 KHz  
 Recordings ..... 1 x 44ms

## Certification

Environmental ..... ROHS, REACH, WEEE  
 Electronic Safety ..... FCC, CE, KCC, SRRC, Telec  
 Outlet Adapter ..... UL

## Building Certification

RESET Air Accredited Indoor Monitor & Data Provider  
 IWBI WELL & WELLv2  
 LEED 4.1 (ARC)  
 Living Building Challenge (LBC)  
 Fitwel

## Product Ordering

Description	Model Number	Part No.
BACnet IP	QNA2700D.BA1	S55720-S572
BACnet MSTP	QNA2700D.BA2	S55720-S573
LoRaWAN	QNA2820D.US	S55720-S575

## Room Air Quality Sensors



QPA2060D Q Series  
Room Carbon Dioxide & Temperature Sensor.

### Description

The QPA Series Room Carbon Dioxide Sensors monitor and transmit changes in CO<sub>2</sub> to the building control systems. No calibration of the CO<sub>2</sub> sensor is necessary – these microprocessor-based units consist of a non-dispersive infrared CO<sub>2</sub> sensor that experiences less than 1% drift per year for the first two years of operation and negligible drift thereafter.

### Features

- LCD display option
- Various models:  
Particulate Matter (PM2.5)  
CO<sub>2</sub>  
CO<sub>2</sub>/VOC  
CO<sub>2</sub>/Temp  
CO<sub>2</sub>/Temp/RH  
VOC
- Built-in test function for troubleshooting
- Jumper selectable °C/°F units for temp models w/display
- Selectable output (0-01V / 4-20mA)
- Modbus RTU output (optional)

### Applications

Combination CO<sub>2</sub> and Volatile Organic Compound (VOC) Sensors (QPA2002 and QPA2002D) measure both CO<sub>2</sub> and VOCs with a single output signal that automatically switches to reflect the higher of the two values. These sensors seamlessly integrate into any Demand Control Ventilation strategy and help address odorless (CO<sub>2</sub>) and odorous (VOCs) air quality issues.

VOC sensors measure volatile organic compounds and provide an excellent means of measuring air quality from an estimated comfort perspective. Output does not indicate a specific ppm count of VOCs.

QSA Series fine dust sensors are designed to measure and transmit indoor concentrations of particulate matter within the PM2.5 and PM10 classifications.

# Specifications

## General

**Installation**..... 18 AWG cable length shared in conduit with other sensor wiring 750 ft. (229 m) max

**Connections** ..... Screw terminals

**Dimensions** ..... 3.94" H x 3.54" W x 1.65" D (100 mm x 90 mm x 42 mm)

**Voltage Requirement**..... 13.5 to 35 Vdc

**Housing Protection Class**..... NEMA 1 (all types)

## CO<sub>2</sub> Element

**Operating Range**.....0 to 2000 ppm

**Accuracy at Room Temperature ≈ 73°F (20°C)** ... +2% Measured Value

**Operating Temperature** ..... -23° to 113°F (-5° to 45°C)

**Temperature Effect**..... Less than 0.1% per degree C

**Sensing Element**..... NDIR CO<sub>2</sub> sensing module

**Output Signal**.....0 to 10 Vdc, 0-100% Linear, Proportional

**Polarity Protection**.....Yes

**Permissible Air Velocity in the Room** .....<26.2 ft./s

## Temperature Element (for Combination CO<sub>2</sub>/T unit only)

**Operating Temperature** .....23° to 113°F (-5° to 45°C)

**Time Constant** .....<1 minute

**Accuracy** ..... ±0.8K

**Output Signal** ..... Selectable (0-10V / 4-20mA)

**Calibration** ..... None Required

## Humidity Element

**Measuring Range**..... 0 to 100% RH

**Accuracy** ..... ±5% RH

## PM2.5

**Measuring Range**..... Selectable (0-50 micrograms/m<sup>3</sup> to 0-500 micrograms/m<sup>3</sup>)

# Product Ordering

Application	Description	Part No.
CO <sub>2</sub>	Selectable (0-10V / 4-20mA)	QPA2000
CO <sub>2</sub> and VOC*	Selectable (0-10V / 4-20mA)	QPA2002
CO <sub>2</sub> and VOC*	Selectable (0-10V / 4-20mA), with Display	QPA2002D
CO <sub>2</sub> and Temp	Selectable (0-10V / 4-20mA)	QPA2060
CO <sub>2</sub> and Temp	Selectable (0-10V / 4-20mA), with Display	QPA2060D
CO <sub>2</sub> , Temp and RH	Selectable (0-10V / 4-20mA)	QPA2062
CO <sub>2</sub> , Temp and RH	Selectable (0-10V / 4-20mA), with Display	QPA2062D
CO <sub>2</sub> , Temp and RH	Modbus RTU QPA2052/MO	S55720-S510
VOC*	Selectable Output (0-10V / 4-20mA) QPA1000	S55720-S119
PM2.5	0-10V / Modbus RTU QSA2700	S55720-S457
PM2.5	0-10V / Modbus RTU, with display QSA2700D	S55720-S458

\* VOC sensors are for maintaining comfort and are not for use as safety devices.

# Accessories Ordering

Description	Part No.
Wall Plate for 2" x 4" Box	ARG70

## Duct Air Quality Sensors



QPM 2100 CO<sub>2</sub> only Sensor.

### Description

The QPM Series Duct CO<sub>2</sub> Sensors monitor and transmit changes in CO<sub>2</sub> to the building control systems. Several models are available for CO<sub>2</sub> only, CO<sub>2</sub>/Temp, CO<sub>2</sub>/Temp/RH and CO<sub>2</sub>/VOC. All variants for CO<sub>2</sub> and combination versions with Temperature or Volatile Organic Compounds (VOCs) deliver 0 to 10 Volt to 5 Volt (field selectable) proportional signals to the controller.

No calibration of the CO<sub>2</sub> sensor is necessary – these microprocessor-based units consist of an NDIR sensor that experiences less than 1% drift per year for the first two years of operation and negligible drift thereafter.

### Features

- LCD display option
- Various models:
  - Particulate Matter (PM2.5)
  - CO<sub>2</sub>
  - CO<sub>2</sub>/VOC
  - CO<sub>2</sub>/Temp
  - CO<sub>2</sub>/Temp/RH
  - VOC
- Jumper selectable °C/°F units for temp models w/display
- Selectable output (0-01V / 4-20mA)
- Modbus RTU (optional)

### Applications

These units are especially suited for applications where precise, stable CO<sub>2</sub> sensing is required.

Combination CO<sub>2</sub> and Volatile Organic Compound (VOC) Sensors (QPM2102 and QPM2102D) measure both CO<sub>2</sub> and VOCs with a single output signal that automatically switches to reflect the higher of the two values. These sensors seamlessly integrate into any Demand Control Ventilation strategy and help address odorless (CO<sub>2</sub>) and odorous (VOCs) air quality issues.

VOC sensors measure volatile organic compounds and provide an excellent means of measuring air quality from an estimated comfort perspective. Output does not indicate a specific ppm count of VOCs.

QSM Series fine dust sensors are designed to measure and transmit indoor concentrations of particulate matter within the PM2.5 and PM10 classifications.

# Specifications

## General

**Installation**..... 18 AWG cable length shared in conduit with other sensor wiring 750 ft. (229 m) max.

**Connections** ..... Screw terminals

**Voltage Requirement**..... 13.5 to 35 Vdc  
Q Series sensors with 0-10 Vdc outputs can also operate on 24 Vac

**Input Impedance (4 to 20 mA versions only)** ..... Less than 500 Ohms

## CO<sub>2</sub> Element

**Operating Range**.....0 to 2000 ppm

**Accuracy at Room Temperature ≈ 73°F (20°C)** .....+2% mean value

**Operating Temperature** .....-31° to 113°F (-35° to 45°C)

**Temperature Effect**.....Less than 0.1% per degree C

**Sensing Element**..... NDIR CO<sub>2</sub> sensing module

**Output Signal** ..... 0 to 10 Vdc, 0-100% linear, proportional

**Polarity Protection**.....Yes

**Permissible Air Velocity in the Duct** .....<26.2 ft./s

## Temperature Element (for Combination CO<sub>2</sub>/T unit only)

**Operating Temperature** ..... -31° to 113°F (-35° to 45°C)

**Time Constant** .....<1 min

**Accuracy** ..... ±1K

**Output Signal** ..... Selectable (0-10V / 4-20mA)

**Calibration** ..... None Required

## PM2.5

**Measuring Range**..... Selectable (0-50 micrograms/m<sup>3</sup> to 0-500 micrograms/m<sup>3</sup>)

# Product Ordering

Application	Description	Part No.
Duct Sensor, CO <sub>2</sub>	Selectable (0-10V / 4-20mA)	<b>QPM2100</b>
Duct Sensor, CO <sub>2</sub> and VOC*	Selectable (0-10V / 4-20mA)	<b>QPM2102</b>
Duct Sensor, CO <sub>2</sub> and VOC*	Modbus RTU QPM2102/MO	<b>S55720-S469</b>
Duct Sensor, CO <sub>2</sub> and VOC*	Selectable (0-10V / 4-20mA) with Display	<b>QPM2102D</b>
Duct Sensor, CO <sub>2</sub> and Temp.	Modbus RTU QPM2150/MO	<b>S55720-S470</b>
Duct Sensor, CO <sub>2</sub> and Temp.	Selectable (0-10V / 4-20mA)	<b>QPM2160</b>
Duct Sensor, CO <sub>2</sub> and Temp.	Selectable (0-10V / 4-20mA) with Display	<b>QPM2160D</b>
Duct Sensor, CO <sub>2</sub> , RH and Temp	Selectable (0-10V / 4-20mA)	<b>QPM2162</b>
Duct Sensor, CO <sub>2</sub> , RH and Temp.	Selectable (0-10V / 4-20mA) with Display	<b>QPM2162D</b>
Duct Sensor, CO <sub>2</sub> , RH and Temp.	Modbus RTU QPM2152/MO	<b>S55720-S471</b>
PM2.5	0-10V QSM2100	<b>S55720-S491</b>
PM2.5, Temp, RH	0-10V QSM2162	<b>S55720-S492</b>

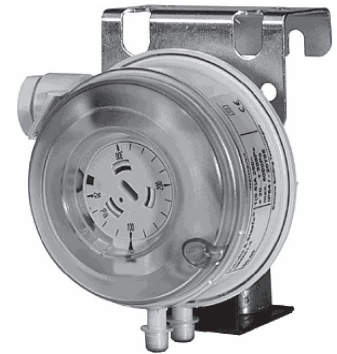
\* VOC sensors are for maintaining comfort and are not for use as safety devices.



## Air Differential Pressure Sensors / Switches



QBM3230 Series



QBM81 Series

### Description

The Siemens QBM Series Air Differential Pressure Devices use a proven sensing technology to deliver accurate and repeatable data in applications that require monitoring of differential pressure.

### Features

- Selectable output signal and measuring range (QBM3230)
- SPDT contact output (QBM81)
- Compact construction
- Integral mounting bracket and snap-on cover with a single screw for fast and easy installation
- Resettable zero point for different mounting positions (QBM3230)
- Low susceptibility to temperature
- No mechanical aging

### Applications

QBM Series Differential Pressure Devices can be used in a wide range of HVAC and general building management applications where differential air pressure monitoring is required.

Typical applications for the QBM3230 include control of variable speed fans in VAV systems and monitoring of pressure differentials in clean room applications.

The QBM81 can be wired NO or NC and provide a digital output with adjustable differential pressure trip point. Common applications include monitoring of air filters and general indication of high/low differential pressure situations.

**Note:** QBM81 includes two pressure ports and 2 meters of tubing (metric).



Siemens offers a 5-year warranty on sensors.\*

\* Not applicable to PL-link devices, IAQ multi-sensor or Series 2200/3200 units with display.

# Specifications

## QBM3230 Series Sensors

**Input Power** ..... 8 to 33 Vdc  
**Accuracy** ..... ±1% Full Scale  
**Permitted Media** ..... Air and other non-corrosive gases  
**Process/Ambient Operating Temp** ..... 32° to 160°F (0° to 71°C)  
**Ambient Humidity** ..... Non-condensing  
**Enclosure** ..... Polycarbonate  
**Diaphragm** ..... Silicone  
**Measuring Element** ..... Ceramic

## QBM81 Series Switches (SPDT Relay Output)

**Contact Rating** ..... AC 250V, 5A max (3A inductive)\*  
**Maximum Pressure** ..... 20" WC  
**Ambient Operating Temp** ..... -22° to 185°F  
**Humidity (Max)** ..... 90% rh, non-condensing  
**Permitted Media** ..... Air and other non-corrosive gases  
**Mounting Orientation** ..... Any  
**Housing/Cover** ..... Polycarbonate  
**Diaphragm** ..... Emission free silicone  
**Bracket** ..... Galvanized Steel

\*Consult local codes for voltages over 24V

## Product Ordering

Pressure measuring ranges			Output Signal	Model Number	Part Number
Range 1	Range 2	Range 3			
-0.3" to +0.3"	-0.2" to +0.2"	-0.1" to +0.1"	0-10V / 4-20mA (selectable)	QBM3230U03UD	S55720-S522
0" to 0.3"	0" to 0.5"	0" to 1"		QBM3230U1D	S55720-S523
0" to 0.5"	0" to 1"	0" to 2"		QBM3230U2D	S55720-S524
0" to 1"	0" to 2"	0" to 3"		QBM3230U3D	S55720-S525
0" to 2"	0" to 3"	0" to 5"		QBM3230U5D	S55720-S526
0" to 3"	0" to 5"	0" to 10"		QBM3230U10D	S55720-S527
0" to 5"	0" to 10"	0" to 20"		QBM3230U20D	S55720-S528
0.08" to 1.2"				SPDT	QBM81-3
0.2" to 2"			QBM81-5		QBM81-5
0.4" to 4"			QBM81-10		QBM81-10
0" to 5"			Modbus RTU	QBM3700-13/MO	S55720-S485
0" to 10"				QBM3700-25/MO	S55720-S486
0" to 2"				QBM3700-5/MO	S55720-S487

## Air Velocity Sensor



QVM62.1 Air Velocity Sensor.

### Description

This sensor is used to control the air velocity to a constant value, balance out pressure fluctuations (supply or exhaust air control), or to monitor the flow in air ducts. It is designed with a thin film sensing element and its unique, sleek housing guarantees product recognition. This unit is compatible with all Siemens systems and controllers.

### Features

- Mounting flange allows the installer to vary the probe insertion length into the duct space for best control
- Mounting flange dampening gasket minimizes vibration
- Graduated probe ensures maximum flow accuracy
- Flow directional arrow provides for the most accurate reading
- Connection cable provides mounting flexibility
- Three jumper selectable flow measuring ranges accommodate any application or environment
- Field selectable output (4 to 20 mA or 0 to 10V)

### Applications

This sensor is primarily used to set the basic volumetric flow rate for modulating fan control.

## Specifications

### Power Supply

Operating Voltage.....	24 Vac ± 20%
Frequency .....	50/60 Hz
Power Consumption .....	≤ 5 VA (maximum 200 mA)
Output Impedance.....	<20 ohm

### Measuring Data

Measuring Ranges, Adjustable.....	0 to 16 ft/s (0 to 5 m/s)
	0 to 33 ft/s (0 to 10 m/s)
	(factory setting)
	0 to 49 ft/s (0 to 15 m/s)
Measuring Accuracy at 68°F (20°C), 45% rh, .....	± 0.7 ft/s
1013 hPa .....	(0.2 m/s + 3% of measured value)
Permissible Air Velocity .....	66 ft/s (20 m/s)
Direction Dependence.....	< 0.3% of measured value at ≤ + 10°
Time Constant $t_{90}$ at 10 m/s.....	4 seconds

### Signal Output U1

Voltage .....	4 to 20 mA or 0 to 10 Vdc
Current .....	± 1 mA

### Line Length

Permissible Length to Controller at:

20 AWG Copper Cable.....	164 ft (50 m)
18 AWG Copper Cable.....	492 ft (150 m)
16 AWG Copper Cable.....	984 ft (300 m)
Line Length to the Sensor Head .....	3 ft (1 m) (prewired)

### Connections

Mechanical .....	Screw Connection
Electric.....	Screw Terminal, Maximum 2 x 18 AWG

### Degree of Protection

Degree of Protection Provided by Enclosures as per EN 60 529

Transducer .....	IP 42
Sensor head .....	IP 20
Degree of protection as per EN 60 730.....	III

### Climatic Conditions

Temperature .....	23° to 113°F (-5° to 45°C)
Humidity (non-condensing) .....	<95% rh
Mechanical Conditions .....	Class 3M2
Chemical Conditions .....	Class 3C2

### Storage (Transducer and Immersion Stem)

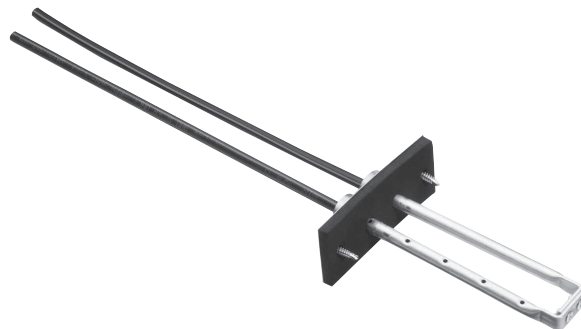
Temperature .....	23° to 113°F (-5° to 45°C)
Humidity (Non-condensing).....	<95% rh
Mechanical Conditions .....	Class 1M2

**Weight with Packaging** .....12 oz (0.352 kg)

## Product Ordering

Application	Description	Part No.
Air Velocity Sensor	0 to 3000 FPM	<b>QVM62.1</b>

## Pitot Tube Sensor Kits



536 Pitot Tube Sensor Kit.

### Description

The Pitot Tube Sensor Kit is used with either static or differential air pressure sensing devices, to measure average static or differential pressure across a duct.

### Features

- Thin steel construction
- Mounting flange is easily bent to conform to round or oval ducts

### Applications

This kit is used in situations where a terminal box manufacturer-supplied sensor (flow pick-up) is not available, or where the existing flow pick-up has been damaged.



\* Not applicable to PL-link devices, IAQ multi-sensor or Series 2200/3200 units with display.

## Specifications

### Material

Probe.....6061 aluminum  
Gasket.....1/4-in (6 mm) closed-cell neoprene  
Tubing .....FR polyethylene  
Mounting Flange.....26 GA galvanized sheet steel

### Mounting

Screws.....#8 self-tapping  
1/4-in (6 mm) hex washer head  
Flange Hub.....#10 pan head, slotted

**Dimensions** ..... 1.50" x 3.75"  
(38 mm x 95 mm)

## Product Ordering

Duct Size	Maximum Probe Length	Part No.
6" (152 mm)	5.75" (146 mm)	<b>536-376</b>
8" (203 mm)	7.75" (197 mm)	<b>536-378</b>
10" (254 mm)	9.75" (248 mm)	<b>536-380</b>
12" (305 mm)	11.75" (298 mm)	<b>536-382</b>
14" (356 mm)	13.75" (349 mm)	<b>536-384</b>

## Wet Differential Pressure Sensors



QBE3100 Series.



QBE3190 Series  
(includes manifold).

### Description

QBE Series Wet Differential Pressure Sensors utilize a well-proven ceramic technology making them an ideal choice across a broad spectrum of applications. These sensors can be ordered individually or pre-assembled with an optional three-valve manifold

### Features

- Loop powered 4 to 20 mA output signal
- Compatible with water and water/glycol mixtures
- Ultra-low susceptibility to temperature
- Maintenance free

### Applications

The QBE Sensor is particularly suitable for use in HVAC systems where continuous monitoring of flow rate or differential pressure across a control valve is required.

## Specifications

**Input Power** ..... 7.5V to 33 Vdc  
**Output Signal** ..... 4 to 20 mA  
**Long-Term Stability** .....  $\pm 0.5\%$  Full Scale  
**Resolution** ..... 0.1% Full Scale  
**Sum of Linearity, Hysteresis and Repeatability** .....  $< \pm 0.5\%$  Full Scale  
**Manifold** ..... Aluminum (6061-T6511)  
**Tubing** ..... Copper (UNS C12200)  
**Fitting** ..... Brass (C36000)  
**Valve Stem** ..... High-performance thermoplastic polymer  
**O-rings** ..... Ethylene Propylene Rubber (EPS, EPDM)

**Suitable Process Media** ..... Air, water, water and glycol mixtures  
**Process Temperature (Sensor)** ..... 5° to 185°F (-15° to 85°C)  
**Process Temperature (Manifold)** ..... 40° to 185°F (5° to 85°C)  
**Ambient Operating Temperature** ..... 5° to 185°F (-15° to 85°C)  
**Enclosure** ..... IP65/NEMA 4  
**Electrical Connections** ..... 1/2" FNPT conduit  
 (kit included for non-conduit installations)  
**Process Connections** ..... 1/4" FNPT  
**Mounting Orientation** ..... Any orientation is allowable  
 (avoid orientations that may be susceptible to air pockets)  
**Maximum Working Pressure (Sensor)** ..... 540 PSIG  
**Maximum Working Pressure (Manifold)** ..... 250 PSIG

## Product Ordering

Description	Output Signal	Differential Pressure Range	Part Number
Wet DP Sensor	4 to 20 mA	0 to 25 PSID	<b>QBE3100UD25</b>
		0 to 50 PSID	<b>QBE3100UD50</b>
		0 to 100 PSID	<b>QBE3100UD100</b>
Wet DP Sensor with 3-Valve Manifold	4 to 20 mA	0 to 25 PSID	<b>QBE3190UD25</b>
		0 to 50 PSID	<b>QBE3190UD50</b>
		0 to 100 PSID	<b>QBE3190UD100</b>



## Liquid Flow Switches



QVE1900U Liquid Flow Switch.



QVE1901U Liquid Flow Switch.

### Description

The QVE1900U Flow Switch is for liquids in piping 1-1/4-inch to 8-inch (20 mm to 200 mm) diameter. The QVE1901U Flow Switch is for liquids in piping 3/4-inch to 8-inch (20 mm to 200 mm) diameter.

These two units have the same general principle of operation, although their switching mechanisms are different. Both detect the flow of the medium to be monitored by means of a paddle. If the flow velocity in the piping falls below the adjusted switch-off value, the paddle in the QVE1900U model actuates a micro-switch with a dry contact (SPDT), which closes the contact. When the flow velocity reaches the switch-on value again, the opposite contact closes. In the QVE1901U model, the switching is achieved through a system of two opposite magnets and a reed contact. The switching point is adjustable on both devices.

### Features

- Compatible with any device capable of receiving and NO/NC input
- Trimmable paddles provide correct flow measurement based on pipe diameter
- Can be wired NO or NC
- Maintenance-free
- Suitable for all common HVAC applications (not for use with ammonia)
- QVE1901U is a direct replacement for common flow switches from McDonnell & Miller, Taco, and others

### Applications

Flow switches are used to monitor the flow of fluids in hydraulic systems, especially in refrigeration and heat pumps, and are for use with condensers, boilers, and heat exchangers.



\* Not applicable to PL-link devices, IAQ multi-sensor or Series 2200/3200 units with display.

## Specifications

### Piping Diameter

QVE1900U ..... 1.25" (32) to 8.00" (200)  
 QVE1901U ..... .75" (20) to 8.00" (200)

### Type of Switch

QVE1900U ..... Micro Switch with Single-Pole Changeover,  
 Potential Free  
 QVE1901U ..... Reed Contact

### Contact Rating

QVE1900U ..... 24 Vac, 15 (8) A  
 QVE1901U ..... 24 Vac, 1 A/24 Vdc, 1 A

### Adjustment of Switching Point

Manual, Supplied with Minimum Switch On/Off Values

### Permissible Medium Temperature

-4° to 248°F (-20° to 120°C)  
 (Medium must be Antifreeze)

### Degree of Protection

Housing ..... IP 65 per EN 60 529

### Safety Class

QVE1900U ..... I per EN 60 730  
 QVE1901U ..... III per EN 60 730

### Operation and Storage

QVE1900U ..... -4° to 158°F (-20° to 85°C)  
 QVE1901U ..... -4° to 176°F (-20° to 80°C)

### Ambient Humidity (QVE1901U)

<95% rh

### Agency Listings

UL Listed for UL 873 XAPX  
 cUL C22.2 No. 24-93 XAPX7

### Housing Material

QVE1900U ..... Bayblend T85/Color RAL 7015  
 QVE1901U ..... Polyamide, Black

### Base Material

QVE1900U ..... Screw-in body Brass  
 QVE1901U ..... Screw-in body Brass

### Paddle Material

QVE1900U ..... High Grade Steel  
 QVE1901U ..... Plastic

### Flow Switch, Overall (QVE1900U)

Silicone-free

### System Connections

QVE1900U ..... 1" MNPT  
 QVE1901U ..... 3/4" NNPT

### Pressure Rating

QVE1900U ..... 160 PSIG  
 QVE1901U ..... 365 PSIG

## Product Ordering

Description	Part No.
SPDT, 15A, 1-1/4" to 8" pipe, 160 psi	QVE1900U
SPST, 1A, 3/4" to 8" pipe, 365 psi	QVE1901U

# Solar Impact Sensor



QLS60 Solar Impact Sensor.

## Description

The outdoor wall-mounted Solar Impact Sensor (QLS60) is used as a demand sensor for heating, ventilation and air-conditioning in facilities where compensation of solar radiation is required or desired. Solar compensation is necessary where buildings or building sections with large window areas are subjected to strong solar radiation, especially in installations where thermostatic radiator valves cannot be used.

To determine the impact of solar radiation, the sensor uses a solar cell that acquires the level of radiation. That cell generates an electrical current depending on the extent of radiation, which is then evaluated by the sensor. As a result, the sensor delivers an output signal of 4 to 20 mA or 0 to 10 Vdc, which is proportional to the solar radiation range.

## Features

- Configurable 0-10 Vdc, 4-20 mA output signal
- 24 Vac or 18-30 Vdc power source
- Output signal linear over entire measuring range
- Measuring range of 0-93 w/ft<sup>2</sup> (0-1000 w/m<sup>2</sup>)
- Rain- and moisture-resistant NEMA 4 enclosure
- Compact housing (2" x 3.62" x 1.8")

## Applications

This sensor can be used in connection with all types of systems and devices capable of acquiring and handling the sensor's 4 to 20 mA or 0 to 10 Vdc output signal.



\* Not applicable to PL-link devices, IAQ multi-sensor or Series 2200/3200 units with display.

## Specifications

**Rated Voltage Range** ..... 24 Vac ( $\pm 20\%$  SELV)  
or 24 Vdc (18 to 30V)

**Power Supply (G+, M)**

Rated Frequency at 24 Vac ..... 50/60Hz  
Rated Power Consumption ..... Max. 2.5 VA (1 W)

**Measuring Range** ..... 0 to 1000 W/m<sup>2</sup>

**Time Constant  $t_{63}$**  ..... </- 2 seconds

**Measured Value Outputs (U, I)**

Voltage Signal Output (U) ..... 0 to 10 Vdc 0 = 1000 W/m<sup>2</sup>  
Current Signal Output (I) ..... 4 to 30 mA 0 to 1000 W/m<sup>2</sup>

**Permissible Cable Lengths With Copper Cable**

18 AWG ..... 164 feet (50 m)  
16 AWG ..... 492 feet (150 m)  
12 AWG ..... 984 feet (300 m)

**Electrical Connections**

Screw Terminals for ..... 2 x 16 AWG or 1 x 12 AWG

**Degree of Protection of Housing** ..... IP 65 to IEC 60 529

**Insulation Class** ..... III to EN 60 730

**Environmental Conditions**

Operation to ..... IEC 60 721-3

Climatic Conditions ..... Class 3K5

Temperature ..... -13° to 131°F (-25° to 55°C)

Humidity (Non-condensing) ..... 5 to 95% rh

Mechanical Conditions ..... Class 3M2

Transportation to ..... IEC 60 721-3-2

Climatic Conditions ..... Class 2K3

Temperature ..... -13° to 158°F (-25° to 70°C)

Humidity ..... <95% rh

Mechanical Conditions ..... Class 2M2

**Agency Standards** ..... UL Listed to UL873

cUL Listed to Canadian Standard C22.2 No. 24-93

CE conformity to EMC directive 2004/108/EC

## Product Ordering

Description	Output Signal	Part No.
Solar Impact Sensor	4 to 20 mA or 0 to 10 Vdc	<b>QLS60</b>

## HVAC Sensors with Modbus RTU Capability



### Description

Siemens offers a full range of Modbus RTU Sensors. The QxA room mounted sensors and the QxM duct mounted sensors are offered in a variety of configurations to measure temperature, humidity, CO2 and VOC.

The QBM3700 Series differential pressure sensors are designed for the air side of the HVAC system. The sensor also features 2 analog inputs and 2 analog outputs, allowing it to serve as decentralized Modbus node to simplify the overall system wiring.


The QSA2700 Series sensors monitor particulate concentrations in the space. It features 2 0-10V outputs for PM2.5 and PM10 particles in  $\mu\text{g}/\text{m}^3$ . Additional data, including individual particle counts is available via Modbus.

### Features




- Modbus RTU via RS-485 simplifies wiring via a straightforward 2 wire communication bus
- Wide variety of sensor types enables a complete Modbus sensor network
- Compatible with most HVAC controllers and building automation systems that are Modbus RTU capable

## Ordering Information




### Temperature Sensors

	Model Number	Part Number	Description	Measuring Range	Accuracy
	QAM2150/MO	S55720-S466	Duct Temperature Sensor, 15.75" Flexible Probe	-58° - 122°F	±1.6°F


### Humidity Sensors

	Model Number	Part Number	Description	Measuring Range	Accuracy
	QFA2050/MO	S55720-S508	Room Humidity / Temperature Sensor, General Purpose	RH: 0-95% Temp: -40 - 158°F	RH: ±3% (30-70%) Temp: ±0.54°F @ 73°F
	QFA2050D/MO	S55720-S509	Room Humidity / Temperature Sensor, Display, General Purpose		
	QFA3150/MO	S55720-S535	Room Humidity / Temperature Sensor, High Performance	RH: 0-100% Temp: -40 - 158°F	RH: ±2% Full Scale Temp: ±0.54°F @ 73°F
	QFM2150/MO	S55720-S467	Duct Humidity / Temperature Sensor, General Purpose	RH: 0-95% Temp: -40 - 158°F	RH: ±3% (30-70%) Temp: ±0.54°F @ 73°F
	QFM3150/MO	S55720-S468	Duct Humidity / Temperature Sensor, High Performance	RH: 0-100% Temp: -40 - 158°F	RH: ±2% Full Scale Temp: ±0.54°F @ 73°F

### Air Quality Sensor

	Model Number	Part Number	Description	Measuring Range	Accuracy
	QPA2052/MO	S55720-S510	Room CO2 / Humidity / Temperature Sensor	CO2: 0-2000 PPM RH: 0-95% Temp: -40 - 158°F	CO2: ±(50 ppm + 2 % of measured value) RH: ±3% (30-70 %) Temp: ±0.54°F @ 73°F
	QPM2102/MO	S55720-S469	Duct CO2 / VOC Sensor	CO2: 0-2000 PPM VOC: 0-100%	CO2: ±(50 ppm + 2 % of measured value)
	QPM2150/MO	S55720-S470	Duct CO2 / Temperature Sensor	CO2: 0-2000 PPM Temp: 23 - 113°F	CO2: ±(50 ppm + 2 % of measured value) Temp: ±0.54°F @ 73°F
	QPM2152/MO	S55720-S471	Duct CO2 / Humidity / Temperature Sensor	CO2: 0-2000 PPM RH: 0-95% Temp: 23 - 113°F	CO2: ±(50 ppm + 2 % of measured value) RH: ±3% (30-70 %) Temp: ±0.54°F @ 73°F
	QPM2153/MO	S55720-S530	Duct CO2 / VOC / Humidity / Temperature Sensor	CO2: 0-2000 PPM VOC: 0-100% RH: 0-95% Temp: 23 - 113°F	CO2: ±(50 ppm + 2 % of measured value) RH: ±3% (30-70 %) Temp: ±0.54°F @ 73°F
	QSA2700 <sup>1</sup>	S55720-S457	Room Dust (PM2.5) Sensor	0 to 500 µg/m <sup>3</sup>	Max of ±15 µg/m <sup>3</sup> and ±15% of reading (unit-to-unit variability)
	QSA2700D <sup>1</sup>	S55720-S458	Room Dust (PM2.5) Sensor, Display		

### Differential Pressure Sensor

	Model Number	Part Number	Description	Measuring Range	Accuracy
	QBM3700-5/MO <sup>2</sup>	S55720-S487	Diff. Pressure Sensor, Air	0-2" WC	≤ ± 1% FS @ 68°F
	QBM3700-13/MO <sup>2</sup>	S55720-S485	Diff. Pressure Sensor, Air	0-5" WC	≤ ± 0.5% FS @ 68°F
	QBM3700-25/MO <sup>2</sup>	S55720-S486	Diff. Pressure Sensor, Air	0-10" WC	≤ ± 0.5% FS @ 68°F


1. QSA units include 0-10V outputs for PM2.5 and PM10 measurements.

2. QBM3700 requires AQB9120/101A installation kit.

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PRODUCT	PAGE #
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Repair Parts	<b>E-50</b>

## Accessories & Service Kits

	Description	Product Group	Quantity	Part No.
<b>Legacy Room Sensor Accessories</b>				
	<b>Lockable Thermostat or Sensor Guard.</b> <ul style="list-style-type: none"> <li>• 10 × 6-1/4 × 3-3/4 inches (254 × 158.75 × 95.25 mm)</li> <li>• Desert beige mounting base</li> <li>• One key and mounting screws included</li> </ul>	Any Siemens T-Stat or Sensor	1	<b>141-570</b>
<b>Legacy Sensors Repair Parts</b>				
	<b>Replacement Occupancy/Override Buttons.</b>	540, 544, 550 and 587 Series Room Sensors	Pkg of 25	<b>544-480A</b> (Beige) <b>544-480B</b> (White)
	<b>Replacement Setpoint Door.</b>	540, 544, 550 and 587 Series Room Sensors	Pkg of 25	<b>544-481A</b> (Beige) <b>544-481B</b> (White)
	<b>Replacement Front Bezel.</b>	540, 544, 550 and 587 Series Room Sensors	Pkg of 25	<b>544-482A</b> (Beige) <b>544-482B</b> (White)
	<b>Repair Kit.</b> Containing slide switch components, reset & override buttons, setpoint door, and bezels. Repairs one sensor.	540, 544, 550 and 587 Series Room Sensors	1	<b>544-483A</b> (Beige) <b>544-483B</b> (White)
	<b>Replacement Blanking Buttons.</b>	540, 544, 550 and 587 Series Room Sensors	Pkg of 25	<b>544-484B</b> (White)



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Heating/Cooling Room Thermostats	TH 192/4HC	155-066P25	<b>F-7</b>
Day/Night and Day/Night/Vent Room Thermostats	TH 192/4DN/DNV	155-067P25	<b>F-9</b>
Free Energy Band Heating/Cooling Room Thermostats	TH 193HC	155-068P25	<b>F-11</b>
Retroline® Retrostat Room Thermostats	TH 192/4	—	<b>F-13</b>
<b>Pneumatic Room Thermostats – D Series</b>			
Room Thermostats	TH 832D	155-072P25	<b>F-17</b>
<b>Pneumatic Thermostats for Specialized Applications</b>			
Limitem™ Rigid Bulb Thermostats	TH 356	155-070P25	<b>F-19</b>
Limitem™ Remote Bulb Thermostats	TH 357	155-071P25	<b>F-21</b>
Unit Mounted Thermostats	TH 188	155-064P25	<b>F-23</b>
High and Low Temperature Detection Thermostats	TH 134	155-063P25	<b>F-25</b>
<b>Pneumatic Receiver-Controllers</b>			
Single Input Receiver-Controller	RC 195	155-119P25	<b>F-27</b>
Multiple Input Receiver-Controller	RC 195	155-036P25	<b>F-29</b>
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Temperature Transmitters	TT 184	155-077P25	<b>F-31</b>
Room and Duct Hygrostats	HU 186	155-027P25	<b>F-33</b>
Room and Duct Humidity Transmitters	HT 186	155-026P25	<b>F-35</b>
<b>Pneumatic Auxiliary Equipment</b>			
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Multi-purpose Relay	RL 243	155-042P25	<b>F-59</b>
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Highest Pressure Signal Selector	RL 243	155-045P25	<b>F-69</b>
Lowest and Highest Signal Selector	RL 243	155-046P25	<b>F-71</b>
Lowest Pressure Signal Selector	RL 243	155-047P25	<b>F-73</b>
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<b>Accessories and Service Kits</b>			<b>F-81</b>

## Powerstar™ Room Thermostats

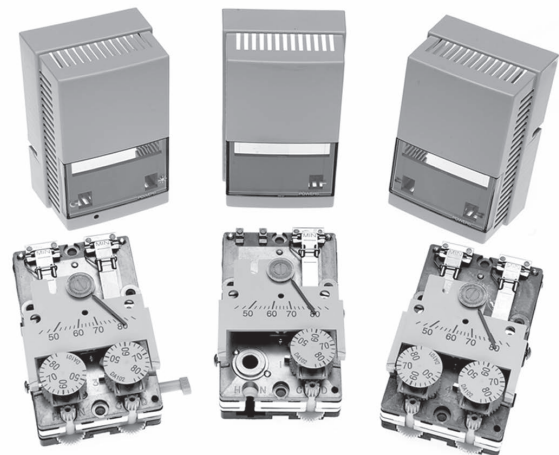
Proven to provide fast response and highly accurate temperature control, Powerstar Pneumatic Room Thermostats are designed to control heating and/or cooling by operating a variety of pneumatic devices such as valves or damper actuators.

Powerstar thermostats are factory calibrated to control pneumatic devices over a 3 to 15 psi (103 to 207 kPa) range.

Powerstar pneumatic room thermostats are available for the following applications:

- Single Temperature
- Day/Night
- Day/Night/Vent
- Heating/Cooling
- Free Energy Band
- Free Energy Band with Hesitation

Covers are available with concealed or exposed setpoint adjustment, room temperature indication, and setpoint indicator.



192 DN/DNV Dual Setpoint (Day/Night).

192 S Single Setpoint.

192 HC Heating/Cooling Setpoint.

## Selection Guide

Air Supply	Applications	Control Outputs	Control Setpoints	Control Actions	Air Output Capacity		Model
					Low (1-pipe)	High (2-pipe)	
15 to 30 psi (103 to 207 kPa)	• Heat or Cool	Single	Single	Direct/Reverse	●	●	192 S
Cool 18 psi (124 kPa) Heat 25 psi (172 kPa)	• Heat and Cool (auto changeover) • Factory calibrated (194 HC) for Honeywell or Johnson retrofit	Single	Dual	Direct/Direct		●	192 HC
				Reverse/Reverse		●	194 HC
				Direct/Reverse		●	
				Reverse/Direct		●	
Day 18 psi (124 kPa) Night 25 psi (172 kPa)	• Day and Night (auto changeover) • Factory calibrated (194 DN) for Honeywell or Johnson retrofit • R2 vent ("0") day, full supply night (DNV only, 3-pipe) • Night override selector switch	Single	Dual (Day/Night)	Direct/Direct		●	192 DN
				Reverse/Reverse		●	194 DN
Day 18 psi (124 kPa) Night 25 psi (172 kPa)	• Day and Night (auto changeover) • Factory calibrated (194 DN for Honeywell or Johnson retrofit) • R2 vent ("0") day, full supply night (DNV only, 3-pipes) • Night override selector switch	Dual	Dual (Day/Night with Vent)	None	●	●	192 DNV 194 DNV
15 to 30 psi (103 to 207 kPa)	• Heat and Cool • Sequence-controlled devices with two control lines (same or different range)	Dual	Dual (Heat/Cool)	Direct/Direct	●	●	193 HC Free Energy Band
				Reverse/Reverse	●	●	
				Direct/Reverse	●	●	
				Reverse/Direct	●	●	
15 to 30 psi (103 to 207 kPa)	• Heat and Cool • Sequence-controlled devices with one control line (different spring ranges)	Single	Dual (Heat/Cool)	Direct/Direct		●	193 HC Free Energy Band (Hesitation)



# Reliable Powers™ Controls that meet pneumatic and mechanical needs

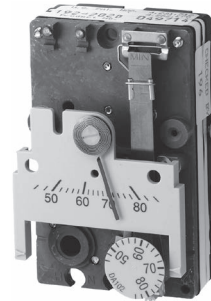
F-4

To continue providing consistent control and years of service, Siemens maintains a full line of Powers pneumatic and mechanical controllers and actuators. These rugged and reliable devices fulfill a wide variety of customer requirements. They're energy efficient, cost-effective, and simple to operate.

Visit [usa.siemens.com/HVACpneumatics](https://usa.siemens.com/HVACpneumatics) to learn more.

**SIEMENS**

## Powerstar™ Single Setpoint Pneumatic Room Thermostat



192 S Thermostat chassis.



Typical wall plate and screws.

### Description

Providing proportional single output, single setpoint, 1-pipe for low air capacity or 2-pipe for high air capacity pneumatic room temperature control, the 192 S Powerstar Single Setpoint Pneumatic Room Thermostat is the most economical model. Refer to the Retroline® Retrostats on page F-15 to replace competitive models.

### Features

- Single setpoint dial available in Fahrenheit or Celsius scales
- Available in direct or reverse acting models
- Sensitive bimetal responds to temperature changes
- Integral, field adjustable limit stops
- Wall mounting plate for connection to a variety of rough-in terminal boxes included
- Large volume air capacity relay in 2-pipe models only
- Test port for fast check of output pressure without removing the cover
- Field replaceable thermometer, setpoint dial, restrictor and filters for decreased maintenance cost

### Options

- Quick-connect air connections for ease of installation and service
- Fixed limit stops to meet government specifications
- Large, 1/2" setpoint knob for convalescent homes

### Applications

Designed for heating and cooling applications for control of pneumatic valves and damper actuators. The 192 S Powerstar Single Setpoint Pneumatic Room Thermostat is excellent for commercial and institutional facilities.

### Recommendation

**1-pipe:** Use when limited output air capacity is required to operate a single valve and/or actuator; requires external restrictor, 20 scim (5.4 ml/s) air supply.

**2-pipe:** Use for high output capacity for control of multiple valves and actuators, used with or without high/low limiting controls.

### Application Drawings

Dotted lines are alternative control schemes.

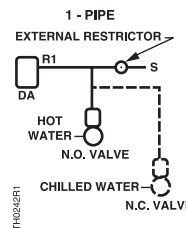


DIAGRAM 1.

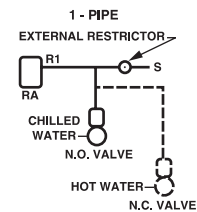


DIAGRAM 2.

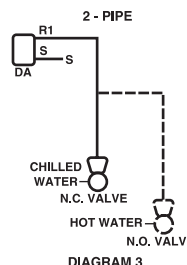


DIAGRAM 3.

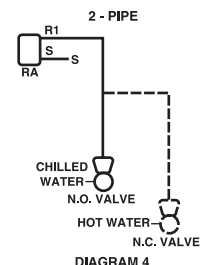


DIAGRAM 4.

# Specifications

## Scale; Range

Major (minor) Divisions.....45° to 85°F, 10(2)°F  
(7° to 30°C, 5(1)°C)

**Factory Calibration** .....72°F, 7.5 psi ±0.3  
(22°C, 52 kPa @ 1.8)

**Sensitivity Adjustment Range** .....1 to 4 psi/°F (12 to 50 kPa/°C)

**Factory Setting** .....2.5 psi/°F (31 kPa/°C)

## Limit Stop

Field Adjustment Range .....45/85°F (7/30°C)

Fixed Limit Stop Range .....55/75°F (13/24°C)

## Temperature

Storage.....-10° to 140°F (-23° to 60°C)

Ambient Operating .....40° to 140°F (4° to 60°C)

## Accuracy at Factory

Calibration .....±2°F (±1.1°C)

Response .....0.1°F (0.06°C)

## Supply Air Pressure

Recommended.....25 psi (172 kPa)

Maximum.....30 psi (207 kPa)

## Nominal Air Consumption for Air Compressor Sizing

1-pipe .....25 scim (6.8 ml/s)

2-pipe .....20 scim (5.5 ml/s)

## Nominal Air Capacity for Air Main Sizing

1-pipe .....25 scim (6.8 ml/s)

2-pipe .....20 scim (5.5 ml/s)

## Nominal Chassis Air Capacity

1-pipe Supply .....25 scim (6.8 ml/s)

2-pipe Supply .....230 scim (63 ml/s)

1-pipe Exhaust .....30 scim (8 ml/s)

2-pipe Exhaust .....150 scim (41 ml/s)

## Air Connections

.....5/32" (4 mm) OD tubing

## Dimensions (with cover)

.....2.16" W x 3.34" H x 1.59" D

(55 mm W x 85 mm H x 40 mm D)

## Shipping Weights (with cover)

Thermostat Chassis and Wall Plate .....0.53 lb. (0.24 kg)

Plastic Cover/Metal Cover.....0.07 lb. (0.04 kg)/0.27 lb. (0.12 kg)

# Product Ordering

Model #	Thermostat Chassis Type				Thermostat Chassis & Wall Plate	
	Output	Setpoint	Air Output Capacity	Thermometer & Setpoint Scales	Control Action	
					Direct	Reverse
192 S 1-pipe	Single	Single (Heat or Cool)	Low (No Relay)	°F	<b>192-200</b>	<b>192-201</b>
				°C	<b>192-220</b>	<b>192-221</b>
192 S 2-pipe	Single	Single (Heat or Cool)	High (Integral Relay)	°F	<b>192-202</b>	<b>192-203</b>
				°C	<b>192-222</b>	<b>192-223</b>



For complete conversion kits, refer to the Retroline® Retrostats starting on page F-13.

## Powerstar™ Heating/Cooling Pneumatic Room Thermostats



192 HC Thermostat chassis.



Typical wall plate and screws.



192 HC Thermostat with plastic cover. Chassis wall plate with easy maintenance plug-in adapters shown (optional).



### Description

Providing proportional single output, dual setpoint with 2-pipe for high air capacity pneumatic room temperature control, the 192 HC Powerstar Heating/Cooling Pneumatic Room Thermostat provides two thermostats under one cover; one side for heating and the other for cooling. Switchover is accomplished by changing the air pressure to the thermostat.

### Features

- Dual setpoint dial available in Fahrenheit or Celsius scales
- Available in direct or reverse acting models
- Sensitive bimetal responds to temperature changes
- Integral, field adjustable limit stops
- Adjustable changeover pressure
- Large volume air capacity relay
- Wall mounting plates provides connection to a variety of rough-in terminal boxes
- Test port for fast check of output pressure without removing the cover
- Field replaceable thermometer, setpoint dials, restrictor and filters

### Options

- Fixed limit stops to meet government specifications
- Quick-connect air connections for ease of installation and service
- Large, 1/2" setpoint knob for convalescent homes

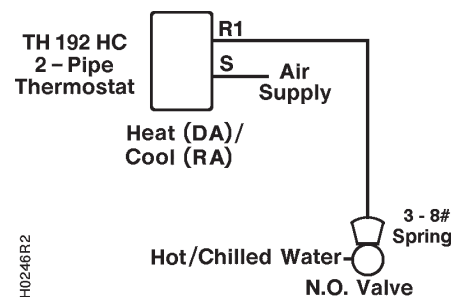
### Applications

Designed for temperature control of heating and cooling applications, the 192 HC Powerstar Heating/Cooling Pneumatic Room Thermostat controls valves and damper actuators in cooling equipment. Providing energy management and occupant comfort, the thermostat automatically adjusts to seasonal changes from heating setpoint to cooling setpoint in commercial and institutional facilities.

### Recommendation

For control of multiple valves and actuators, use with or without high/low limiting controls.

### Application Drawing



# Specifications

**Scale; Range**  
Major (minor) Divisions ..... 45° to 85°F, 10(2)°F  
(7° to 30°C, 5(1)°C)

**Factory Calibration** ..... 72°F, 7.5 psi ± 0.3  
(22°C, 52 kPa @ 1.8)

**Sensitivity Adjustment Range** ..... 1 to 4 psi/°F (12 to 50 kPa/°C)

**Factory Setting** ..... 2.5 psi/°F (31 kPa/°C)

**Limit Stop**  
Field Adjustment Range ..... 45/85°F (7/30°C)  
Fixed Limit Stop Range ..... 55/75°F (3/24°C)

**Temperature**  
Storage ..... -10° to 140°F (-23° to 60°C)  
Ambient Operating ..... 40° to 140°F (4° to 60°C)

**Accuracy at Factory**  
Calibration ..... ±2°F (±1.1°C)  
Response ..... 0.1°F (0.06°C)

**Supply Air Pressure**  
Two Pressure (Recommended) Cooling/Heating ..... 18 psi (124kPa)/  
(124 kPa)/25 psi (172 kPa)

**Supply Air Pressure**  
Two Pressure (Range)  
Cooling ..... 15 to 19 psi (103 to 131 kPa)  
Heating ..... 23 to 30 psi (159 to 207 kPa)

Two Pressure, Honeywell Competitive Model  
Cooling/Heating ..... 13 psi (90 kPa)/18 psi (124 kPa)

Two Pressure, Johnson Competitive Model<sup>1</sup>  
Cooling/Heating ..... 15 psi (103 kPa)/20 psi (138 kPa)

**Nominal Air Consum. for Air Compressor Sizing** ..... 25 scim (6.8 ml/s)

**Nominal Air Capacity for Air Main Sizing** ..... 40 scim (11 ml/s)

**Nominal Air Capacity**  
Supply/Chassis Exhaust ..... 150 scim (41 ml/s)/150 scim (41 ml/s)

**Air Connections** ..... 5/32" (4 mm) OD tube

**Dimensions (with cover)** ..... 2.16" W x 3.34" H x 1.59" D  
(55 mm W x 85 mm H x 40 mm D)

**Shipping Weights**  
Thermostat Chassis and Wall Plate ..... 0.53 lb. (0.24 kg)  
Plastic Cover ..... 0.07 lb. (0.04 kg)  
Metal Cover (single/dual) ..... 0.27 lb. (0.12 kg)/0.7 lb. (0.3 kg)

1. Some Johnson Controls heat/cool thermostats have a cooling supply pressure of 20 psi (138 kPa) and a heating supply pressure of 15 psi (103 kPa). For this application, the heating and cooling actions must be reversed. If exposed setpoint is required, order special cover, **192-773**.

# Product Ordering

Model #	Thermostat Chassis Type				Thermostat Chassis & Wall Plate	
	Output	Setpoint	Air Output Capacity	Thermometer & Setpoint Scales	Control Action	
					Heat Direct	Heat Reverse
192 HC 2-pipe	Single	Dual (Heat and Cool)	High (Integral Relay)	°F	<b>192-207</b> Cool (DA)	<b>192-209</b> Cool (DA)
				°F	<b>192-208</b> Cool (RA)	<b>192-210</b> Cool (RA)
				°C	—	<b>192-229</b> Cool (DA)
				°C	<b>192-228</b> Cool (RA)	—

▶ For complete conversion kits, refer to the Retroline® Retrostats starting on page F-13.



## Powerstar™ Day/Night/Vent Pneumatic Room Thermostats



192 DN Thermostat chassis.



Typical wall plate and screws.



192 DN Thermostat with plastic cover. Chassis wall plate with easy maintenance plug-in adapters shown (optional).



### Description

Providing proportional dual setpoint, 2-pipe or 3-pipe high air capacity pneumatic room temperature control, the 192 DN or DNV Powerstar Pneumatic Room Thermostat automatically resets the room temperature setpoint during unoccupied hours by changing the air pressure to the thermostat. A manual override feature allows occupants to switch to day mode. The override returns to night mode the following night.

### Features

- Dual setpoint dial available in Fahrenheit or Celsius scales
- Available in direct or reverse acting models
- Sensitive bimetal responds to temperature changes
- Manual override selector for off-hour occupant comfort
- Adjustable changeover pressure
- Large volume air capacity relay
- Integral, field adjustable limit stops
- Wall mounting plate for connection to a variety of rough-in terminal boxes included
- Test port for fast check of output pressure without removing the cover
- Field replaceable thermometer, setpoint dial, restrictor and filters

### Options

- Fixed limit stops to meet government specifications
- Quick-connect air connections for ease of installation and service
- Large, 1/2" setpoint knob for convalescent homes

### Applications

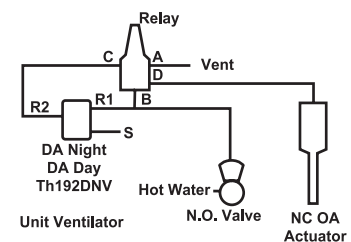
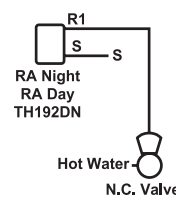
The 192 DN and DNV Powerstar Pneumatic Room Thermostat controls valves and damper actuators in cooling equipment, automatically performing setback changes from day to night. The 192 DNV also performs a purge sequence at night to bring in “vent” outside air to cool the building. A manual override selector switch allows individual room or zone “day” control locally during the night cycle.

During the night control cycle, the 192 DNV models provide a separate output signal (full air supply) allowing ventilation control. Periodic resetting to the “night” control mode during evening or weekend periods using time clocks ensures optimal energy management.

### Recommendation

Use 192 DN or DNV for multiple valves and actuators, with or without high/low limiting controls.

### Application Drawings



Chassis Port R2 Pressure	Operation Mode (Air Supply)	Switching Relay Connection
Full Air Supply	Night (S=25 psi)	A-D
0 psi	Night Occupied	B-D
0 psi	Day (S=18 psi)	B-D

# Specifications

**Scale; Range**  
 Major (Minor) Divisions.....45° to 85°F, 10(2)°F  
 (7° to 30°C, 5(1)°C)

**Factory Calibration** .....72°F, 7.5 psi  
 (22°C, 31 kPa)

**Sensitivity Adjustment Range** ..... 1 to 4 psi/°F (12 to 50 kPa/°C)

**Factory Setting** .....2.5 psi/°F (31 kPa/°C)

**Limit Stop**  
 Field Adjustment Range ..... 45/85°F (7/30°C)  
 Fixed Limit Stop Range..... 55/75°F (3/24°C)

**Temperature**  
 Storage.....-10° to 140°F (-23° to 60°C)  
 Ambient Operating .....40° to 140°F (4° to 60°C)

**Accuracy at Factory**  
 Calibration ..... ±2°F (±1.1°C)  
 Response ..... 0.1°F (0.06°C)

**Supply Air Pressure**  
 Two Pressure  
 Day (recommended) ..... 18 psi (124 kPa)  
 Night (recommended) ..... 25 psi (172 kPa)  
 Vent-Day/Night..... 0 psi (0 kPa)/25 psi (172 kPa)

Two Pressure  
 Day (range) ..... 15 to 19 psi (103 to 131 kPa)  
 Night (range)..... 23 to 30 psi (159 to 207 kPa)

Two Pressure (Honeywell Competitive Model)  
 Day/Night ..... 13 psi (90 kPa)/18 psi (124 kPa)

Two Pressure (Johnson Controls Competitive Model)  
 Day/Night ..... 15 psi (103 kPa)/20 psi (138 kPa)

**Nominal Air Consumption for Air Compressor Sizing** ..... 25 scim (6.8 ml/s)

**Nominal Air Capacity for Air Main Sizing** ..... 40 scim (11 ml/s)

**Nominal Chassis Air Capacity**  
 Supply ..... 230 scim (63 ml/s)  
 Exhaust ..... 150 scim (41 ml/s)

**Air Connections** ..... 5/32" (4 mm) OD tube

**Dimensions (with cover)**  
 192 DN ..... 2.16" W x 3.34" H x 1.59" D  
 (55 mm W x 85 mm H x 40 mm D)  
 192 DNV ..... 2.5" W x 3.34" H x 1.59" D  
 (64 mm W x 85 mm H x 40 mm D)

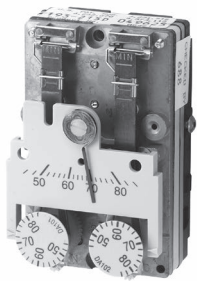
**Shipping Weights**  
 Thermostat Chassis and Wall Plate .....0.53 lb. (0.24 kg)  
 Plastic Cover .....0.07 lb. (0.04 kg)  
 Metal Cover (dual).....0.27 lb. (0.12 kg)

# Product Ordering

Model #	Thermostat Chassis Type				Thermostat Chassis & Wall Plate		
	Output	Setpoint	Air Output Capacity	Thermometer & Setpoint Scales	Control Action		
					D (DA) / N (DA)	D (RA) / N (RA)	D (DA) / N (DA) (with Night Vent)
192 DN	Single	Dual (Day and Night)	High (Integral Relay)	°F	192-204	192-205	192-206
192 DNV 3-pipe				°C	192-224	192-225	192-226

▶ For complete conversion kits, refer to the Retroline® Retrostats starting on page F-13.

## Powerstar™ Free Energy Band Heating/Cooling Pneumatic Room Thermostats



193 HC Thermostat chassis.



Typical wall plate and screws.



193 HC Thermostat with plastic cover. Chassis wall plate with easy maintenance plug-in adapters shown (optional).

### Description

Providing proportional, dual output, dual setpoint, 2-pipe (dual 1-pipe low air capacity) or 3-pipe (dual 2-pipe high air capacity) pneumatic room temperature control, the 193 HC Powerstar Free Energy Band Pneumatic Room Thermostat creates a deadband so that no heating or cooling occurs during the Free Energy Band.

### Features

- Dual setpoint dials available in Fahrenheit or Celsius scales
  - Integral, field adjustable limit stops
  - Sensitive bimetal responds to temperature changes
  - Adjustable Free Energy Band
  - Test port for fast check of output pressure without removing the cover
  - Wall mounting plates for connection to a variety of rough-in terminal boxes included
  - Field replaceable thermometer, setpoint dials, restrictors and filters
  - Competitive adapter mounting kits available
- ### Options
- Fixed limit stops to meet government specifications
  - Quick-connect air connections for ease of installation and service
  - Large, 1/2" setpoint knob for convalescent homes

### Applications

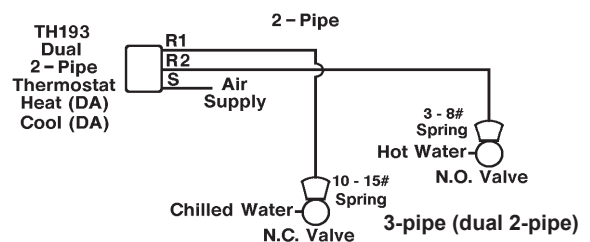
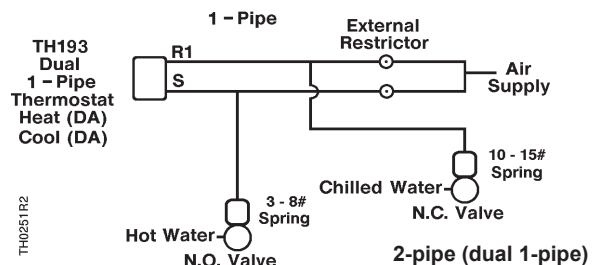
Designed for buildings with early morning heat requirements and mid-morning to afternoon cooling requirements, the Powerstar Free Energy Band Pneumatic Room Thermostat two temperature thermostat controls valves, damper actuators and mechanical heating and cooling equipment. Providing energy management and occupant comfort, the thermostat automatically reduces heating load and increases cooling load.

### Recommendation

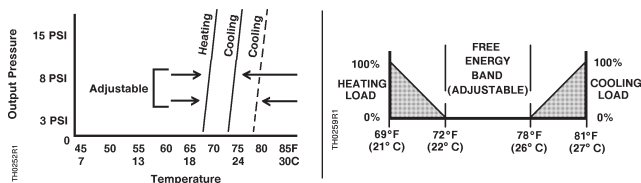
**2-pipe (dual 1-pipe):** Use when a limited air capacity is required to operate a single valve and/or actuator.

**3-pipe (dual 2-pipe):** Use for multiple valves and actuators with or without high/low limiting controls which require higher air capacities.

### Application Drawings



### Input/Output Characteristics



# Specifications

### Scale; Range

Major (minor) Divisions ..... 45° to 85°F, 10(2)°F (7° to 30°C, 5(1)°C)

**Factory Calibration** ..... 72°F, 7.5 psi ±0.3  
(22°C, 52 kPa @ 1.8)

**Sensitivity Adjustment Range** ..... 1 to 4 psi/°F (12 to 50 kPa/°C)

**Factory Setting** ..... 2.5 psi/°F (31 kPa/°C)

### Limit Stop

Field Adjustment Range ..... 45/85°F (7/30°C)

Fixed Limit Stop Range ..... 55/75°F (13/24°C)

### Temperature

Storage ..... -10° to 140°F (-23 to 60°C)

Ambient Operating ..... 40° to 140°F (4 to 60°C)

### Accuracy at Factory

Calibration ..... ±2°F (±1.1°C)

Response ..... 0.1°F (0.06°C)

### Supply Air Pressure

Two Pressure (recommended) ..... 25 psi (172 kPa)

Maximum ..... 30 psi (207 kPa)

### Nominal Air Consumption for Air Compressor Sizing

1-pipe ..... 50 scim (14 ml/s)

2-pipe ..... 40 scim (11 ml/s)

### Nominal Air Capacity for Air Main Sizing

1-pipe ..... 50 scim (14 ml/s)

2-pipe ..... 40 scim (11 ml/s)

### Nominal Chassis Air Capacity

1-pipe Supply ..... 25 scim (6.8 ml/s) per side

2-pipe Supply ..... 230 scim (63 ml/s) per side

1-pipe Exhaust ..... 30 scim (8 ml/s) per side

2-pipe Exhaust ..... 150 scim (41 ml/s) per side

### Air Connections

..... 5/32" (4 mm) OD tubing

### Dimensions (with cover)

..... 2.16" W x 3.34" H x 1.59" D

(55 mm W x 85 mm H x 40 mm D)

### Shipping Weights

Thermostat Chassis and Wall Plate ..... 0.53 lb. (0.24 kg)

Plastic Cover ..... 0.07 lb. (0.04 kg)

Metal Cover (dual) ..... 0.27 lb. (0.12 kg)

# Product Ordering

Model #	Thermostat Chassis Type				Thermostat Chassis & Wall Plate	
	Output	Setpoint	Air Output Capacity	Thermometer & Setpoint Scales	Control Action	
					Heat Direct	Heat Reverse
193 HC 1-pipe	Single	Dual (Heat and Cool)	Low (No Relay)	°F	<b>193-211</b> Cool (DA)	<b>193-213</b> Cool (DA)
				°F	<b>193-212</b> Cool (RA)	—
193 HC 2-pipe		Dual (Heat and Cool)	High (Integral Relay)	°F	<b>193-215</b> Cool (DA)	<b>193-217</b> Cool (DA)
				°F	<b>193-216</b> Cool (RA)	<b>193-218</b> Cool (RA)
				°C	<b>193-235</b> Cool (DA)	—



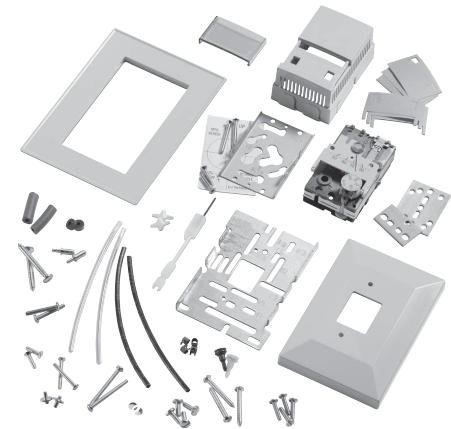
For complete conversion kits, refer to the Retroline® Retrostats starting on page F-13.

## **RETROLINE®** Powerstar™ Retrostat Pneumatic Room Thermostats

### **RETROLINE®**

easily replaces:

- Barber-Colman (Siebe, Invensys, Schneider)
- Johnson Controls
- Honeywell
- Robertshaw (Siebe, Invensys, Schneider)



192/194 Dual Setpoint Pneumatic Room Thermostat Kit.

### Description

The Powerstar Retroline Retrostat Pneumatic Room Thermostat converts most existing pneumatic room thermostats to a Powerstar 192/194 direct or reverse acting, 2-pipe, single or dual setpoint unit.

Day/Night or Heat/Cool Retrostat is factory calibrated to match the appropriate changeover pressure of the competitive thermostat.

### Features

- Complete kit including Retrostat cover kit with exposed or concealed setpoint adjustment
- Setpoint dials available in Fahrenheit or Celsius scales
- Factory calibrated for accuracy
- All installation hardware and calibration wrench provided.
- Fits into large format wall openings, using included "goof plate."
- Integral, field adjustable limit stops
- Test port for fast check of output pressure without removing the cover
- Field replaceable thermometer, setpoint dial(s), restrictor(s), and filter(s)

### Options

- Quick-connect air connections for ease of installation and service
- Large, 1/2" setpoint knob for convalescent homes

### Applications

Retroline Retrostat kits are available for most 2-pipe applications in direct and reverse acting models, including:

- Single Temperature
- Day/Night
- Heat/Cool

Refer to the Powerstar products to select the appropriate application.

# Specifications

Single Setpoint			
Description	Thermometer & Setpoint Scales	Control Action	
		Direct	Reverse
Single Temperature	°F	192-840	192-841
	°C	192-850	192-851

**Table Notes:**

Kits include covers.

If a different cover is required, refer to the Accessories and Service Kit section.

Dual Setpoint			
Action/Changeover Pressure	Manufacturer	Thermometer & Setpoint Scales	Kit Part No. (Desert Beige)
<b>Day/Night</b>			
Day (DA) 13 psi (90 kPa) / Night (DA) 18 psi (124 kPa)	Honeywell	°F	194-3042
Day (DA) 13 psi (90 kPa) / Night (DA) 18 psi (124 kPa)	Honeywell	°C	194-3142
Day (DA) 15 psi (103 kPa) / Night (DA) 20 psi (138 kPa)	Johnson/B-C	°F	194-3043
Day (DA) 15 psi (103 kPa) / Night (DA) 20 psi (138 kPa)	Johnson/B-C	°C	194-3143
Day (DA) 18 psi (124 kPa) / Night (DA) 25 psi (172 kPa)	Siemens	°F	192-3044
Day (DA) 18 psi (124 kPa) / Night (DA) 25 psi (172 kPa)	Siemens	°C	192-3144
Day (RA) 18 psi (124 kPa) / Night (RA) 25 psi (172 kPa)	Siemens	°F	192-3054
<b>Heat/Cool</b>			
Heat (DA) 20 psi (138 kPa) / Cool (RA) 15 psi (103 kPa)	Johnson/B-C	°F	194-3083*
Heat (DA) 25 psi (172 kPa) / Cool (RA) 18 psi (124 kPa)	Siemens	°F	192-3084*

**Table Notes:**

- For detailed specifications on Day/Night, refer to 192 DN or DNV.
- For detailed specifications on Heat/Cool, refer to 193 HC.
- All kits include covers.

## Product Ordering

Manufacturer Part No.	Manufacturer	Control Action/Temperature Scale	Retroline Part No.	
			Kit	Replace. Chassis
T-4002-201 <sup>1</sup>	Johnson Controls	Single Temperature, Direct Acting	192-840	192-202
T-4002-202 <sup>1</sup>	Johnson Controls	Single Temperature, Reverse Acting	192-841	192-203
T-4002-203	Johnson Controls	Single Temperature, Direct Acting	192-840	192-202
T-4002-204	Johnson Controls	Single Temperature, Reverse Acting	192-841	192-203
T-4506-201 <sup>1</sup>	Johnson Controls	Day (DA) 15 psi (103 kPa) changeover / Night (DA) 20 psi (138 kPa)	194-3043	194-2043
T-4506-202	Johnson Controls	Day (DA) 15 psi (103 kPa) changeover / Night (DA) 20 psi (138 kPa)	194-3043	194-2043
T-4506-203 <sup>1,2</sup>	Johnson Controls	Day (DA) 15 psi (103 kPa) changeover / Night (DA) 20 psi (138 kPa)	194-3043	194-2043
T-4506-204 <sup>2</sup>	Johnson Controls	Day (DA) 15 psi (103 kPa) changeover / Night (DA) 20 psi (138 kPa)	194-3043	194-2043
T-4506-201 <sup>1</sup>	Johnson Controls	Day (DA) 15 psi (103 kPa) changeover / Night (DA) 20 psi (138 kPa)	194-3043	194-2043
T-4506-202	Johnson Controls	Day (DA) 15 psi (103 kPa) changeover / Night (DA) 20 psi (138 kPa)	194-3043	194-2043
T-4506-203 <sup>1,2</sup>	Johnson Controls	Day (DA) 15 psi (103 kPa) changeover / Night (DA) 20 psi (138 kPa)	194-3043	194-2043
T-4506-204 <sup>2</sup>	Johnson Controls	Day (DA) 15 psi (103 kPa) changeover / Night (DA) 20 psi (138 kPa)	194-3043	194-2043
T-4756-205 <sup>1</sup>	Johnson Controls	Heat (DA) 20 psi (138 kPa) changeover / Cool (RA) 15 psi (103 kPa)	194-3083	194-2083
T-4756-206	Johnson Controls	Heat (DA) 20 psi (138 kPa) changeover / Cool (RA) 15 psi (103 kPa)	194-3083	194-2083
TP970A1002	Honeywell	Single Temperature, Direct Acting	192-840	192-202
TP970A1012	Honeywell	Single Temperature, Direct Acting	192-840	192-202
TP970A1035	Honeywell	Single Temperature, Direct Acting	192-840	192-202
TP970A1038	Honeywell	Single Temperature, Direct Acting	192-840	192-202
TP970A1053	Honeywell	Single Temperature, Direct Acting	192-840	192-202
TP970A1061	Honeywell	Single Temperature, Direct Acting	192-840	192-202
TP970A2004	Honeywell	Single Temperature, Direct Acting	192-840	192-202
TP970A1002	Honeywell	Single Temperature, Reverse Acting	192-841	192-203
TP970B1028	Honeywell	Single Temperature, Reverse Acting	192-841	192-203
TP970B1036	Honeywell	Single Temperature, Reverse Acting	192-841	192-203
TP970B1044	Honeywell	Single Temperature, Reverse Acting	192-841	192-203
TP971A1003	Honeywell	Day (DA) 13 psi (90 kPa) changeover / Night (DA) 18 psi (124 kPa)	194-3042	194-2042
TP971A1029	Honeywell	Day (DA) 13 psi (90 kPa) changeover / Night (DA) 18 psi (124 kPa)	194-3042	194-2042
TP971A1037	Honeywell	Day (DA) 13 psi (90 kPa) changeover / Night (DA) 18 psi (124 kPa)	194-3042	194-2042
TP971A1045	Honeywell	Day (DA) 13 psi (90 kPa) changeover / Night (DA) 18 psi (124 kPa)	194-3042	194-2042
TP971A1086	Honeywell	Day (DA) 13 psi (90 kPa) changeover / Night (DA) 18 psi (124 kPa)	194-3042	194-2042

### Ordering Notes:

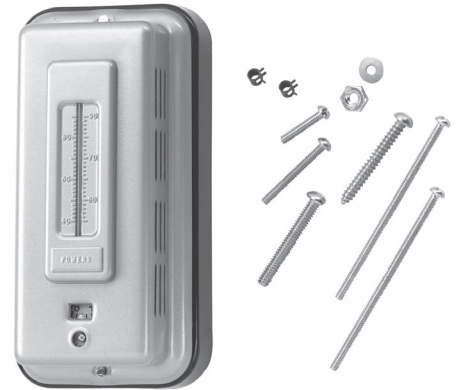
1. Suggested Retrofit Kit converts horizontal thermostat to vertical position.
2. Suggested Retrofit Kit has an additional manual changeover switch, not provided on the original.

## Product Ordering

Manufacturer Part No.	Manufacturer	Control Action/Temperature Scale	Retroline Part No.	
			Kit	Replace. Chassis
TK-18	Barber-Colman	Single Temperature, Direct Acting	192-840	192-202
TK-19	Barber-Colman	Single Temperature, Reverse Acting	192-841	192-203
TK-19-1	Barber-Colman	Single Temperature, Reverse Acting	192-841	192-203
TK-19-19	Barber-Colman	Single Temperature, Reverse Acting	192-841	192-203
TK-1001	Barber-Colman	Single Temperature, Direct Acting	192-840	192-202
TK-1101	Barber-Colman	Single Temperature, Reverse Acting	192-841	192-203
TK-1001-116	Barber-Colman	Single Temperature, Direct Acting	192-850	192-222
TK-1002	Barber-Colman	Single Temperature, Direct Acting	192-840	192-202
TK-1002	Barber-Colman	Single Temperature, Reverse Acting	192-841	192-203
TK-5001-116	Barber-Colman	Single Temperature, Direct Acting	192-850	192-222
TKR-18	Barber-Colman	Single Temperature, Direct Acting	192-840	192-202
TKR-18-91	Barber-Colman	Single Temperature, Direct Acting	192-840	192-202
TKR-19	Barber-Colman	Single Temperature, Reverse Acting	192-841	192-203
TKR-1001	Barber-Colman	Single Temperature, Direct Acting	192-840	192-202
TKR-1101	Barber-Colman	Single Temperature, Reverse Acting	192-841	192-203
2212-118	Robertshaw	Single Temperature, Direct Acting	192-840	192-202
2212-119	Robertshaw	Single Temperature, Reverse Acting	192-841	192-203
2212-128	Robertshaw	Single Temperature, Direct Acting	192-840	192-202
2212-129	Robertshaw	Single Temperature, Reverse Acting	192-841	192-203
2212-418	Robertshaw	Single Temperature, Direct Acting	192-840	192-202
2212-419	Robertshaw	Single Temperature, Reverse Acting	192-841	192-203
2212-518	Robertshaw	Single Temperature, Direct Acting	192-840	192-202
2212-519	Robertshaw	Single Temperature, Reverse Acting	192-841	192-203
T15-101	Robertshaw	Single Temperature, Direct Acting	192-840	192-202
T18-101	Robertshaw	Single Temperature, Direct Acting	192-840	192-202
T18-201	Robertshaw	Single Temperature, Direct Acting	192-840	192-202
T18-301	Robertshaw	Single Temperature, Direct Acting	192-840	192-202
T18-3011	Robertshaw	Single Temperature, Direct Acting	192-840	192-202
192-202	Powers	Single Temperature, Direct Acting	192-840	192-202
192-203	Powers	Single Temperature, Reverse Acting	192-841	192-203
192-204	Powers	Day (DA) 18 psi (124 kPa)/Night (DA) 25 psi (172 kPa) changeover	192-3044	192-204
192-205	Powers	Day (RA) 18 psi (124 kPa)/Night (RA) 25 psi (172 kPa) changeover	192-3054	192-205
192-208	Powers	Heat (DA) 25 psi (172 kPa)/Cool (RA) 18 psi (124 kPa) changeover	192-3084	192-208
192-222	Powers	Single Temperature, Direct Acting	192-850	192-222
192-223	Powers	Single Temperature, Reverse Acting	192-851	192-223
192-224	Powers	Day (DA) 18 psi (124 kPa) changeover/Night (DA) 25 psi (172 kPa)	192-3144	192-224



## Pneumatic Room Thermostats



832 D Pneumatic Room Thermostat and screws.

### Description

The single setpoint, direct acting thermostat provides gradual acting pneumatic room temperature control for heating and cooling applications. The 832 D Thermostat is ruggedly constructed for dependable, long-term service.

### Features

- All metal construction
- Rapid response to temperature change
- Unique design of supply and exhaust air valves prevents waste
- Quiet operation
- Easy-to-calibrate and service
- Tamper-proof cover screws
- Exposed remote changeover control
- Calibrated thermometer

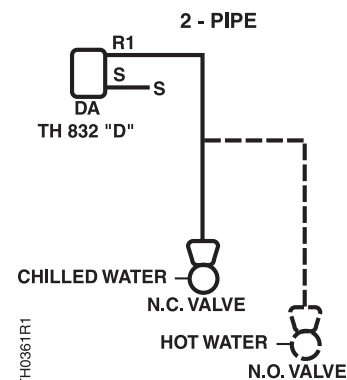
### Applications

Designed for controlling rooms heated or cooled by radiation, ventilation, or an air conditioning system, the 832 D Pneumatic Room Thermostat is versatile and responsive for individual room control.

Other applications include room control of radiant panels, finned radiation, and unit ventilators.

### Application Drawing

Dotted lines are alternative control schemes.



## Specifications

<b>Control Action</b> .....	Direct	<b>Maximum Operating Pressure</b> .....	30 psi (207 kPa)
<b>Operating Range</b> .....	60° to 85°F (15° to 30°C)	<b>Dimensions</b> .....	2.88" W x 5.63" H x 2.19" D (73 mm W x 143 mm H x 56 mm D)
<b>Sensitivity Fixed</b> .....	2.5 psi/°F (31 kPa/°C)	<b>Air Consumption for Compressor Sizing</b> .....	10 scim (2.7 ml/s)
<b>Temperature Response</b> .....	0.5°F (0.3°C)	<b>Cover Style</b> .....	Key or concealed setpoint adjustment
<b>Maximum Ambient Temperature</b> .....	110°F (43°C)	<b>Cover Finish</b> .....	Silver; Special order other finishes.
<b>Dial Graduations</b> .....	2°F (1.1°C)	<b>Shipping Weight</b> .....	3.0 lb. (1.36 kg)
<b>Normal Air Supply Pressure</b> .....	18 psi (124 kPa)		

## Product Ordering

Description	Thermostat Part No. <sup>2</sup>	Cover Assembly
Concealed Adjustment with Thermometer	832-0120	856-036
Concealed Adjustment without Thermometer	832-0490	856-046 <sup>1</sup>
Exposed Key Adjustment with Thermometer	832-0500	856-044
Exposed Knob Adjustment with Thermometer	832-1260	856-044

### Ordering Notes:

1. Blind cover, **856-046**, does not include mounting screws, **856-014**, that are required for installation.
2. Does not include adjustment key, **856-055**, that is required for installation.

**Thermostat comes complete with cover.**

 Order the Calibration Kit in the Accessories and Service Kits section.

## TECH TIP

To calibrate any pneumatic thermostat, perform the following:

1. Remove the cover.
2. Measure the ambient temperature.
3. Set the setpoint dial to the ambient temperature.
4. Measure the controller output pressure (branch pressure).
5. Turn the calibration screw(s) until the branch pressure equals the midpoint of the control span [usually 8 psi (55 kPa)].
6. Reposition the cover.

## Limitem™ Rigid Bulb Thermostats



356 Limitem Rigid Bulb Thermostat.

### Description

The 356 Limitem™ Rigid Bulb Thermostat is a pneumatically operated, duct-mounted thermostat, which is available in either direct or reverse acting in a variety of ranges.

### Features

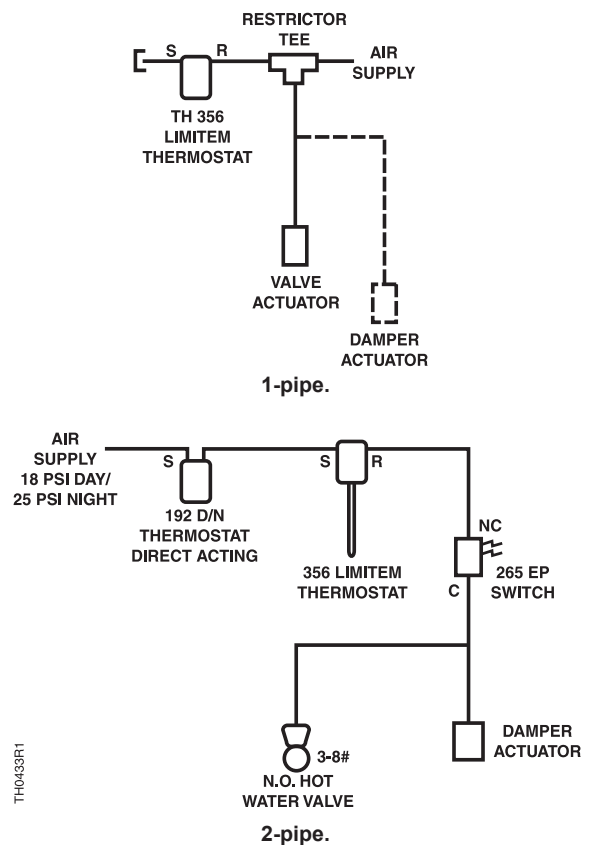
- Durable copper motor tube and steel rod temperature sensing element
- Two-valve design reduces air waste
- Duct mounting hardware included
- All metal construction
- 18" (46 cm) sensing tube

### Applications

The 356 Limitem Rigid Bulb Thermostat provides primary control for unit ventilators, fan coils and other air handling units. Can also be used as low limit control for air flow to a controlled space.

#### Application Drawings

Dotted lines are alternative control schemes.



TH0433R1

## Specifications

**Control Action** .....Direct or Reverse  
**Maximum Supply Air Pressure** ..... 30 psi (207 kPa)  
**Sensitivity Range (adjustable)** .....0.25 to 2 psi/°F (3 to 25 kPa/°C)  
**Factory Sensitivity Setting** .....1.25 psi/°F (15 kPa/°C)  
**Temperature Response** ..... 0.50°F (0.9°C)  
**Dial Graduations** ..... 5°F (2.7°C) /2°C (3.6°F)  
**Maximum Ambient Temperature**  
 Case ..... 200°F (93°C)  
 Bulb (Direct Acting)..... 225°F (107°C)  
 Bulb (Reverse Acting)..... 250°F (121°C)

**Nominal Air Supply Pressure** ..... 18 to 25 psi (124 to 172 kPa)  
**Maximum External Pressure (on bulb)** ..... 250 psi (1722 kPa)  
**Mounting** .....Flange or 3/8" NPT  
**Air Connections** ..... 1/8" NPT  
**Dimensions**  
 Bulb Length ..... 18" (457 mm)  
 Flange OD ..... 2.56" (65 mm)  
 Case ..... 1.5" Diameter x 3" L  
 (33 mm Diameter x 76 mm L)  
**Shipping Weight** .....2.0 lb. (0.91 kg)

## Product Ordering

Control Action	Temperature Operating Range	Part No.
Direct Acting	0° to 100°F (-18° to 38°C)	<b>356-0012</b>
Direct Acting	30° to 180°F (-1.11° to 82.2°C)	<b>356-0750</b>
Reverse Acting	0° to 100°F (-18° to 38°C)	<b>356-0013</b>
Reverse Acting	30° to 180°F (-1.11° to 82.2°C)	<b>356-1005</b>

### TECH TIP

When using the Limitem as a one-pipe device, a 40 scim (11 ml/s) restrictor will limit your output to 80% of supply. A 20 scim (5 ml/s) restrictor will limit your output to 60% of supply.

*Example:* With a 20 scim (5 ml/s) restrictor and 25 psi (11.3 kPa) supply, your maximum output is 15 psi (6.8 kPa).

## Limitem™ Remote Bulb Thermostats



357 D Limitem Remote  
Thermostat with an average bulb.

### Description

The 357 D Limitem™ Remote Bulb Thermostat is a pneumatically-operated thermostat that is gradual, direct acting with a remote or averaging bulb.

### Features

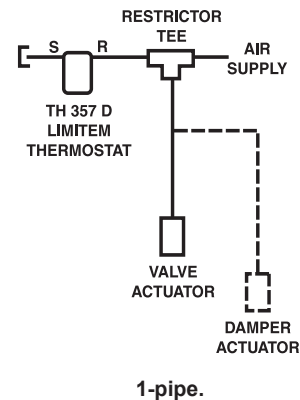
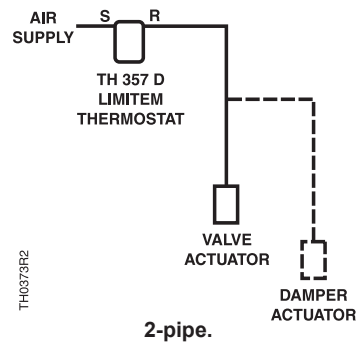
- Direct acting only
- Remote or averaging bulbs for flexibility in installation
- Liquid-filled sensing element for rapid response to temperature changes
- Two-valve design reduces air waste
- Adjustable sensitivity

### Applications

The 357 D Limitem Remote Bulb Thermostat provides primary monitoring and control for air handling units or a low limit control.

### Application Drawings

Dotted lines are alternative control schemes.



## Specifications

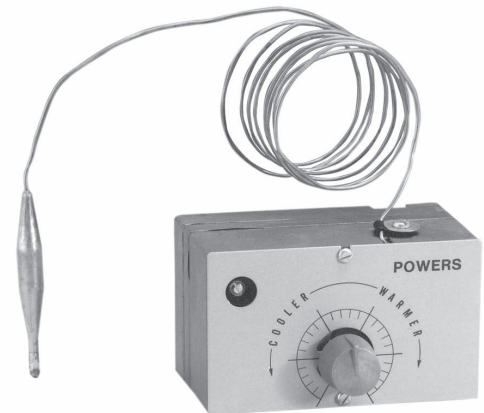
Control Action..... Direct  
 Maximum Supply Air Pressure..... 30 psi (207 kPa)  
 Sensitivity Range (adjustable) ..... 0.33 to 3.5 psi/°F (4 to 43 kPa/°C)  
 Factory Sensitivity Setting ..... 1.25 psi/°F (15 kPa/°C)  
 Bulb..... Liquid-filled  
 Temperature Response..... 0.5°F (0.3°C)  
 Dial Graduations..... 5°F (2.7°C), 2°C (3.6°F)

Maximum Ambient Temperature (case)..... 180°F (82°C)  
 Nominal Air Supply Pressure ..... 18 to 25 psi (124 to 172 kPa)  
 Mounting ..... Bracket supplied  
 Air Connection..... 1/8" NPT  
 Dimensions (Case)..... 1.75" Diameter x 3.5" H  
 (44.5 mm Diameter x 88.9 mm H)  
 Shipping Weight ..... 2.0 lb. (0.9 kg)

## Product Ordering

Sensing Element	Temperature Operating Range	Capillary	Bulb	Maximum Ambient Temp.	Part No.
Remote Bulb	20° to 100°F (-6.7° to 37.8°C)	8' (2.4 m)	3/8" x 4' (0.95 mm x 10.2 cm)	201°F (94°C)	<b>357-0003</b>
Averaging Bulb	5° to 145°F (1.7° to 62.8°C)	40' (12.2 m)	3/32" x 15' (0.24 mm x 457 cm)	210°F (99°C)	<b>357-0004</b>
Averaging Bulb	35° to 145°F (1.7° to 62.8°C)	6" (15 cm)	3/32" x 8' (0.24 mm x 244 cm)	211°F (99.4°C)	<b>357-0001</b>

## Unit Mounted Thermostats



188 Unit Mounted Thermostat.

### Description

The 188 Unit Mounted Thermostat is a gradual acting thermostat with a remote bulb operating on the force-balance principle, using pneumatic feedback to obtain linearity and maintain selected room temperature by positioning pneumatic devices to control heating or cooling.

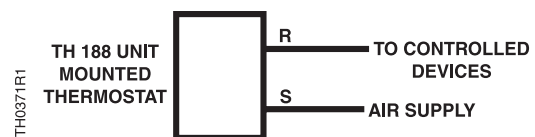
### Features

- Liquid-filled thermal system temperature sensing element
- Durable die-cast metal case with rugged setpoint knob
- Adjustable sensitivity
- Universal mounting bracket for easy installation
- Integral adjustable limit stops
- Available as:
  - Direct Acting only (Heating)
  - Reverse Acting only (Cooling)
  - Heat or Cool depending on supply air pressure

### Applications

The 188 Unit Mounted Thermostats are designed primarily for use in fan coil induction units and unit ventilators to control the temperature within an occupied space. The thermostat's temperature range is limited to applications at ambient temperatures.

### Typical Connections



## Specifications

**Control Action** ..... Heating/Cooling, Direct and Reverse;  
Direct only

**Operating Range** .....60° to 85°F (15.5° to 29.4°C)

**Operating Pressure** .....30 psi (207 kPa) max.

**Adjustment Sensitivity** .....1 to 5.25 psi/°F (12 to 65 kPa/°C)

**Factory Sensitivity Setting** .....2.25 psi/°F (28 kPa/°C)

**Temperature Response** ..... 0.2°F (0.1°C)

**Maximum Ambient Temperature**

Case ..... 135°F (57.2°C)

Bulb .....231°F (111°C)

**Scale Graduations** ..... 1°F (0.55°C)

**Nominal Air Supply Pressure**

Direct or Reverse Acting..... 25 psi (172 kPa)

Heating/Cooling..... 25 psi (172 kPa)/18 psi (124 kPa)

**Average Air Usage**

40 scim Restrictor..... 45 scim (12.2 ml/s)

**Air Connections** ..... 1/4" (6 mm) Brass barbed for polyethylene tubing

**Bulb Size** ..... 3/8" Diameter x 3-1/2" L  
(9.5 mm Diameter x 89 mm L)

**Capillary Length** .....48" (121.9 cm) approx.

**Finish** .....Corrosion-resistant Zinc Chromate

**Dimensions (case)**

Heating/Cooling, Reverse Acting..... 3.1" W x 2.4" H x 2.13" D  
(100 mm W x 61 mm H x 54 mm D)

Direct Acting ..... 3.1" W x 2.4" H x 1.38" D  
(100 mm W x 61 mm H x 35 mm D)

**Shipping Weight** .....3.0 lb. (1.36 kg)

## Product Ordering

	Control Action	Changeover Pressure	Average Air Usage	Part No.
Single Setpoint	Direct Acting / 25 psi (172 kPa)	—	40 scim (11 ml/s)	<b>188-0031</b>
Heat/Cool	Direct Acting (Heating) / Reverse Acting (Cooling) 18 psi (124 kPa)	21 psi (145 kPa)	40 scim (11 ml/s)	<b>188-0030</b>
Heat/Cool	Retroline Direct Acting/Reverse Acting 18 psi (124 kPa) / 13 psi (90 kPa). Retroline replacement for <b>Honeywell LP916BXXXX</b> .	15 psi (103 kPa)	40 scim (11 ml/s)	<b>188-0033</b>
Heat/Cool	Retroline Direct Acting/Reverse Acting 25 psi (172 kPa) / 15 psi (103 kPa). Retroline replacement for <b>Johnson Controls T-3300-2</b> .	17 psi (117 kPa)	40 scim (11 ml/s)	<b>188-0034</b>



## Pneumatic Low Temperature Detection Thermostats



134 Pneumatic Low Temperature Detection Thermostat.

### Description

The 134 Low Temperature Detection Pneumatic Thermostats automatically “lockout” at setpoint and require manual reset.

### Features

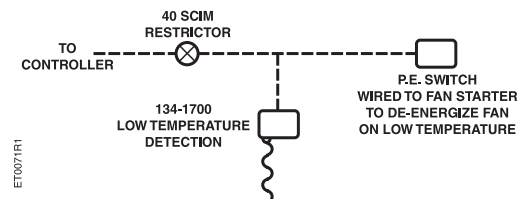
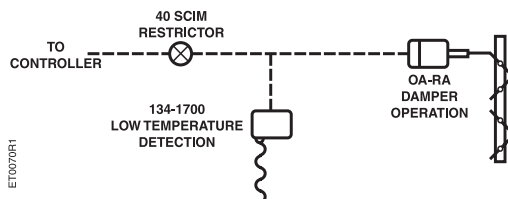
- Snap-acting pneumatic switch
- Sight-set calibrated setpoint scale
- No leakage of air prior to reset of switch
- Easily adjustable settings
- Normally closed air valve; bleeds to less than 2 psi (14 kPa) when supplied through a restrictor
- Barb fitting for push-on connection of 1/4" (6 mm) OD polyethylene tubing
- Holds dead-ended line to approximately 22 psi (152 kPa) air pressure

### Applications

The 134 Pneumatic Low Temperature Detection Thermostats are used on pneumatic heating and cooling systems in areas protected from the weather.

On a typical low temperature application, the thermostat stops the fan or closes a damper when the temperature drops to the setpoint at any one foot (30.5 cm) or more of the sensing element.

### Application Drawings



# Specifications

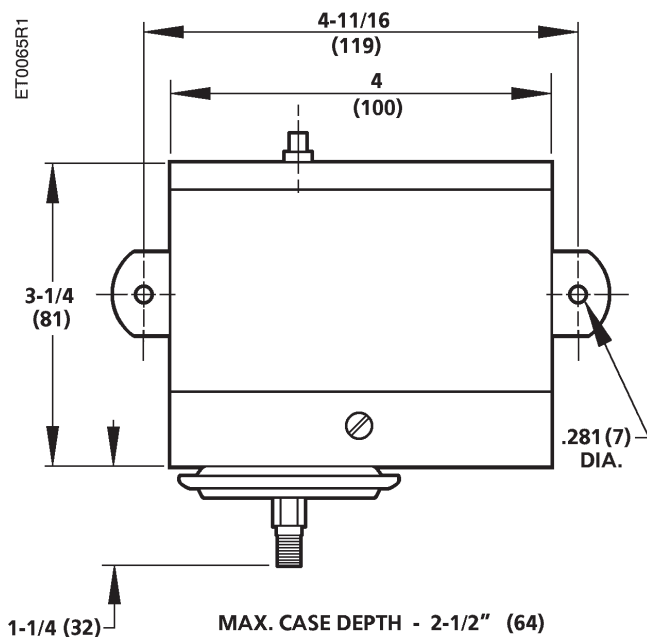
## Part No. 134-1700

- Ambient Temperature Range .....Greater than setpoint to 140°F (60°C)
- Pneumatic Switch .....NC, 0.020" (0.6 mm) diameter bleed
- Control Point Low
- Temperature Thermostat .....Lowest temperature at any one foot section of the sensing bulb
- Case Finish ..... Gray Baked Enamel
- Shipping Weight .....2.45 lb. (1.11 kg)

# Product Ordering

Temp.	Temperature Range	Differential	Max. Bulb Temp.	Bulb & Capillary Length	Switch Reclose	Part No.
Low	15° to 55°F (-9° to 12.8°C) with stop at 35°F (1.67°C)	5°F (2.8°C) Non-Adjustable	400°F (204°C)	20' (6 m)	Temperature must increase by 5°F (2.8°C) before pneumatic switch can be reclosed.	<b>134-1700</b>

# Dimensions



Dimensions shown in inches (mm).

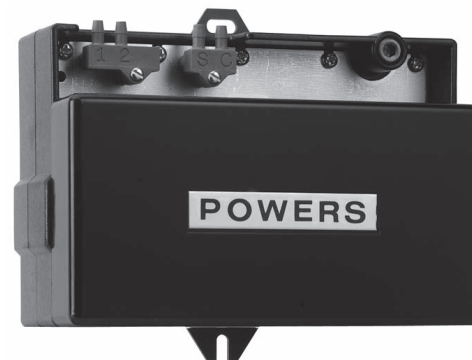
Pneumatics

F-26

## Single Input Receiver-Controller

Powers **RETROLINE**<sup>®</sup>  
easily replaces:

- Barber-Colman
- Johnson Controls
- Honeywell
- Robertshaw
- Seibe



195 Single Input Receiver-Controller.

### Description

The 195 Single Input Receiver-Controller is a pneumatic controller which receives one pneumatic input, and produces a pneumatic output signal based on the net pneumatic input and the mechanical settings of the setpoint and percent proportional band. This controller can be easily changed from direct to reverse acting.

Powers Retroline Receiver-Controller (195-1000) includes decals and installation instructions to replace competitive models.

### Features

- Rugged proven design
- Plug-in air connections for ease of installation, calibration, and service
- Internal restrictors for transmitter inputs
- Stick-on scales included for setpoint dial in standard transmitter ranges
- Large, easy-to-read scales on all adjustments
- Calibration card for converting transmitter range to 3 to 15 psi (21 to 103 kPa) signal
- Tamper-resistant cover

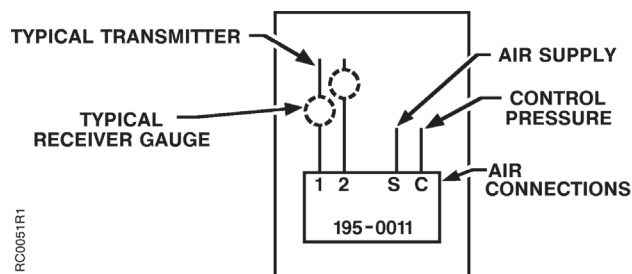
### Options

- Retroline products for replacing competitive products

### Applications

The 195 Single Input Receiver-Controller is a one-input, direct/reverse acting instrument used to control temperatures, humidity, and pressure of mechanical equipment in commercial and industrial facilities.

### Typical Connections



## Specifications

**Action**  
 Input #1 ..... Direct  
 Input #2 ..... Reverse

**Pneumatic Inputs** ..... 3 to 15 psi (21 to 103 kPa)

**Control Output** ..... 0 psi (0 kPa) to supply pressure 22 psi (152 kPa)

**Operating Ambient Temperature Range** ..... 40° to 120°F (4° to 49°C)

**Supply Pressure**  
 Operating ..... 22 psi (152 kPa)  
 Maximum Safe ..... 30 psi (207 kPa)

**% Proportional Band Adjustment Range** ..... 2 to 20% for a 5 psi (34 kPa) control pressure change

**Air Consumption** ..... 60 scim (17 ml/s)

**Air Capacity** ..... 2 psi (14 kPa) Pressure Change at 9 psi (62 kPa) control pressure  
 Supply ..... 640 scim (175 ml/s)  
 Exhaust ..... 590 scim (161 ml/s)

**Mounting** ..... Surface

**Air Connections** ..... Barb fittings for 1/4" (6 mm) OD polyethylene tubing. Two plug-in connectors are provided; one for the direct acting and the reverse acting transmitter inputs and one for supply and control lines. 1/8" NPT connection provided for control pressure gauge (gauge not included)

**Case Material** ..... Lexan, 20% glass-filled

**Dimensions** ..... 6.75" W x 5.69" H x 3.5" D (171 mm W x 144 mm H x 89 mm D)

**Shipping Weight** ..... 3.1 lb. (1.4 kg)

## Product Ordering

Description	Part No.
Single Input Receiver-Controller	<b>195-0011</b>

### **RETROLINE®**

Manufacturer	Manufacturer Part No.	Part No. <sup>1</sup>
Barber-Colman	RKS-1001	<b>195-1000</b>
Barber-Colman	RKS-2001	<b>195-1000</b>
Barber-Colman	RKS-5001	<b>195-1000</b>
Honeywell	RP908A	<b>195-1000</b>
Honeywell	RP920A	<b>195-1000</b>
Johnson Controls	T-5800-1	<b>195-1000</b>

#### Ordering Notes:

1. Includes **195-0011** plus decals to replace any competitive single input receiver-controller.

## Multiple Input Receiver-Controller

Powers **RETROLINE**<sup>®</sup>  
easily replaces:

- Barber-Colman
- Johnson Controls
- Honeywell
- Robertshaw
- Seibe



195 Multiple Input Receiver-Controller  
with Control Pressure Gauge.

### Description

The 195 Multiple Input Receiver-Controller is a pneumatic controller that receives up to three pneumatic inputs and produces a pneumatic output signal based on the net pneumatic input and the setpoint, percent proportional band, and authority settings. The Controller can be easily changed from direct to reverse acting.

Powers Retroline Receiver-Controller (195-1000) includes decals and installation instructions to replace competitive models.

### Features

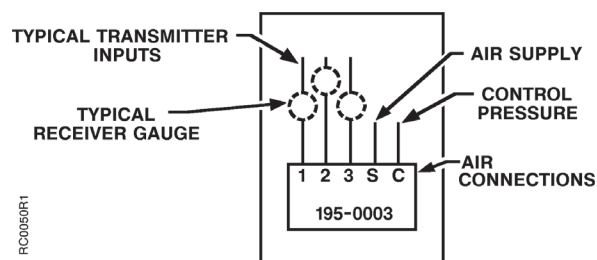
- Rugged proven design
- Plug-in air connections for ease of installation, calibration, and service
- Internal restrictors for transmitter inputs
- Stick-on scales included for setpoint dial in standard transmitter ranges
- Large, easy-to-read scales on all adjustments
- Calibration card for converting transmitter range to 3 to 15 psi (21 to 103 kPa) signal
- 0 to 30 psi (0 to 200 kPa) Pressure Gauge
- Retroline products for replacing competitive products

### Applications

The 195 Multiple Input Receiver-Controller is commonly used when the setpoint needs to be automatically reset based on a separate input; can also be used as a single input device.

*Example:* Change hot water supply temperature setpoint based on outside air temperature.

### Typical Connections



# Specifications

**Action**  
 Input #1 ..... Direct  
 Input #2 ..... Reverse

**Reset**  
 Input #3 ..... Direct reset relative to Input #2  
 Reverse reset relative to Input #1

**Pneumatic Inputs** ..... 3 to 15 psi (21 to 103 kPa)

**Control Output** ..... 0 psi (0 kPa) to supply pressure 22 psi (152 kPa)

**Operating Ambient Temperature Range** ..... 40° to 120°F (4° to 49°C)

**Supply Pressure**  
 Operating ..... 22 psi (152 kPa)  
 Maximum Safe ..... 30 psi (207 kPa)

**% Proportional Band Adjustment Range** ..... 2 to 20% for a 5 psi (34 kPa) control pressure change

**% Authority Adjustment Range** ..... 20 to 200%

**Air Consumption** ..... 60 scim (17 ml/s), *not including transmitters*

**Air Capacity** ..... @ 2 psi (14 kPa) Pressure Change and 9 psi (62 kPa) control pressure  
 Supply ..... 640 scim (175 ml/s)  
 Exhaust ..... 590 scim (161 ml/s)

**Mounting** ..... Surface, vertical

**Air Connections** ..... Barb fittings for 1/4" (6 mm) OD polyethylene tubing. Two plug-in connectors are provided; one for the three transmitter inputs and one for supply and control lines. 1/8" NPT connection provided for control pressure gauge.

**Case Material** ..... Lexan, 20% glass-filled

**Dimensions** ..... 6.75" W x 5.69" H x 3.5" D  
 (171 mm W x 144 mm H x 89 mm D)

**Shipping Weight** ..... 3.1 lb. (1.4 kg)

# Product Ordering

Description	Part No.
Multiple Input Receiver-Controller	<b>195-0003</b>

## RETROLINE®

Manufacturer	Manufacturer Part No.	Part No. <sup>1</sup>
Barber-Colman	RKS-3002	<b>195-2000</b>
Barber-Colman	RKS-4002	<b>195-2000</b>
Johnson Controls	T-5800-3	<b>195-2000</b>
Robertshaw	P-341	<b>195-2000</b>
Robertshaw	P-541	<b>195-2000</b>
Honeywell	RP908B	<b>195-2000</b>
Honeywell	RP920B	<b>195-2000</b>

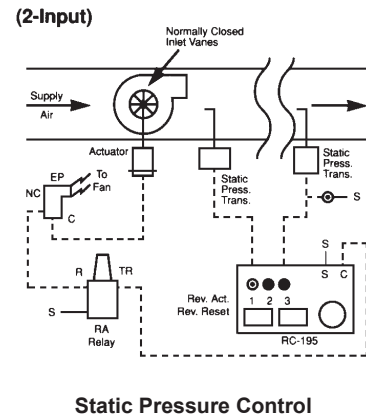
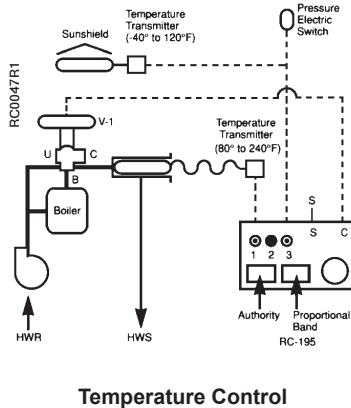
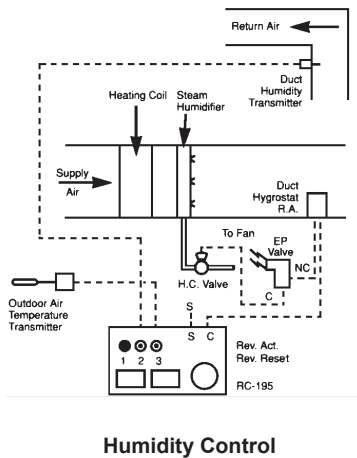
### Ordering Notes:

- Includes **195-0003** plus decals to replace competitive receiver-controllers.

# Dimensions/Engineering Drawings

Pneumatics

F-30



# Temperature Transmitters

Powers **RETROLINE**<sup>®</sup>  
easily replaces:

- Barber-Colman
- Johnson Controls
- Honeywell
- Robertshaw
- Seibe



184-0340 Room  
Temperature  
Transmitter.



184-0005 Temperature  
Transmitter with  
Remote Bulb.



184 Temperature  
Transmitter with  
Averaging Bulb.



184 Temperature  
Transmitter with  
Rigid Bulb.

## Description

The 184 Temperature Transmitters are direct acting, one-pipe instruments that sense temperature and transmit a proportional 3 to 15 psi (21 to 103 kPa) pneumatic signal to a remotely located receiver gauge and/or receiver controller. Temperature Transmitters operate on the force-balance principle, using internal feedback for excellent linearity and accuracy.

Powers Retroline transmitters easily replace any competitive model. Refer to the appropriate product to locate the Retroline replacement.

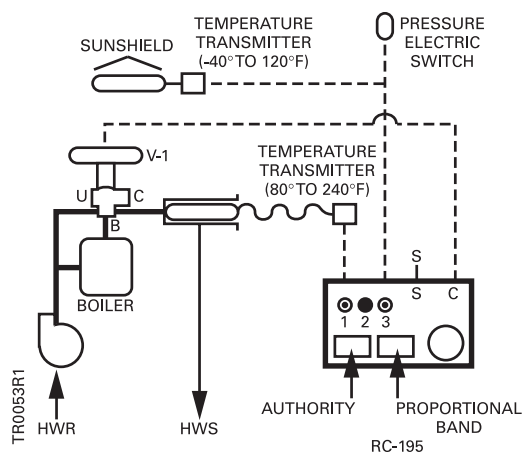
## Features

- 1-pipe, direct acting
- Rapid response to temperature changes over their full range
- Available in a variety of sensing elements and temperature ranges
- Available with rigid bulb, remote averaging bulb, and room transmitter
- Internal feedback for excellent linearity and accuracy

## Applications

The 184 Temperature Transmitters can be used for a variety of applications to monitor temperature and are ideal for those requiring indication with a receiver-controller.

### Application Drawing



Hot water temperature setpoint reset.

## Specifications

<b>Action</b> .....	Direct
<b>Output Air Pressure</b> .....	3 to 15 psi (21 to 103 kPa)
<b>Ambient Temperature Range</b> .....	40° to 120°F (4.4° to 49°C)
<b>Input (supply) Air Pressure</b>	
Restrictor Size .....	40 scim (11 ml/s)
Calibration Pressure .....	22 ± 1.0 psi (152 ± 6.9 kPa)
Maximum .....	30 psi (207 kPa)
<b>Thermal System</b>	
Room .....	Bimetal
Rigid Bulb .....	Rod and tube
Remote Bulb .....	Liquid-filled
<b>Air Consumption</b> .....	35 scim (10 ml/s)

<b>Air Connections</b> .....	1/8" NPT (Except for room type)
<b>Mounting</b>	
Room .....	Wall terminal
Rigid Bulb .....	Mounting flange
Remote Bulb .....	Mounting flange or well bracket mounting kit
Averaging Bulb .....	Mounting flange
<b>Cover Finish</b>	
Room .....	Desert Beige, plastic
Rigid, Averaging and Remote Bulb .....	Gray
<b>Dimensions</b>	
Room .....	2.16" W x 3.35" H x 1.59" D (55 mm W x 85 mm H x 40 mm D)
Averaging Bulb/Remote Bulb .....	1.875" W x 3" H x 1.69" D (48 mm W x 76 mm H x 33 mm D)

## Product Ordering

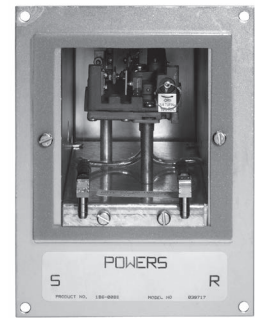
Description	Temperature Range	Part No.
<b>Rigid Bulb Transmitter</b> 9" bulb (229 mm)	35° to 135°F (2° to 57°C)	<b>184-0001</b>
	50° to 100°F (10° to 38°C)	<b>184-0002</b>
	80° to 240°F (27° to 116°C)	<b>184-0003</b>
	0° to 100°F (-18° to 38°C)	<b>184-0028</b>
<b>Remote Averaging Bulb Transmitter</b> 3/32" Dia. x 20' L (2 mm x 6.1 m L) w/ 12" (305 mm) capillary	35° to 135°F (2° to 57°C)	<b>184-0004</b>
	0° to 100°F (-18° to 38°C)	<b>184-0048</b>
<b>Remote Bulb Transmitter</b> 1/4" Dia. x 4' L (6 mm x 102 mm L), 3' (0.92 mm) armored capillary	-40° to 120°F (-18° to 38°C)	<b>184-0005</b>
	50° to 100°F (10° to 38°C)	<b>184-0018</b>
	80° to 240°F (27° to 116°C)	<b>184-0014</b>
	0° to 100°F (-18° to 38°C)	<b>184-0036</b>
	35° to 135°F (2° to 57°C)	<b>184-0034</b>
	30° to 190°F (-1° to 88°C)	<b>184-0041</b>
<b>Remote Bulb Transmitter</b> 1/4" Dia. x 4' L (6 mm x 102 mm L), 3' (0.92 mm) armored capillary	-40° to 120°F (-40° to 49°C)	<b>184-0006</b>
<b>Room Temperature Transmitter</b> With cover and wall plate	50° to 100°F (10° to 38°C)	<b>184-0340</b>



## Pneumatic Room and Duct Hygrostats



186 Room Hygrostat.



186 Duct Hygrostat.

### Description

The 186 Room and Duct Hygrostats are pneumatic instruments sensitive to slight changes in relative humidity.

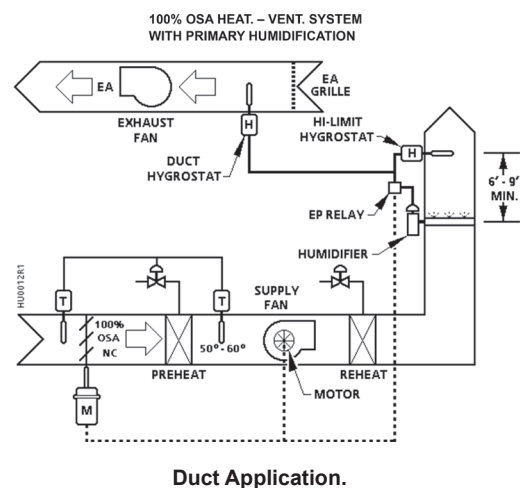
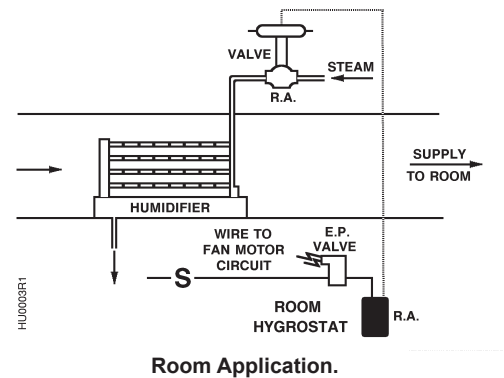
### Features

- Adjustable sensitivity
- Sensitive hygroscopic membrane
- Includes temperature compensation
- Galvanized steel housing standard on duct model
- Models available for normal comfort range and high limit range
- Room type comes complete with standard cover and wall plate
- Duct type comes mounted inside a duct mounting box

### Applications

The 186 Room and Duct Hygrostats provide control of relative humidity for comfort control in hospitals, schools and office buildings.

#### Application Drawings



## Specifications

**Sensitivity** .....1/4 to 4 psi/% RH  
**Normal Supply Pressure** ..... 15 to 25 psi (103 kPa to 172 kPa)  
**Maximum Supply Pressure** .....30 psi (207 mm)  
**Air Consumption** .....20 scim (5.5 ml/s)  
**Effect of 10°F Temperature Change** ..... Shift of 1% RH  
**Effect of 5 psi Supply Pressure Change (mid sensitivity)** ..... 7.0 min./vol unit  
**Duct Box** ..... Extends 6" (152 mm) into duct  
**Air Connections**  
 Duct..... Barb fitting for 1/4" (64 mm) OD polyethylene tubing  
 Room..... 5/32" (4 mm) OD polyethylene tubing

**Dimensions**  
 Chassis..... 2.9" H x 1.75" W x 1.13" D  
 (73.66 mm W x 44.45 mm H x 28.70 mm D)  
 Room..... 2.16" W x 3.34" H x 1.59"D  
 (55 mm W x 85 mm H x 40 mm D))  
 Duct..... 4.5" W x 5.88" H x 6" D  
 (114 mm x W 149 mm H x 152 mm D)  
**Standard Room Cover** .....Desert Beige, plastic  
**Shipping Weights**  
 186-0013 & 186-0019..... 0.84 lb. (0.38 kg)  
 186-0088; 186-0090; 186-0091.....3.3 lb. (1.5 kg)

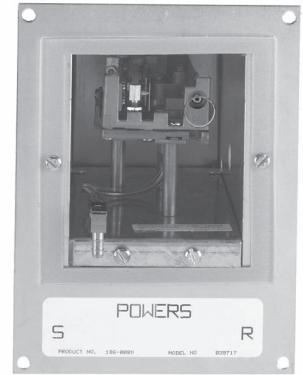
## Product Ordering

Description	Control Range	Type of Control	Part No.	
			Direct Control Action	Reverse Control Action
Room	20 to 90% RH	Humidification/Dehumidification	<b>186-0013</b>	<b>186-0019</b>
Duct	20 to 90% RH	Humidification/Dehumidification	—	<b>186-0088</b>
Duct	55 to 95% RH	High Limit	—	<b>186-0090</b>
Duct	25 to 65% RH	Room Comfort	—	<b>186-0091</b>

## Room and Duct Humidity Transmitters



186-0043 Room Humidity Transmitter.



186-0089 Duct Humidity Transmitter.

### Description

The 186 Room and Duct Transmitters are one-pipe, direct acting pneumatic instruments that sense space humidity and transmit a 3 to 15 psi (21 to 103 kPa) pneumatic signal to a remote receiver gauge and/or receiver-controller to read percent relative humidity.

### Features

- Inorganic sensing element for rapid response to humidity changes
- Bimetal temperature compensation minimizes temperature effects
- Cover included with Room Transmitter
- Available for room mounting (vertical) and duct mounting that is at least 6-inches (152 mm) high and 6-1/2-inches (165 mm) deep

### Applications

The 186 Room and Duct Humidity Transmitters operate on a force-balance principle with internal feedback to obtain linearity to accurately sense relative humidity.

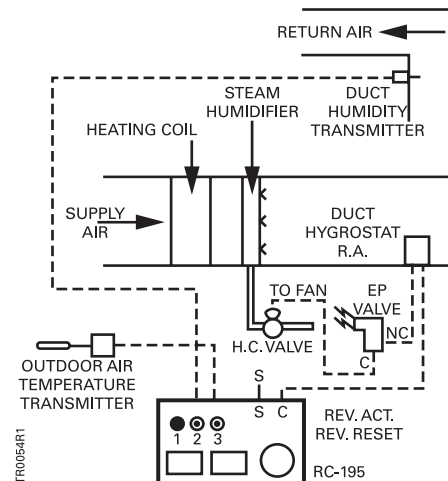
The transmitter output can be sent to a receiver-controller for control of an air conditioning or process control system

### Recommendation

**Room:** Air velocity must be at least 30 FPM (0.15m/s) and the transmitter should be located where it senses actual *room conditions* (away from doors, equipment, etc.).

**Duct:** Duct transmitters should be used whenever possible in the return air duct.

### Application Drawing



Typical Application of Return Air Duct

## Specifications

**Action** ..... Direct  
**RH Range** ..... 20 to 80% RH  
**Maximum Operating Temperature** ..... 135°F (57°C)  
**Supply Pressure**  
 Maximum ..... 30 psi (207 kPa)  
 Normal Operating ..... 22 ± 1.0 psi (152 ± 6.89 kPa)  
**Effect of 10°F (5.6°C)**  
**Temperature Change** ..... Shift of 1% RH  
**Air Consumption** ..... 35 scim (9.6 ml/s)  
**Output Pressure** ..... 3 to 15 psi (21 to 103kPa)  
**Air Connections** ..... 1/8" (3 mm)  
**Mounting**  
 Room ..... Wall terminal  
 Duct ..... Duct at least 6" H x 6.5" D  
 (152 mm H x 165 mm D)

**Standard Room Cover Finish** ..... Desert Beige, plastic

**Duct Box**  
 Material ..... Galvanized Steel

**Air Connections** ..... 1/4" (6 mm) barbed connection

**Dimensions**  
 Room ..... 2.06" W x 3.19" H x 1.37 D  
 (53 mm W x 81 mm H x 35 mm D)  
 Duct ..... 4.5" W x 5.87" W x 6" D  
 (114 mm W x 149 mm W x 152 mm D)

**Shipping Weights**  
 Room ..... 0.84 lb. (0.38 kg)  
 Duct ..... 3.14 lb. (1.42 kg)

## Product Ordering

Description	Part No.
Duct Humidity Transmitter	186-0089
Room Humidity Transmitter	186-0043

## Air Station Equipment



201-1000 Single-stage,  
Compressed Air Pressure Reducing Valve.



656-0009  
High Capacity, 3-way Pilot Valve.



908-051  
Compressed Air Filter.

### Description

Providing pneumatic control, Air Station Equipment, which includes Single- and Dual-stage Pressure Reducing Valves and High Capacity, 3-way Pilot Valves, responds rapidly to large volume demands and supply pressure variations. The Compressed Air Filter removes water or oil to 0.025 particle size.

### Features

#### Pressure Reducing Valve

- 200 mesh stainless strainer
- Locking handle
- Dual tappings for right or left-hand gauge (201-1000)
- Gauge plug and bushing
- 2-1/2" (64 mm) gauge with 0 to 30 psig (0 to 207 kPa) (201-1001, 201-1002)

#### Compressed Air Filter

- 20 scfm (33.9 m<sup>3</sup>/hr) capacity
- Manual drain port
- Replaceable cartridge

### Applications

Air Station Equipment and compressor systems are available for schools, hospitals, commercial office and industrial buildings, and other facilities.

#### Compressed air systems include:

- Single (low) pressure
- Dual (low and high) pressure
- Dual, low pressure for two pressure systems

Your local Siemens Building Technologies representative can assist you in selecting the appropriate air compressors and accessories for optimum efficiency and duty cycling.

## Specifications

### Single-stage, Compressed Air Pressure Reducing Valve, 201-1000

Capacity	8 scfm (17 m <sup>3</sup> /hr)
Maximum Inlet Pressure	250 psig (1734 kPa)
Reducing Pressure Range	3 to 60 psig (21 to 430 kPa)
Inlet/Outlet Connections	1/4" NPT Female
Gauge Port	1/4" NPT Male x 1/8" NPT Female bushing
Shipping Weight	1.7 lb. (0.8 kg)

### Compressed Air Filter, 908-051

Capacity	20 scfm (33.9 m <sup>3</sup> /hr) @ 100 psig
Maximum Pressure	300 psig (2068 kPa)
Inlet/Outlet Ports	3/8" NPT Female
Shipping Weight	4.2 lb. (1.9 kg)

### High Capacity, 3-way Pilot Valve, 656-0009

Application	Two-pressure systems/ Day-Night or Heat-Cool
Inlet/Outlet Ports	1/2" (12 mm) O.D. SAE flare
Pilot Port	1/8" NPT Female
Actuator	3 to 8 psi, 10 to 15 psi (69 to 103 kPa)
Valve Specifications	Cv=2.5, 14 scfm (24 m <sup>3</sup> /s) based on 18 psig (124 kPa) with a 1 psi (7 kPa) pressure drop
Shipping Weight	2.0 lb. (0.9 kg)

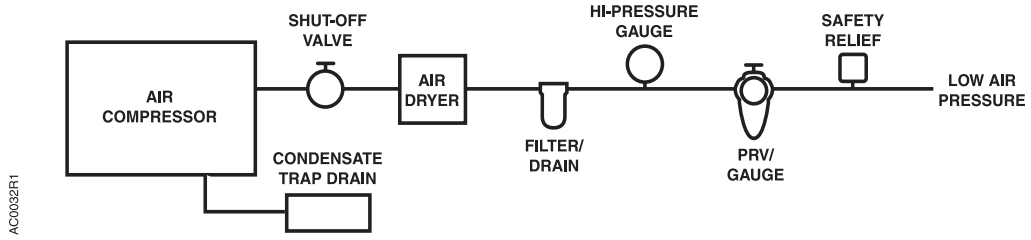
### High Capacity, 3-way Pilot Valve, 656-0010

Application	Two-pressure systems/ Day-Night or Heat-Cool
Inlet/Outlet Ports	1/2" (13 mm) O.D. SAE flare
Pilot Port	1/8" NPT Female
Actuator	3 to 8 psi (21 to 55 kPa)
Valve Specifications	Cv=2.5, 14 scfm (24 m <sup>3</sup> /s) based on 18 psig (124 kPa) with a 1 psi (7 kPa) pressure drop
Shipping Weight	2.0 lb. (0.9 kg)

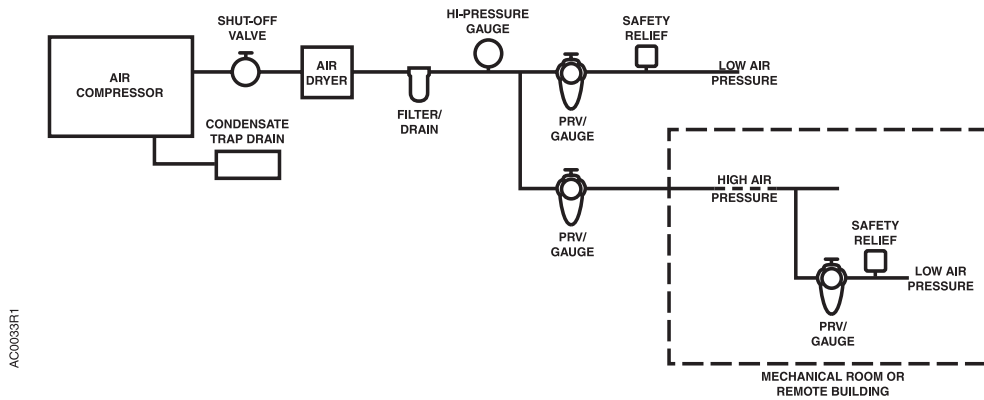
## Product Ordering

Description	Part No.
Single-stage, Compressed Air Pressure Reducing Valve	201-1000
Compressed Air Filter	908-051
High Capacity, 3-way Pilot Valve (10 to 15 psi)	656-0009
High Capacity, 3-way, Pilot Valve (3 to 8 psi)	656-0010

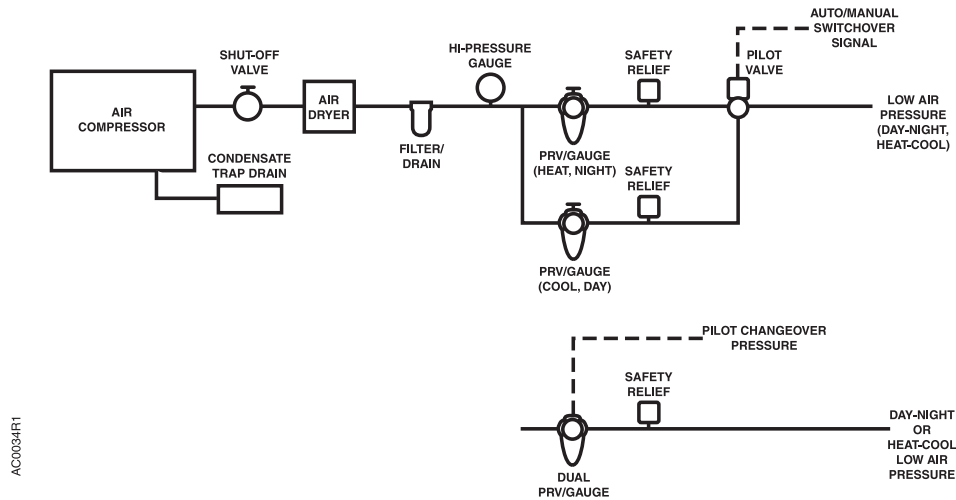
# Application Drawings



Single Pressure.



Low and High Pressure.



Dual Pressure.



Siemens offers a 5-year warranty on thermostats.



# Indoor air quality solution for healthy rooms

Control comfort and protect against mold with easy set-up and integration in one device for most fan coil and universal applications. The Siemens fan coil thermostat features a combination of on/off and modulating output signals allowing it to control 16 different types of two- and four-pipe fan coil units.

F-40

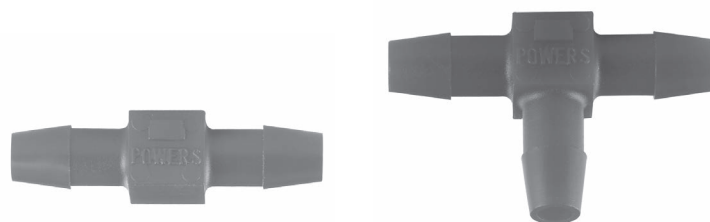
This flexible solution is a better value and enables various control strategies including comfort, standby and mold protection for improved indoor air quality.

Visit [usa.siemens.com/thermostats](https://usa.siemens.com/thermostats) to learn more.

**SIEMENS**



## External Restrictors



In-line Barbed Restrictor.

Tee Barbed Restrictor.

### Description

Restrictors are available in a variety of orifice sizes and connection types.

### Features

#### External Types 2 and 3

- Air filter
- Barbed connection for 1/4-inch (6 mm) plastic tubing (Types 2 and 3)
- Color-coded (Types 2 and 3)
- Air flow direction arrow to minimize installation errors
- Air flow restrictor capacity molded (Types 2 and 3) on body

### Applications

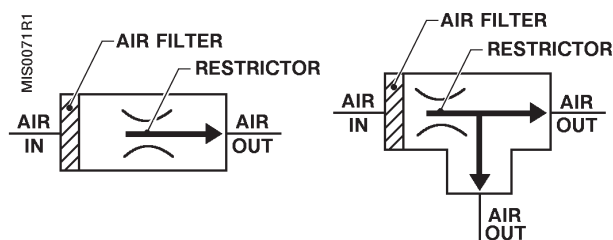
#### External restrictors are used:

- For 1-pipe room thermostats, 20 scim (5.5 ml/s), refer to Figure 3.
- For 1-pipe transmitters, 40 scim (11 ml/s), refer to Figures 1 and 2.
- When installed tubing lengths exceed maximum recommended values, refer to Figure 2.
- With check valves to provide air flow time delays:
  - Slow to supply, fast to exhaust, refer to Figure 4.
  - Fast to supply, slow to exhaust, refer to Figure 5.
- VAV vortex control. Use 80 scim (22 ml/s) restrictor in positioning relay control pressure line to prevent cycling.
- When other air capacities, 10 scim (2.7 ml/s), or 320 scim (87 ml/s) are required to compensate for tubing size or response time.

Figures are on page F-45.



### Typical Connections



# Specifications

### Materials

Type 2 and 3.....Plastic

### Air Connections

Type 2 and 3.....Barb for 1/4" (6 mm) OD polyethylene tubing

### Ambient Temperature

Minimum.....40°F (4°C)

Maximum.....140°F (60°C)

### Mounting

.....In-line

## Flow Capacity at Various Air Pressure Drop

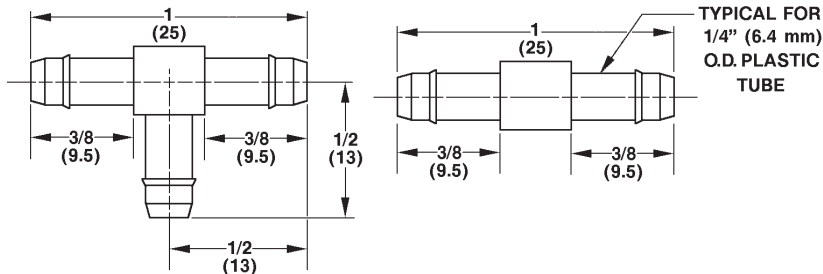
Air Pressure	% of Max. Flow Capacity	Nominal Capacity				
		10	20	40	80	320
22 psi (152 kPa)	100%	10 scim (2.7 ml/s)	20 scim (5.5 ml/s)	40 scim (11 ml/s)	80 scim (87 ml/s)	320 scim (87 ml/s)
10 psi (69 kPa)	70%	7 scim (1.9 ml/s)	14 scim (3.8 ml/s)	28 scim (7.6 ml/s)	56 scim (15 ml/s)	224 scim (61 ml/s)
5 psi (34 kPa)	50%	5 scim (1.4 ml/s)	10 scim (2.7 ml/s)	20 scim (5.5 ml/s)	40 scim (11 ml/s)	160 scim (44 ml/s)
2.5 psi (17 kPa)	35%	3.5 scim (1.0 ml/s)	7 scim (1.9 ml/s)	14 scim (3.8 ml/s)	28 scim (7.6 ml/s)	112 scim (31 ml/s)

## Product Ordering

Nominal Air Capacity	Orifice Diameter	Part No.		Barbed Restrictor Body Color
		Type 2 In-line Barbed (Pkg. of 5)	Type 3 Tee Barbed (Pkg. of 5)	
10 scim (2.7 ml/s)	0.0035" (0.09 mm)	<b>184-115</b>	<b>184-112</b>	Red
20 scim (5.5 ml/s)	0.0051" (0.13 mm)	<b>184-116</b>	<b>184-113</b>	Yellow
40 scim (11 ml/s)	0.0074" (0.19 mm)	<b>184-117</b>	<b>184-114</b>	Green

**If inoperative, replace the unit.**

## Dimensions



Dimensions shown in inches (mm).

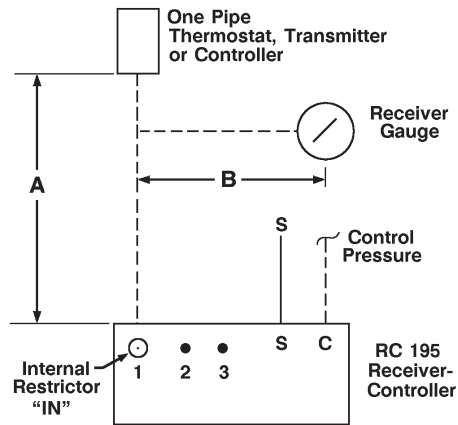


Figure 1.

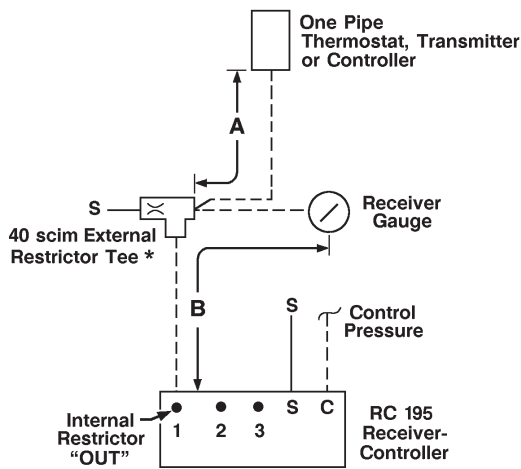


Figure 2.

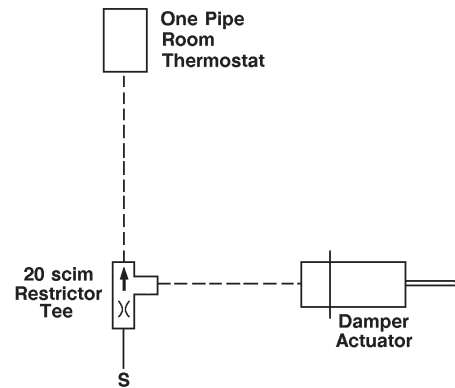


Figure 3.

\* Use External Restrictor with RC195 when "A" length exceeds 300 ft. (91 m) or when "A & B" length exceeds 1,000 ft. (305 m).

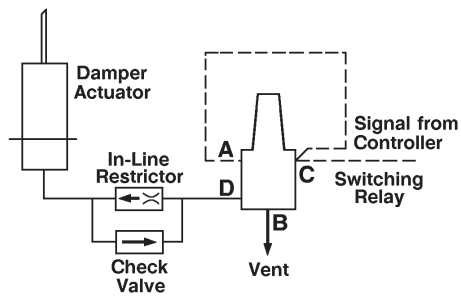


Figure 4.

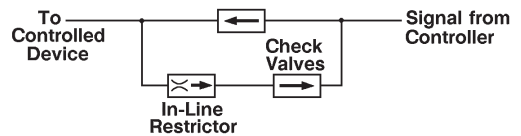


Figure 5.



# Your job made easier with Siemens HVAC solutions

Siemens HVAC solutions transform building operations, energy efficiency and comfort. Increase productivity with innovations that simplify installation and commissioning to improve building performance and indoor air quality. Rely on Siemens solutions — built to last for buildings of all sizes.



Siemens offers a 5-year warranty on valves, actuators, damper actuators, sensors and thermostats.

F-44

Visit [usa.siemens.com/hvac](https://usa.siemens.com/hvac) to learn more.

**SIEMENS**

## Pneumatic Tube Fitting Kit



141-0601 Pneumatic Tube Fitting Kit.



141-464 Case.

### Description

The Pneumatic Tube Fitting Kit provides the service or installation mechanic with a compact and convenient source of the most commonly used brass barbed fittings for 1/4-inch (6 mm), 3/8-inch (10 mm) and 1/2-inch (13 mm) OD polyethylene tubing.

### Features

- Rustproof, odor and oil resistant case
- Translucent lid for easy identification of fittings
- Double positive latches
- 15 dividers for configuring up to 24 compartments
- Lower cost for fittings
- Representative quantities of commonly used 1/4-inch (6 mm), 3/8-inch (10 mm) and 1/2-inch (13 mm) brass fittings

### Applications

The Pneumatic Tube Fitting Kit is useful for servicing, modifying, or adding to pneumatic control systems. Purchasing in quantity reduces material costs. Labor savings is the major reason to have this convenient kit in your service shop or van.

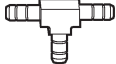




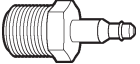
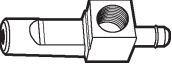
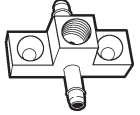



# Specifications

Case Material ..... Copolymer Resin  
 Dimensions ..... 15" L x 11.75" W x 2.5" D  
 (381 mm L x 298 mm W x 64 mm D)  
 Shipping Weight  
 Case ..... 3.0 lb. (1.4 kg)  
 Case and Fittings ..... 7.0 lb. (3.2 kg)

## Other Supplies and Equipment

The fittings in this kit represent most of the commonly used polyethylene tube fittings required by HVAC mechanics.

## Kit Includes:

	Description	Quantity
	<b>Barbed Tee.</b> • 1/4" (6 mm) • 3/8" (10 mm) • 1/2" (13 mm)	12 6 6
	<b>1/4" (6 mm) Barbed Reducing Tee.</b> • 3/8" (10 mm) • 1/2" (13 mm)	6 6
	<b>90° Elbow.</b> • 1/4" (6 mm) • 3/8" (10 mm) • 1/2" (13 mm)	12 6 6
	<b>1/8" NPT Male x 90° Elbow.</b> • 1/4" (6 mm) or 5/32" (4 mm)	12
	<b>1/4" (6 mm) OD Copper Coupling.</b> • 1/4" (6 mm)	10
	<b>1/8" NPT Male.</b> • 1/4" (6 mm)	10
	<b>Gauge Tee 1/8" NPT Male/NPT Female.</b> • 1/4" (6 mm)	10
	<b>Gauge Tee 1/8" NPT Female.</b> • 1/4" (6 mm)	5
	<b>Plug.</b> • 1/4" (6 mm)	10
	<b>Reducer Coupling OD.</b> • 1/4" (6 mm)	10
	<b>Coupling.</b> • 1/4" (6 mm ) • 3/8" (10 mm) • 1/2" (13 mm)	12 10 10

## Product Ordering

Description	Part No.
Complete Kit with 159 fittings	<b>141-0601</b>
Case only	<b>141-464</b>

## Controls Cabinet/Enclosure



567-556 Small Panel with Window.



567-351 Exposed Panel Assembly.

### Description

Designed to conveniently group control system components, 567 Controls Cabinets are available in two styles, exposed and flush mount.

With the exposed panels, the control components can be mounted in the door or mounted within the enclosure using the perforated panel. The cabinet housing, door, and perforated mounting plate may be ordered as a unit or separately.

The flush mount panel is designed to recess the panel into a wall. The controls are mounted within the enclosures on a perforated panel. Order both the cabinet and the mounting kit.

### Features

- Panels are symmetrical, and can be mounted with door hinge on left or right-hand side
- Removable door with lock and keys
- Removable perforated subpanel permits mounting controls without drilling holes
- Attractive gray finish permits use in occupied areas
- Support kit is available for floor mounting (medium and large exposed cabinets only)
- Variety of mounting methods available
- Knockouts are provided for electrical or pneumatic piping
- Panels listed under UL508 Industrial Control Panel Enclosures
- CSA listed under LR 84214
- NEMA Type 1
- Exposed Panels available in 6" or 9" depth

### Applications

The 567 Controls Cabinets provide a convenient central location for equipment mounting, termination of piping, wiring adjustment, and calibration.

Panels may be used with DDC and/or pneumatic systems using either copper or polyethylene tubing for transmission lines, with wired electric/electronic systems, or with a combination of both. Within the panel enclosure, use polyethylene pneumatic tubing for easy installation and arrangement and for a flexible connection to hinged door components.

The empty panel can be installed at the job to permit early rough-in of conduit. Since the door and subpanel can be separated from the cabinet, controls may be mounted to the door subpanel either at the job site or at the field office and connected to the cabinet at your convenience. After reassembly, final connections are then made.

# Specifications

## Exposed Panel

### Dimensions – 9" Depth

Size 3: ..... 24.94" H x 24.38" W x 9.38" D  
 (633 mm H x 619 mm W x 238 mm D)  
 Size 4: ..... 36.5" H x 24.38" W x 9.38" D  
 (927 mm H x 619 mm W x 238 mm D)

### Dimensions – 6" Depth

Size 1: ..... 19.5" H x 16.38" W x 5.75" D  
 (495 mm H x 416 mm W x 146 mm D)  
 Size 2: ..... 20.0" H x 20.0" W x 6.0" D  
 (508 mm H x 508 mm W x 152 mm D)  
 Size 3: ..... 24.94" H x 24.38" W x 6.0" D  
 (633 mm H x 619 mm W x 152 mm D)  
 Size 4: ..... 36.5" H x 24.38" W x 6.0" D  
 (927 mm H x 619 mm W x 152 mm D)

### Dimensions – 3.5" Depth

Size 0: ..... 12" H x 14" W x 3.5" D  
 (305 mm H x 356 mm W x 89 mm D)

### Shipping Weights – 9" Depth

Size 3: ..... 39.0 lb. (18 kg)  
 Size 4: ..... 72.0 lb. (33 kg)

### Shipping Weights – 6" Depth

Size 1: ..... 20.0 lb. (9 kg)  
 Size 2: ..... 28.0 lb. (13 kg)  
 Size 3: ..... 38.0 lb. (17 kg)  
 Size 4: ..... 63.0 lb. (29 kg)

### Shipping Weights – 3.5" Depth

Size 0: ..... 12.0 lb. (5.5 kg)

## Flush Mount Panel – 567-391

Dimensions ..... 19.5" H x 16.13" W x 5.13" D  
 (495 mm H x 410 mm W x 130 mm D)

Shipping Weight ..... 20.0 lb. (9 kg)

## Panel Door

### Shipping Weights

Size 1: ..... 8.0 lb. (3.6 kg)  
 Size 3: ..... 13.0 lb. (5.9 kg)  
 Size 4: ..... 20.0 lb. (9 kg)  
 Size 0: ..... 13.0 lb. (5.9 kg)

## Product Ordering

Size	Part No. – 9"	Part No. – 6"
<b>Exposed Panel Assembly</b>		
Size 1	—	<b>567-351</b>
Size 2	—	<b>567-454</b>
Size 3	<b>567-352</b>	<b>567-452</b>
Size 4	<b>567-353</b>	<b>567-453</b>
<b>Panel Door Only</b>		
Size 1	<b>567-361</b>	—
Size 3	<b>567-362</b>	—
Size 4	<b>567-363</b>	—
<b>Panel Enclosure</b>		
Size 1	<b>567-371</b>	—
Size 3	<b>567-372</b>	—
<b>Mounting Plate Only</b>		
Size 1	<b>567-381</b>	—
Size 3	<b>567-382</b>	—
Size 4	<b>567-383</b>	—
<b>Flush Mount Panel &amp; Kit</b>		
Flush Mount Panel	<b>567-391</b>	—
Flush Mount Kit contains escutcheon, hinged locking door and two keys	<b>567-390</b>	—
<b>Small Panel with Mounting Plate, Key Lock</b>		
Size 0 with blank door	<b>567-551</b>	
Size 0 with window door	<b>567-556</b>	

## Accessories

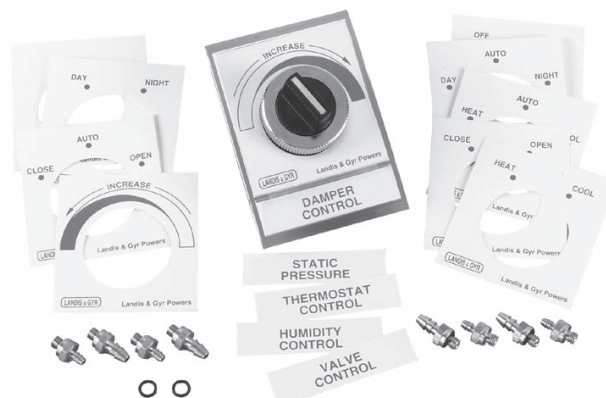
Description	Part No.
Replacement Door Lock & Key Assembly	<b>567-225</b>

## Literature

For additional details, see Siemens technical instruction #155-272P25 for CP567 Control Cabinets.



## Selector Switches



786 Floating Selector Switch.

### Description

The 786 Selector Switch is used to deliver or stop the flow of compressed air to selected controllers valves, or dampers in commercial applications.

The common port may be connected to two or three ports depending on the switch model.

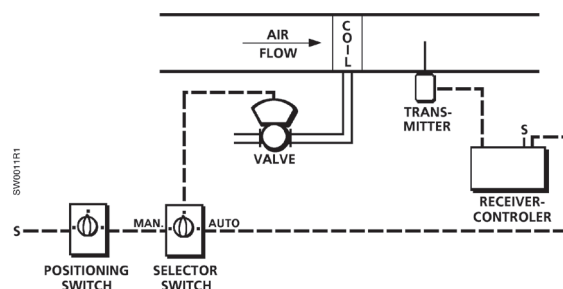
### Features

- Compact design and lightweight construction
- Click stop for positive positioning
- Easy panel mounting through 1-7/32-inch (31 mm) diameter knockout
- 10-32 Female connection ports
- Dial label and nomenclature sheets for most applications
- Barb fitting for 5/32-inch (4 mm) OD tubing for port connections

### Applications

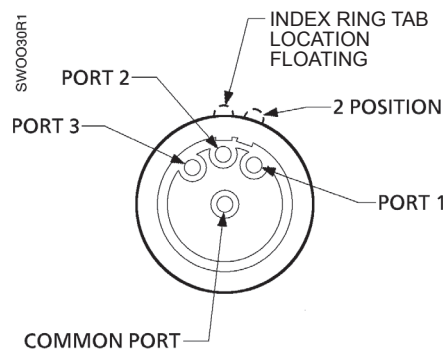
The 786 floating Selector Switch is used in compressed air systems to connect and direct supply and signal pressures. Typical applications are OPEN/CLOSE damper position, DAY/NIGHT thermostat operation, and ON/OFF/AUTO system operation. The compact design makes these especially adaptable to panel groupings.

#### Application Drawing



Standard and Large Capacity.

#### Typical Connections



2- and 3-position Selector Switch.

# Specifications

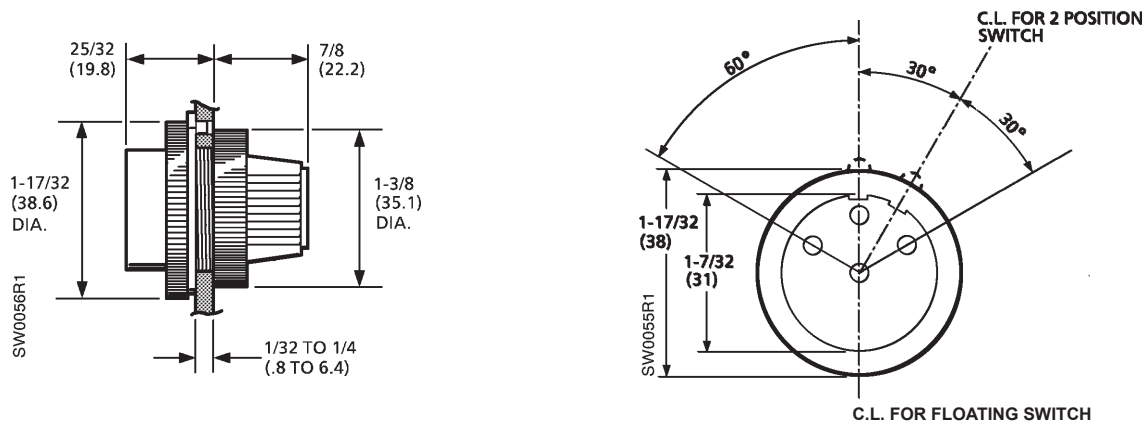
**Medium** ..... Air  
**Air Connections**  
 Standard Switch ..... 1/16" NPT  
 LC Switch ..... 1/8" NPT  
**Inlet Pressure**  
 Nominal ..... 30 psi (206 kPa)  
 Maximum ..... 125 psi (858 kPa)  
**Operating Temperature** ..... 35° to 150°F (2° to 66°C)

**Capacity at 1 psi (7 kPa) Differential**  
 5/32" (4 mm) OD tubing ..... 250 scim (68 ml/s)  
 1/4" (3 mm) OD tubing ..... 480 scim (130 ml/s)  
**Port Threads** ..... 10-32 NPT female  
**Materials**  
 Body ..... Acetal  
 O-rings ..... Buna N

# Product Ordering

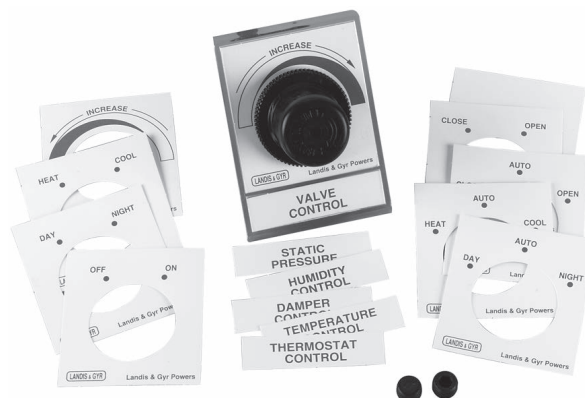
Description	Part No.
2-position	786-0600
Floating	786-0610

# Dimensions



Dimensions shown in inches (mm).

## Positioning Switch



141 Positioning Switch.

### Description

The 141 Positioning Switch is used to deliver any manually selected pressure over a range of 0 to 30 psi (0 to 207 kPa) to air-operated equipment. The adjustment knob can be left free to rotate or held in position by snapping the locking ring.

### Features

- Compact design and lightweight construction
- Non-rising low torque pressure adjustment knob with snap-action locking ring for maintaining pressure setting
- Available in manual select or bleed type models
- Easy to surface or panel mount
- Easy panel mounting through 1-7/32" (31 mm) diameter knockout
- Includes dial label and nomenclature sheet for most applications

### Applications

The 141 Positioning Switch is used in compressed air systems to maintain a uniform outlet pressure despite changes in the inlet pressure and changes in downstream flow requirements; especially suited for installations where space is limited and where panel mounting with a flush mount knob is desired.

# Specifications

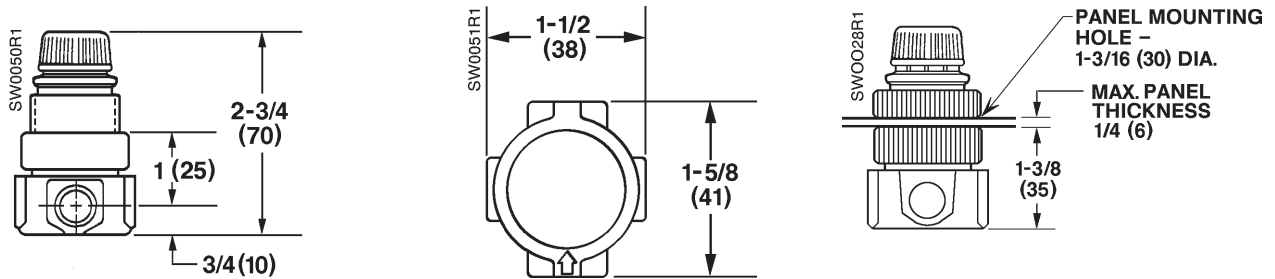
**Medium** ..... Air  
**Air Connections** ..... 1/8" NPT female  
**Inlet Pressure**  
 Nominal ..... 30 psi (206 kPa)  
 Maximum ..... 400 psi (2745 kPa)

**Operating Temperature** ..... 0° to 150°F (-18° to 66°C)  
**Capacity at 1 psi (7 kPa) Differential**  
 5/32" (4 mm) OD tubing ..... 500 scim (140 ml/s)  
 1/4" (6 mm) OD tubing ..... 650 scim (180 ml/s)  
**Shipping Weight** ..... 0.5 lb. (0.23 kg)

# Product Ordering

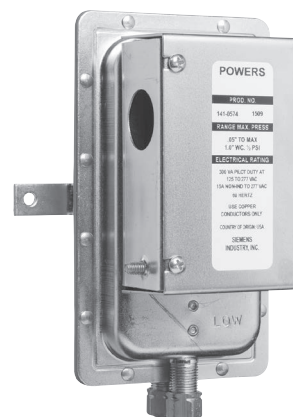
Description	Part No.
Positioning Switch	141-0600

# Dimensions



Dimensions shown in inches (mm).

# Differential Static Pressure Airflow Switches



141 Differential Static Pressure Airflow Switches.

## Description

The 141 Airflow Switch senses static differential pressure and at setpoint open/closes a set of electrical contacts.

## Features

- Available in ranges:
  - 0.05 to 1" W.C. (12.45 to 249 Pa)
  - 1 to 12" W.C. (249 to 2988 Pa)
- Available with auto reset
- Can be used in multiple applications:
  - Proof of flow
  - High limit cut out
  - Filter 'dirty' indication

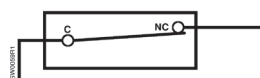
## Applications

The 141 Airflow Switch actuates electrical circuits (positive pressure), fan inlet (negative pressure), or across the fan (differential pressure) to detect excessively high positive pressures or low negative pressures and turn off the fan before damage occurs to ducts or dampers.

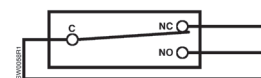
The manual reset switch (141-0575) should be used for applications that require safety lock out (shut down) of the fan. The switch can be used on the fan discharge.

The auto reset switch should be used for applications that require positive proof of airflow (or fan operation) or detect high differential pressures associated with dirty air filters or similar maintenance alarms that do not require safety lock or (shut down) of the fan.

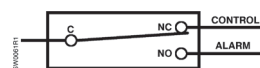
## Typical Connections



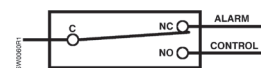
141-0575  
Manual Reset Switch.



141-0518 and 141-0574  
Auto Reset Switches.



Auto Reset Switches to Prove Excessive Airflow or Pressure.



Auto Reset Switches to Prove Insufficient Airflow or Pressure.

# Specifications

**Medium** ..... Air  
**Switch Action Manual Reset**  
 (must be manually rest by operator)..... NC; only opens on increasing pressure signal  
**Ambient Temperature Range** ..... -40° to 180°F (-40° to 82°C)  
**Maximum Overpressure** ..... 0.5 psi (3.4 kPa)  
**Mounting Position** ..... Diaphragm in any vertical plane  
**Body** ..... Zinc-plated Steel with blue erudite dip  
**Electrical Ratings**  
 Non-inductive ..... 15 amps @ 120 to 277 Vac  
 Pilot Duty ..... 300 VA @ 120 to 277 Vac

**Conduit Opening** ..... 1/2" (13 mm) conduit size  
**Sample Line Connectors** ..... 2 connectors, complete with nuts and ferrules, which accept 1/4" (6 mm) OD copper or polyethylene tubing  
**Material** ..... Aluminized Steel  
**Agency Approvals** ..... UL MFHX File MH9888  
 CSA 1811M25  
**Dimensions** ..... 6.13" H x 3.88" W x 3.19" D  
 (156 mm H x 98 mm W x 81 mm D)  
**Shipping Weight** ..... 1.0 lb. (0.45 kg)

# Product Ordering

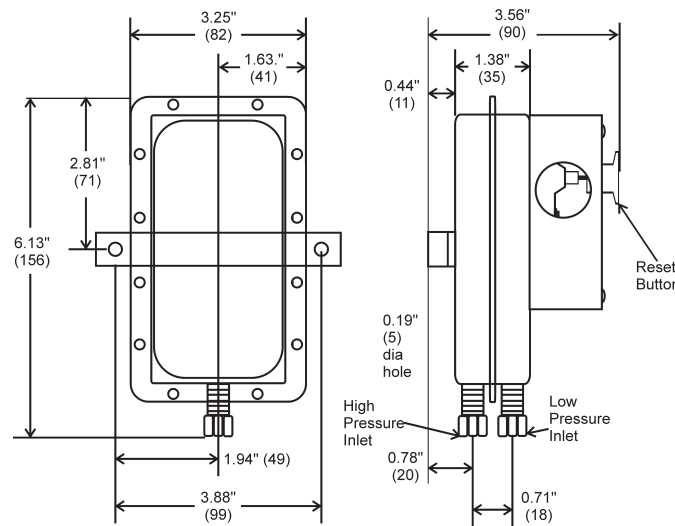
Setpoint Range (Field Adjustable)	Switching Action/Reset	Factory Setpoint Accuracy*	Differential*	Part No.
1" to 12" W.C. (250 to 3000 kPa)	SPDT/Auto Reset	@ 12" ± 1.5" W.C. (3000 Pa ± 375 Pa)	Approx. 0.6" to 1.5" W.C. (150 Pa to 375 Pa)	<b>141-0518</b>
1" to 12" W.C. (250 to 3000 kPa)	SPST/ Manual Reset	1" ± 0.1" W.C. (250 Pa ± 25 Pa) to 12" ± 1.2" W.C. (3000 Pa ± 300 Pa)	Not Applicable	<b>141-0575</b>
0.05" to 1.0" W.C. (12.5 to 250 kPa)	SPDT/ Auto Reset	@ 1" ± 0.2" W.C. (250 Pa ± 50 Pa)	Approx. 0.06" to 0.6" W.C. (15 Pa to 150 Pa)	<b>141-0574</b>

\*Setpoint accuracy tolerance and switching differential decrease proportional to setpoint decrease.

# Accessories Ordering

Description	Part No.
High Accuracy Static Pressure Sensor	<b>269-062</b>
Static Pressure Sensing Kit	<b>189-142</b>

# Dimensions

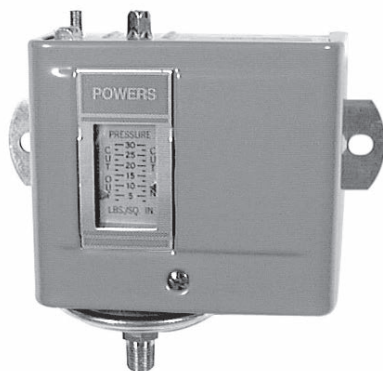


Dimensions shown in inches (mm).

Pneumatics

F-54

## Pressure Electric Switch



134-1450 Pressure Electric Switch.



134-1460 Pressure Electric Switch.

### Description

The 134 Pressure Electric Switches are heavy duty pressure-actuated, mechanical contact type switches used to open or close electrical circuits from pressure signals in pneumatic control systems.

### Features

- DPST or SPDT snap-acting
- External adjustment and indication of setpoint and differential
- Screw terminals are easily accessible for field wiring
- Long life, heavy duty contact mechanism
- Normally open or normally closed contacts models available
- Not position sensitive, can be mounted in any position
- Mounting bracket included

### Applications

The 134 Pressure Electric Switches are used wherever it is necessary to close (or open) an electrical circuit on the basis of a predetermined air pressure signal. This switch is to be used in areas protected from the weather. Typical applications include the control of air compressors, fans, pilot lights, resistance heating elements, control of electric heating loads or motors on fans, pumps or small air compressors.

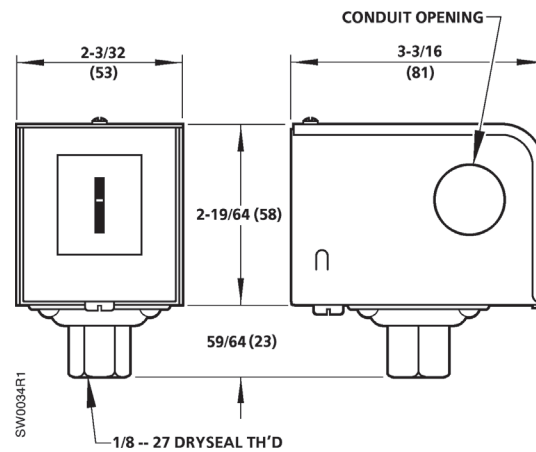
## Specifications

Medium .....	Compressed air
Setpoint Range .....	3 to 30 psi (20 to 200 kPa)
Differential .....	Adjustable from 1.5 to 20 psi (10 to 138 kPa)
Maximum Pressure .....	50 psi (345 kPa)
Pressure Connection .....	1/8" male NPT
Conduit Opening .....	1/2" (13 mm) nominal conduit
Ambient Temperature .....	32° to 140°F (0° to 60°C)
<b>Pilot Duty</b>	
134-1450, 134-1451 .....	125 VA @ 600 Vac
134-1460 .....	125 VA @ 24 to 277 Vac
Agency Approval (for 134-1450 only) .....	UL file E 35198
Shipping Weight .....	2.0 lb. (0.9 kg)

## Product Ordering

Description	Switch Action	Electrical Rating	Part No.
Pressure Differential, Adjustable Switch, 1.5 to 10 psi	DPST (NO)	<b>IND:</b> 12 A @ 120, 208 & 240 Vac	<b>134-1450</b>
	DPST	<b>Non-IND:</b> 12 A @ 120 to 277 Vac	<b>134-1451</b>
Fixed Differential Switch 2.0 psi	SPDT (NC)	<b>IND:</b> 16 A @ 120 Vac; 8 A @ 240 Vac <b>Non-IND:</b> (SPDT) 16 A @ 120 to 277 Vac (SPST) 24 A @ 120 to 277 Vac	<b>134-1460</b>

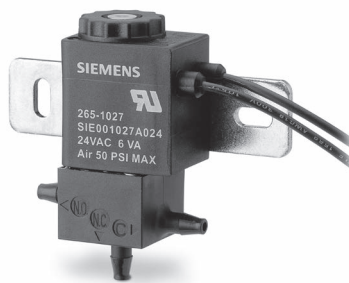
## Dimensions



Dimensions shown in inches (mm).



## Three-way EP Valves



265-1027  
3 EP Valve.



265-1021  
3 EP Valve.

### Description

A general purpose, electrically operated, two-position three-way valve designed to control air flow, the 265 Three-Way Valve can be used for interlock between an electrical system and a pneumatic control system; available in open frame (yoke) and junction box (splice box) types.

### Features

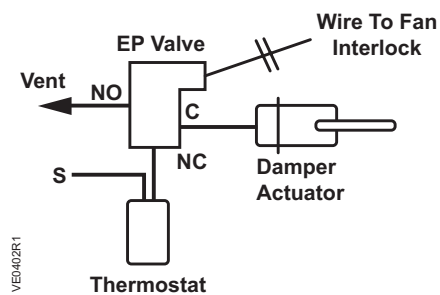
- UL and cUL recognized per UL429
- Valve may be mounted in any position
- Mounting holes provided in the yoke
- Wide selection of AC voltages
- Junction box and open frame types available

### Applications

The 265 EP Three-way Valves are commonly-used to alternately apply pressure to and exhaust pressure from pneumatically-controlled devices, such as valves and damper actuators, by an electrical input energizing or de-energizing the solenoid of the valve.

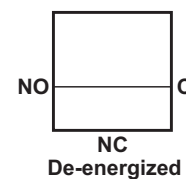
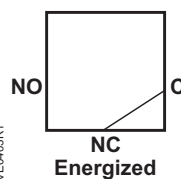
A standard method is shown in the Application Drawings below. The input air is connected to port 1 (normally closed) and the output is connected to port 3 (common). Thus when the solenoid is energized, port 1 connects to port 3 permitting the thermostat to control the damper actuator. When the solenoid is de-energized, port 2 (normally open) is connected to port 3, exhausting air from the actuator permitting it to return to its normal position.

### Application Drawings



VED402R1

VED403R1



# Specifications

**Ambient Temperature**  
 Junction Box Type .....0° to 100°F (0° to 38°C)  
 Open Frame Type .....0° to 110°F (0° to 43°C)

**Controlled Medium** .....Air only

**Maximum Air Pressure** ..... 50 psi (207 kPa)

**Air Flow Capacity**  
 Inlet Pressure ..... 20 psi (138 kPa)  
 Differential Pressure ..... 1 psi (7 kPa)  
 Air Flow ..... 600 scfm (164 cm<sup>3</sup>/s)

**Cv Flow Factor** .....0.06

**Electrical Ratings**  
 Voltages .....24 to 240 Vac  
 Power Consumption ..... 6 VA

**Mounting Bracket** ..... 1 oval and open-ended hole; part of the yoke.

**Junction Box** ..... NEMA 1 Enclosure

**Air Connections** ..... Barbed fittings for 1/4" (6 mm) OD tubing

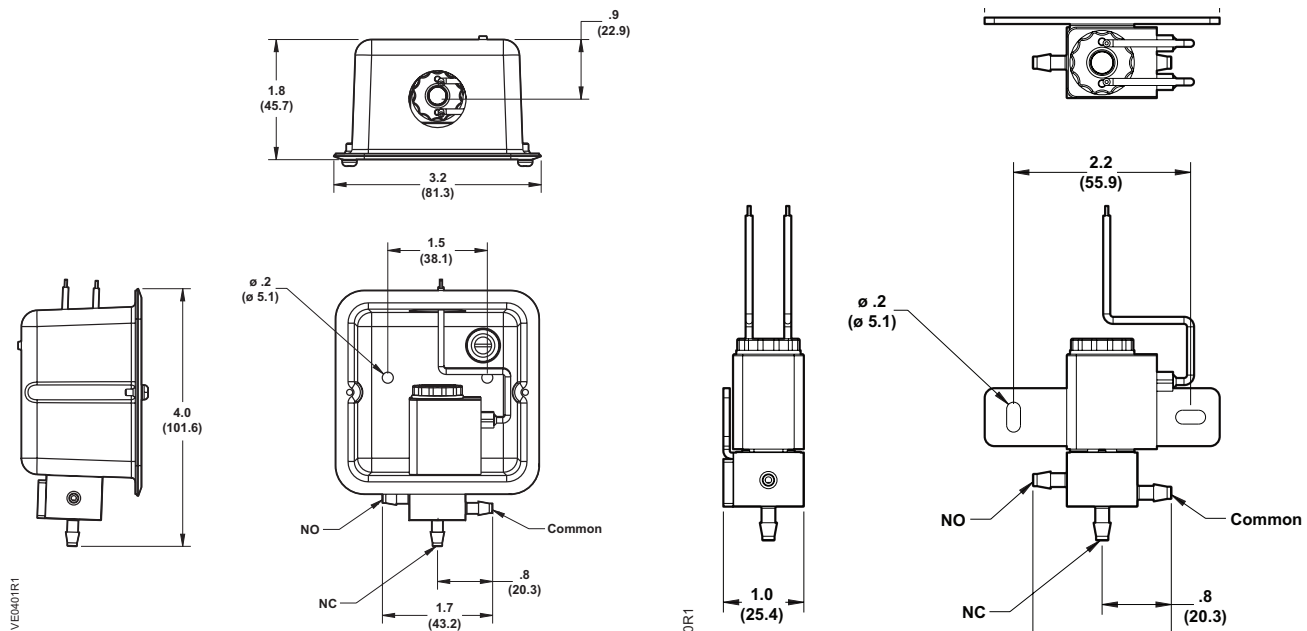
**Materials**  
 Body ..... Glass Filled Thermoplastic  
 Internal ..... Buna N, Copper, Stainless Steel

**Shipping Weight**  
 Open Frame Type .....0.25 lb. (0.11 kg)  
 Junction Box Type .....0.50 lb. (0.23 kg)

# Product Ordering

AC Voltage		Part No.
60 Hz	50 Hz	
<b>Junction Box</b>		
24	—	<b>265-1021</b>
120	110	<b>265-1022</b>
240	220	<b>265-1024</b>
<b>Open Frame</b>		
24	—	<b>265-1027</b>
120	110	<b>265-1028</b>

# Dimensions

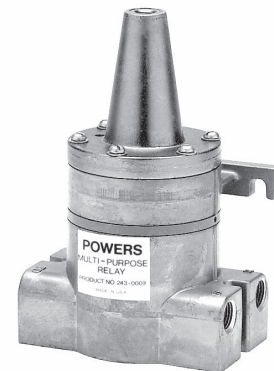


Dimensions shown in inches (mm).

Pneumatics

F-58

## Multipurpose Relay



243-0009  
Multi-purpose Relay.

### Description

The 243 Multipurpose Relay is pneumatic auxiliary devices designed to provide a variety of pneumatic control functions for the typical control system.

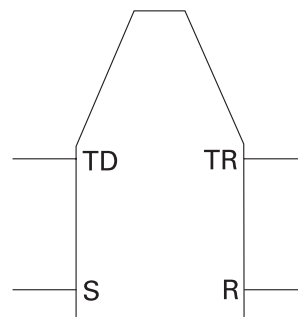
### Features

- Use for your most common applications
- High accuracy/repeatability
- Two-valve design prevents constant air loss
- Internal relief mechanism for fail safe operation

### Applications

The 243 Multipurpose Relay is used as direct and reverse acting, amplifying, signal advancing, minimum pressure relay, and lower pressure transfer.

#### Typical Connections



- R = output
- TD = direct acting input
- TR = reverse acting input
- S = air supply

For more detailed information on applications, refer to page G-27 in the Engineering section.



## Specifications

### Ambient Temperature Range

Operational.....40° to 120°F (4° to 49°C)  
 Storage.....-20° to 120°F (-29° to 49°C)

Hysteresis ..... 0.25 psi (1.7 kPa)

Relief Valve Differential ..... 1.0 psi (6.9 kPa)

Air Capacity ..... 400 scim (109 ml/s)

Air Consumption (max.) ..... 7 scim (2 ml/s)

Spring Range ..... 0 to 25 psi (0 to 172 kPa)

Air Connections ..... 1/8" NPT

Spring Adjustment Range ..... 25 psi (0 to 172 kPa)

### Supply Air

Normal..... 25 psi (172 kPa)

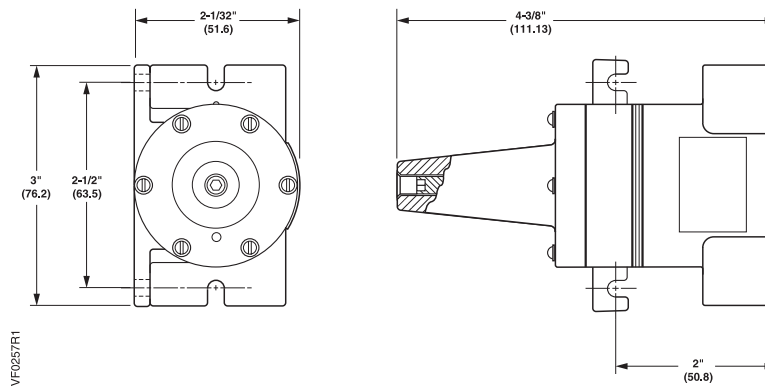
Maximum..... 30 psi (207 kPa)

Shipping Weight .....1.5 lb. (1.35 kg)

## Product Ordering

Description	Part No.
Multipurpose Relay	243-0009

## Dimensions



Dimensions shown in inches (mm).

## Balance-retard Relay



243-0010  
Balance-retard Relay.

### Description

The 243 Balance-retard Relay is gradual-acting, pneumatic devices designed to provide special functions such as balancing, signal retard, hesitation, and pressure limiting.

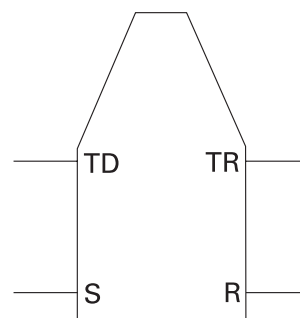
### Features

- Internal relief valve for fail-safe operation
- Adjustable retard setting

### Applications

The 243 Balance-retard Relay is adjustable and the ports can be pneumatically piped in a variety of different combinations. Each combination represents a relay application that can be used to perform a specific function in a control loop. The relay is factory set for balancing action.

### Typical Connections



- R = output
- TD = direct acting input
- TR = reverse acting input
- S = air supply

For more detailed information on applications, refer to page G-27 in the Engineering section.

# Specifications

## Ambient Temperature Range

Operational.....40° to 120°F (4° to 49°C)  
 Storage.....-20° to 120°F (-29° to 49°C)

Hysteresis ..... 0.25 psi (1.7 kPa)

Relief Valve Differential ..... 1.0 psi (6.9 kPa)

Air Capacity .....400 scim (109 ml/s)

Air Consumption (max.) ..... 7 scim (2 ml/s)

Spring Range ..... 0 to 25 psi (0 to 172 kPa)

Air Connections ..... 1/8" -27 Female NPT

## Spring Adjustment Range

Balance ..... 0 to 15 psi (0 to 103 kPa)  
 Retard..... 0 to 10 psi (0 to 69 kPa)

## Supply Air

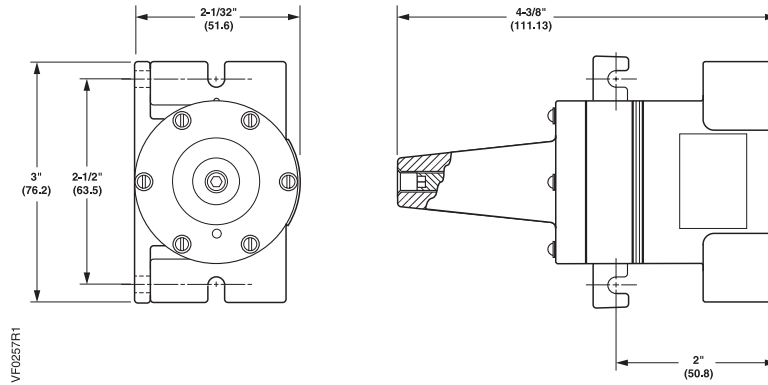
Normal..... 25 psi (172 kPa)  
 Maximum..... 30 psi (207 kPa)

Shipping Weight .....1.5 lb. (1.35 kg)

# Product Ordering

Description	Part No.
Balance-retard Relay	<b>243-0010</b>

# Dimensions



Dimensions shown in inches (mm).

## Analog Relay



243-0011 Analog Relay.

### Description

The 243 Analog Relays are pneumatic auxiliary devices designed to assist the engineer in obtaining specialized control action within a pneumatic control system.

### Features

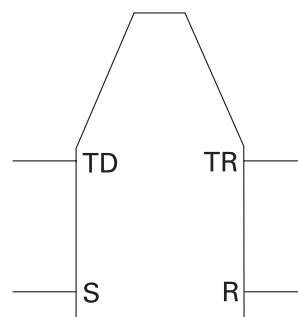
- Multi-function
- Lightweight commercial model with molded barb fittings for 1/8" (3 mm) polyethylene tubing
- Heavy duty die-cast model with 1/8" NPT ports
- Mounting bracket included with both models; can be mounted in any position

### Applications

The 243 Analog Relay is used for amplifying, summing, differential pressure, ratio control higher pressure and signal characterization control. The relay has a two-valve design to ensure stability and prevent unnecessary air consumption.

This relay does not require any adjustment or calibration and can be mounted in any position. An internal relief is provided to assure fail-safe operation on loss of air supply.

### Typical Connections



- R = output
- TD = direct acting input
- TR = reverse acting input
- S = air supply

For more detailed information on applications, refer to page G-27 in the Engineering section.

# Specifications

**Air Supply**  
 Normal..... 0 to 25 psi (0 to 172 kPa)  
 Maximum..... 30 psi (207 kPa)

**Ambient Temperature Range**  
 Operating.....40° to 120°F (4° to 49°C)  
 Storage.....-20° to 120°F (-29° to 49°C)

**Hysteresis** ..... 0.25 psi (1.7 kPa)

**Relief Valve Differential** ..... 1.0 psi (6.9 kPa)

**Air Capacity** .....400 scim (109 ml/s)

**Air Consumption (max.)** ..... 7 scim (2 ml/s)

**Mounting** .....Integral brackets for wall or panel

**Spring Adjustment Range Action** ..... Gradual

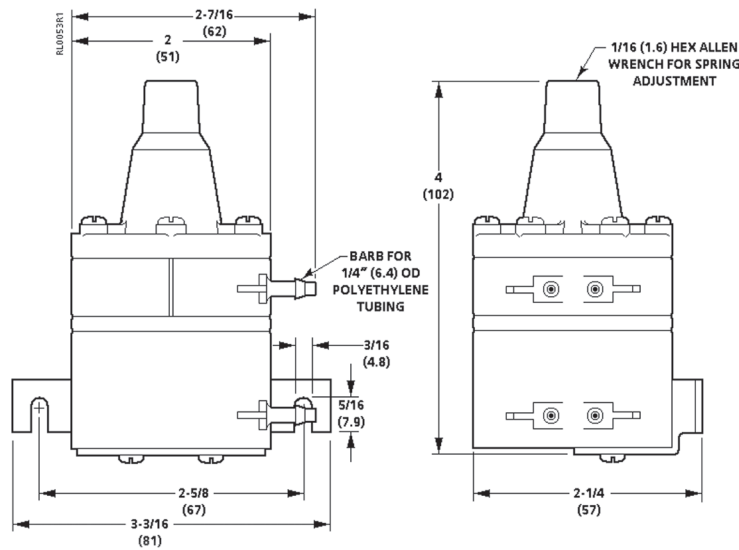
**Supply Air**  
 Normal..... 25 psi (172 kPa)  
 Maximum..... 30 psi (207 kPa)

**Shipping Weight** .....1.5 lb. (1.35 kg)

# Product Ordering

Description	Part No.
Analog Relay	243-0011

# Dimensions



Dimensions shown in inches (mm).



## Switching Relay



243 Switching Relay.

### Description

The 243 Switching Relay is a compact three-way air valve that can be used to perform a variety of switching and diverting functions.

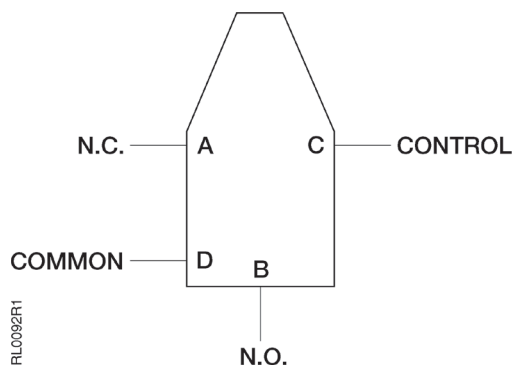
### Features

- Adjustable changeover pressure
- Factory calibrated at 9 psi (62 kPa) for most applications
- 1/8" NPT threaded ports

### Applications

The 243 Switch Relay action connects common port to either of two other ports.

#### Typical Connections



When air pressure to the C port is increased, ports A and D are connected. When air pressure to the C port is decreased, ports B and D are connected.

For more detailed information on applications, refer to page G-27 in the Engineering section.

# Specifications

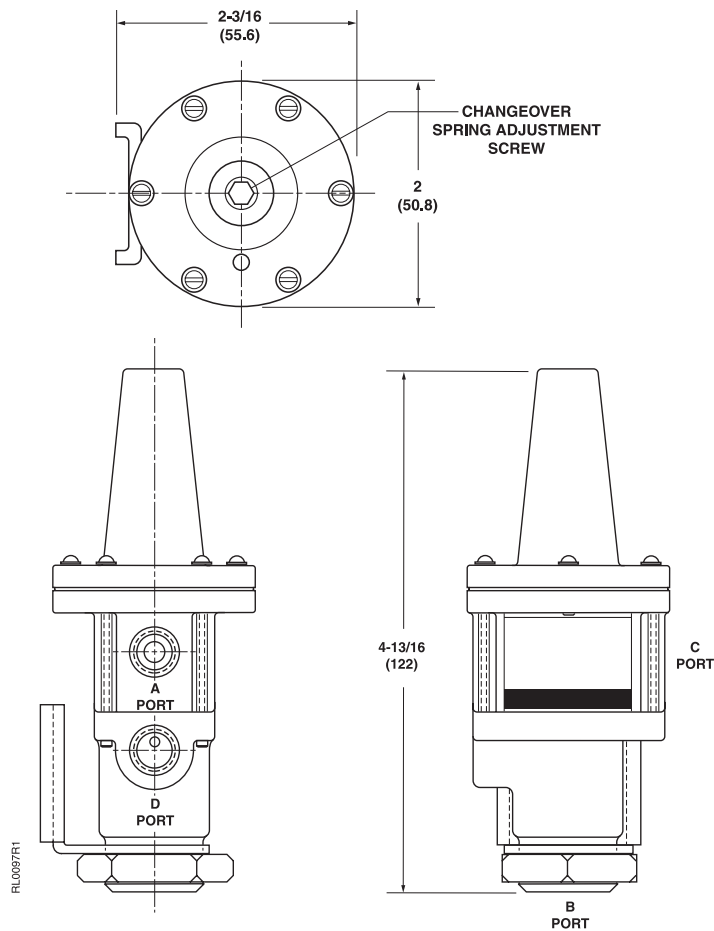
**Maximum Instrument Air Supply** ..... 30 psi (207 kPa)  
**Changeover Range** ..... 3 to 25 psi (21 to 172 kPa)  
**Standard Changeover Setting** ..... 9 psi (62 kPa)  
**Changeover Differential (nominal)** ..... 1.5 psi (10.3 kPa)  
**Ambient Temperature**  
 Maximum ..... 160°F (71.1°C)  
 Minimum ..... -20°F (-28.8°C)  
**Air Connection** ..... 1/8" NPT

**Adjustable Changeover Range** ..... 0 to 25 psi (0 to 172 kPa)  
**Changeover Differential** ..... 1.5 psi (10 kPa) nominal  
**Standard Changeover Settings** ..... 9 psi (62 kPa)  
**Nominal Capacity @ 2 psi ΔP**  
 A Port ..... 800 scim  
 B Port ..... 1100 scim  
**Shipping Weight** ..... 2.0 lb. (0.9 kg)

# Product Ordering

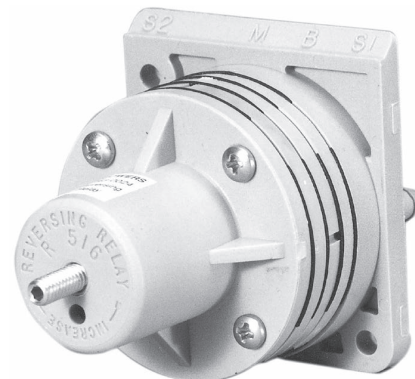
Description	Part No.
Switching Relay	243-0001

# Dimensions



Dimensions shown in inches (mm).

# Reverse Acting Relay



243 Reverse Acting Relay.

## Description

The 243 Reverse Acting Relay provides a proportional output signal that varies inversely with the input signal. A spring adjustment is provided to allow setting a desired reverse acting schedule required by a particular application.

## Features

- Lightweight and compact
- Can be mounted in any position
- Mounting bracket and screws included
- Field adjustable spring range
- Can be used as a signal inverting relay
- Force-balance operation minimizes air consumption
- Internal relief provides fail-safe operation
- Amplifies air volume to minimize system lag

## Applications

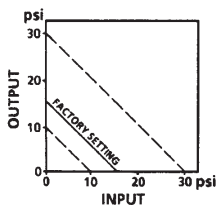
The 243 Reverse Acting Relay has two applications. For both, the supply air pressure must be equal to or greater than the spring setting.

**Signal Reverse Acting Relay Application:** The relay reverses a controller signal to match the operation of a control element. An increase in input pressure causes equivalent decrease in output pressure.

**Signal Inverting Application:** A typical application reverses the action of a face and bypass damper actuator on a coil used for both heating and cooling. The output pressure is directly proportional to the input pressure until one-half the spring setting is reached. After this point, the output pressure is inversely proportional to the input until the output reaches zero.

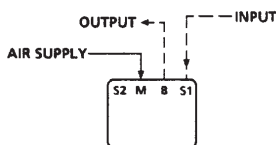
## Typical Input/Output Drawings

Reverse Acting Relay Application

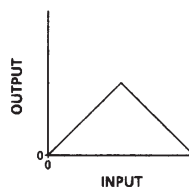


An increase in input pressure causes equivalent decrease in output pressure.

Input S1	Input B
0	15
5	10
10	5
15	0

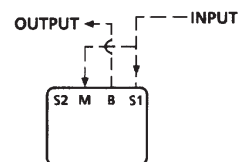


Signal Inverting Application



The output pressure is directly proportional to the input pressure until one-half the spring setting is reached. After this point, the output pressure is inversely proportional to the input until the output reaches zero.

Input S1+M	Output B
3	3
7.5	7.5
12	3
15	0



- Key**
- B Output Pressure
  - M Supply Air
  - S1 Input Pressure
  - S2 Not Used
  - SP Spring Setting

## Specifications

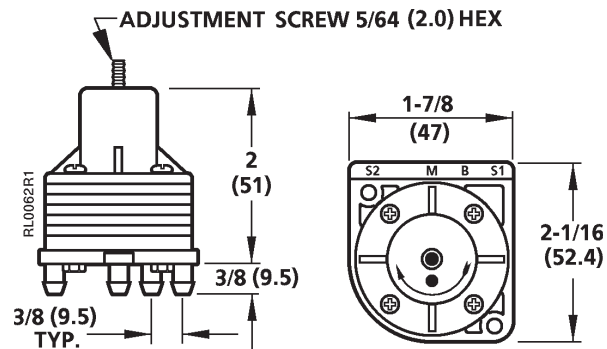
**Operating Range** ..... 0 to 30 psi (0 to 207 kPa)  
**Adjustment Using 5/64" (2 mm) Hex Wrench**  
 Range Adjustment ..... 10 to 30 psi (69 to 207 kPa)  
 Factory Setting ..... 15 psi (103 kPa)  
**Maximum Ambient Temperature** ..... 104°F (60°C)  
**Maximum Air Pressure** ..... 30 psi (207 kPa)  
**Air Capacity** ..... 230 scim (63 ml/s)

**Air Consumption for Air Compressor Sizing** ..... 29 scim (8 ml/s)  
**Material**  
 Housing ..... Glass-filled Nylon  
**Air Connections** ..... Barbed nipple for 1/4" (6 mm) OD polyethylene tubing  
**Mounting** ..... Mounting bracket included  
**Shipping Weight** ..... 0.27 lb. (0.13 kg)

## Product Ordering

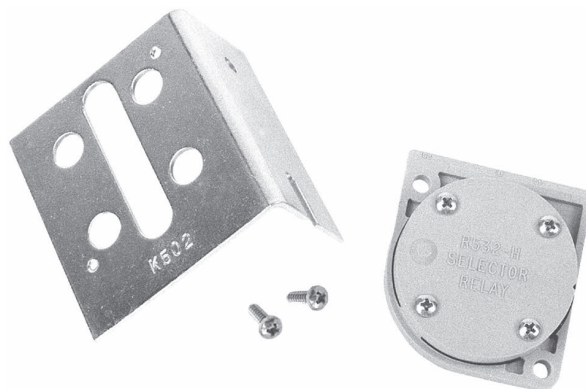
Description	Part No.
Reverse Acting Relay	243-0024

## Dimensions



Dimensions shown in inches (mm).

# Highest Pressure Signal Selector



243 Highest Pressure Signal Selector and Mounting Bracket.

## Description

A dual input, single output logic device, the 243 Highest Pressure Signal Selector, is used in pneumatic control systems to compare pressure signals.

## Features

- Selects the highest of two input signals
- Small, lightweight
- Mounting bracket provided

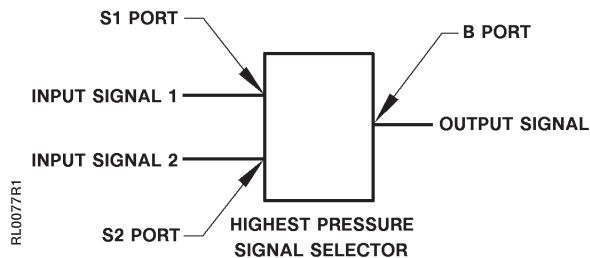
## Applications

The 243 Highest Pressure Signal Selector is used where two proportional high capacity air signals (2-pipe thermostat) must be compared and the highest of the two signals transmitted to another logic or final control device.

## Recommendation

Use 243-0019 selector to compare more than two inputs.

## Typical Connections



Input Signal 2	Input Signal 1	Output Signal
3 psi	15 psi	15 psi
15 psi	3 psi	15 psi
9 psi	9 psi	9 psi

# Specifications

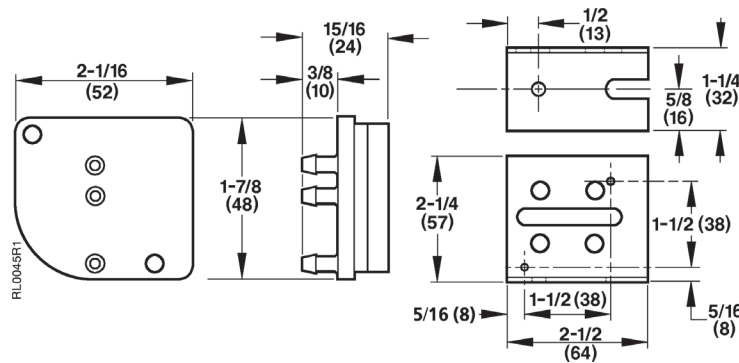
**Action** ..... Direct  
**Maximum Air Pressure** ..... 30 psi (207 kPa)  
**Adjustments** ..... None  
**Connections** ..... 1/4" (6 mm) OD polyethylene tubing  
**Operating Ambient Temperature**  
 Minimum ..... 40°F (4°C)  
 Maximum ..... 140°F (60°C)

**Air Consumption** ..... None  
**Air Capacity @ P = 2 psi** ..... 130 scim (35 ml/s)  
**Materials** ..... Glass-filled Nylon  
**Shipping Weight** ..... 0.25 lb. (0.10 kg)

# Product Ordering

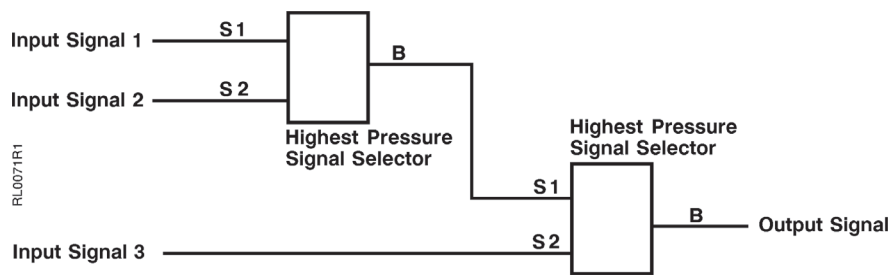
Description	Part No.
Highest Pressure Signal Selector	243-0018
<b>If inoperative, replace the unit.</b>	

# Dimensions and Engineering Drawings

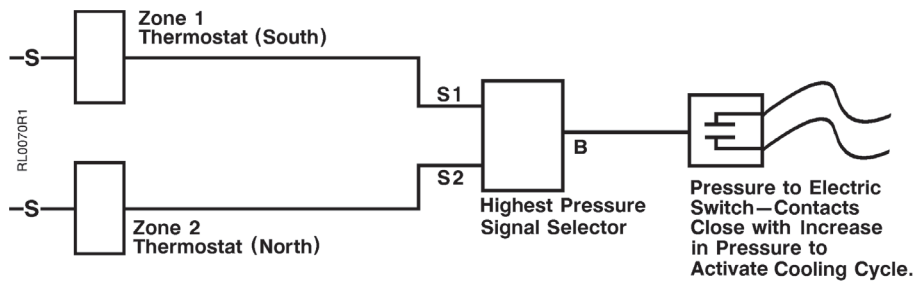


Dimensions shown in inches (mm).

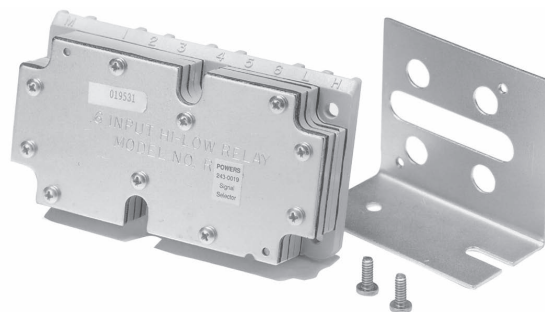
## Highest of the Three Signal Pressures.



## Single Fan Cooling Control from Two Zone Direct Acting Thermostats.



# Lowest and Highest Signal Selector



243 Lowest and Highest Pressure Signal Selector and Mounting Bracket.

## Description

The 243 Lowest and Highest Signal Selector is a six-input, dual output logic device for use in pneumatic control systems.

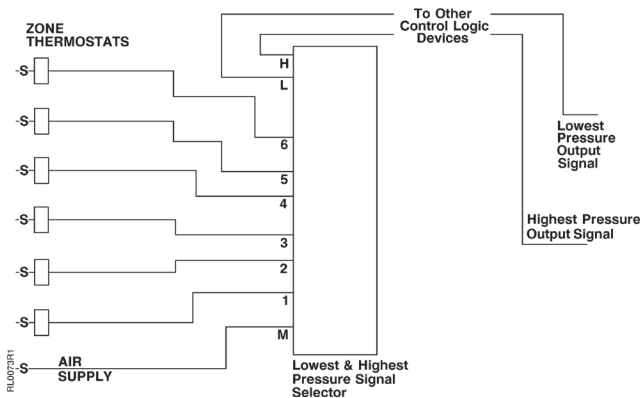
## Features

- Accepts up to 6 inputs
- Selects both or highest/lowest signal
- Easily supported in-line or mounted using provided hardware
- Small, lightweight

## Applications

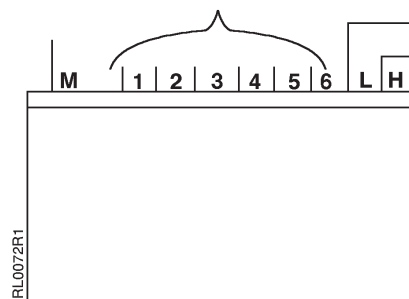
The 243 Lowest and Highest Signal Selector is used where up to six input air signals must be compared and the lowest and/or highest of the signals transmitted to another logic or final control device. Unused input ports must be connected to the highest numbered input port being used. This is a low capacity output device, therefore, an amplifying relay will be required for many applications.

### Application Drawing



## Typical Connections

Input Port #	Input Signal	Lowest Pressure Output Signal	Highest Pressure Output Signal
1	3 psi	—	—
2	6 psi	—	—
3	9 psi	—	—
—	—	3 psi	15 psi
4	10 psi	—	—
5	13 psi	—	—
6	15 psi	—	—



# Specifications

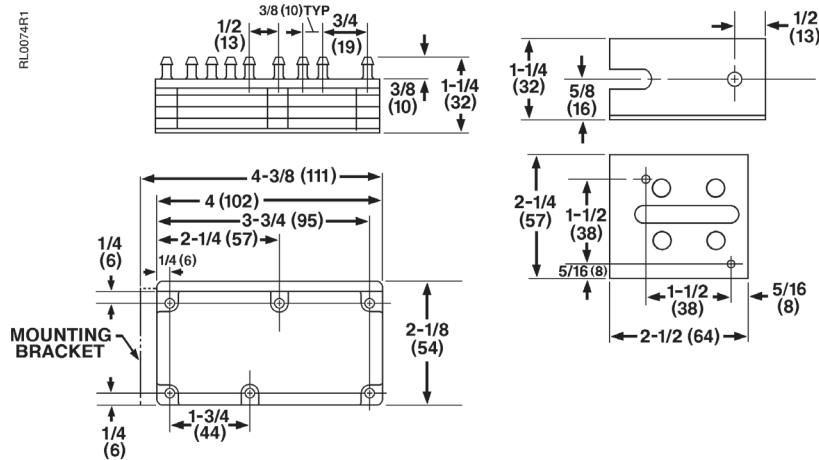
**Action** ..... Direct  
**Air Supply Pressure**  
 Normal Operating ..... 20 psi (138 kPa)  
 Maximum ..... 30 psi (207 kPa)  
**Adjustments** ..... None  
**Connections** ..... 1/4" (6 mm) OD polyethylene tubing  
**Operating Ambient Temperature**  
 Minimum ..... 40°F (4°C)  
 Maximum ..... 140°F (60°C)

**Air Consumption** ..... 44 scim (12 ml/s)  
**Air Capacity @ P = 2 psi**  
 Highest ..... 5 scim (1.4 ml/s)  
 Lowest ..... 10 scim (2.7 ml/s)  
**Material** ..... Glass-filled Nylon  
**Shipping Weight** ..... 0.63 lb. (0.295 kg)

# Product Ordering

Description	Part No.
Lowest and Highest Signal Selector	243-0019
If inoperative, replace the unit.	

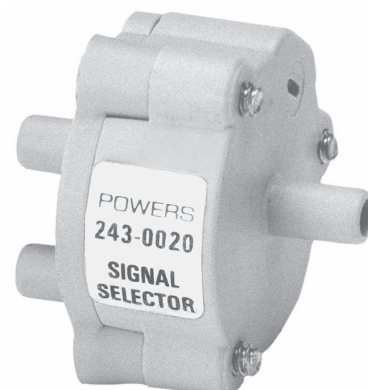
# Dimensions



Dimensions shown in inches (mm).



## Lowest Pressure Signal Selector



243 Lowest Pressure Signal Selector.

### Description

The 243 Lowest Pressure Signal Selector is a dual input, single output logic device for use in pneumatic control systems.

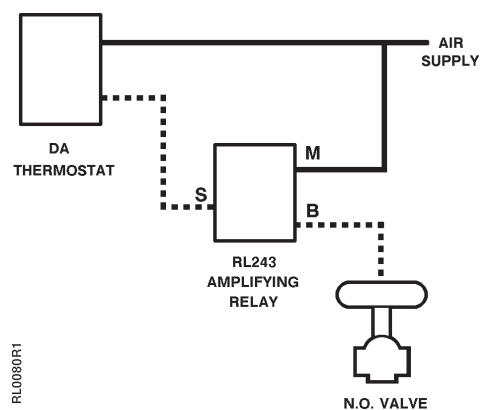
### Features

- Small, lightweight
- Can be mounted in any position
- Can be supported by the 1/4-inch (6 mm) poly tubing connected to the input and output fittings
- Can be used as volume amplifying relay
- Cascade multiple selectors for more than two inputs

### Applications

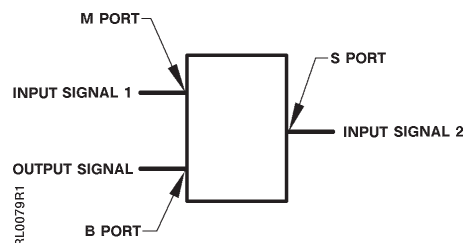
The 243 Lowest Pressure Signal Selector is used where two input air signals must be compared and the lowest of the two signals transmitted to another logic or final control device. The 243 Lowest Pressure Signal Selector can also be used as a direct acting amplifying relay.

#### Application Drawing



Direct Acting Amplifying Relay.

#### Typical Connections



# Specifications

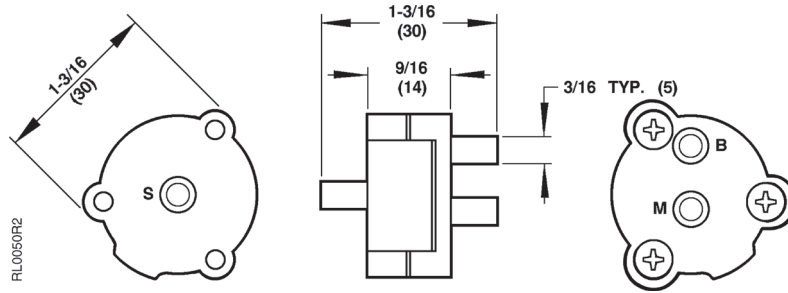
**Action** ..... Direct  
**Maximum Pressure** ..... 30 psi (207 kPa)  
**Adjustments** ..... None  
**Connections** ..... 1/4" (6 mm) OD polyethylene tubing  
**Operating Ambient Temperature**  
 Minimum ..... 40°F (4°C)  
 Maximum ..... 140°F (60°C)

**Air Consumption** ..... 29 scim (8 ml/s)  
**Air Capacity @ P = 2 psi** ..... 82 scim (22 ml/s)  
**Material** ..... Glass reinforced nylon  
**Diaphragm** ..... Nylon reinforced fairprene  
**Mounting** ..... In-line  
**Shipping Weight** ..... 0.31 lb. (0.01 kg)

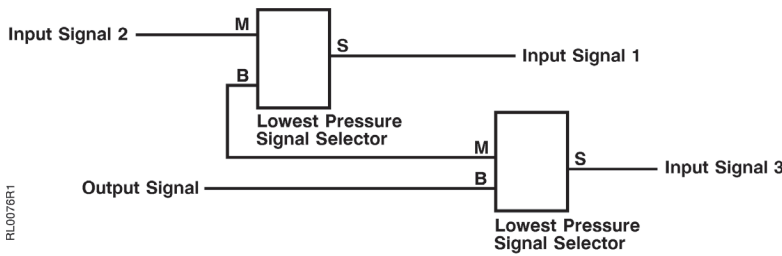
# Product Ordering

Description	Part No.
Lowest Pressure Signal Selector	243-0020
<b>If inoperative, replace the unit.</b>	

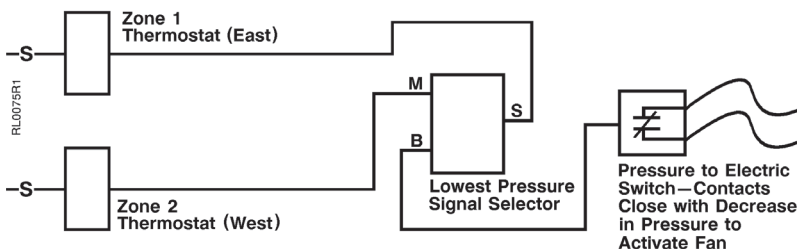
# Dimensions and Engineering Drawings



Dimensions shown in inches (mm).

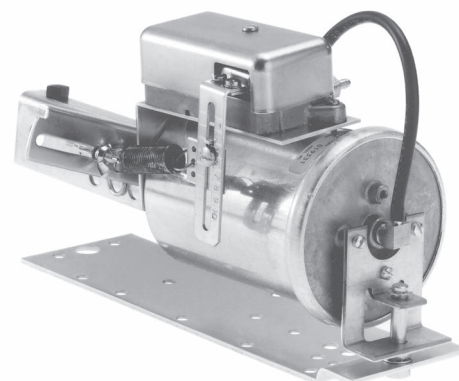


Input Signal 2	Input Signal 1	Output Signal
3 psi	15 psi	3 psi
15 psi	3 psi	3 psi
9 psi	9 psi	9 psi



Lowest of Three Signal Pressures.

## Positioning Relay



147 Positioning Relay and Mounting Kit shown on a No. 3 Damper Actuator.

### Description

The 147 Positioning Relay is a compact pneumatic auxiliary device designed to provide positive positioning of a pneumatic valve or damper actuator.

### Features

- Designed to operate at a very low bleed rate to minimize air consumption
- Provides simplified adjustment of both starting pressure and operating span
- Adjustable start point
- Adjustable span
- Rapid response
- Good repeatability
- Consistency of operation

### Applications

The 147 Positioning Relay accurately positions damper actuator in response to a control air signal change. Damper actuators that are equipped with a Positioning Relay can use full control air pressure at any point in stem travel to initiate stem movement or to maintain stem position. However, the actuator spring still provides the necessary force to move the stem in the opposite direction.

A mounting kit is required for direct attachment of the relay to a pneumatic damper actuator or valve actuator.

NOTE: Refer to pages B-47 – B-61 for a complete line of pneumatic damper actuators.

# Specifications

**Ambient Temperature Range**  
 Operating.....35° to 160°F (2° to 71°C)  
 Storage.....-20° to 160°F (-29° to 72°C)  
**Maximum Pilot Signal Pressure** ..... 30 psi (207 kPa)  
**Maximum Supply Air Pressure** ..... 60 psi (413 kPa)  
**Start Point Adjustment Range** ..... 3 to 10 psi (21 to 69 kPa)  
**Operating Span Adjustment Range** ..... 3 to 12 psi (21 to 83 kPa)  
**Response** ..... 0.10 psi (0.689 kPa) input change

**Air Capacity @ ΔP** ..... 410 scim (112 ml/s)  
**Air Consumption** ..... 40 scim (11 ml/s)  
**Air Connections** ..... 1/8" NPT  
**Materials**  
 Body ..... Zinc  
 Cover ..... Steel  
**Shipping Weight (with mounting kit)** ..... 2.0 lb. (0.9 kg)

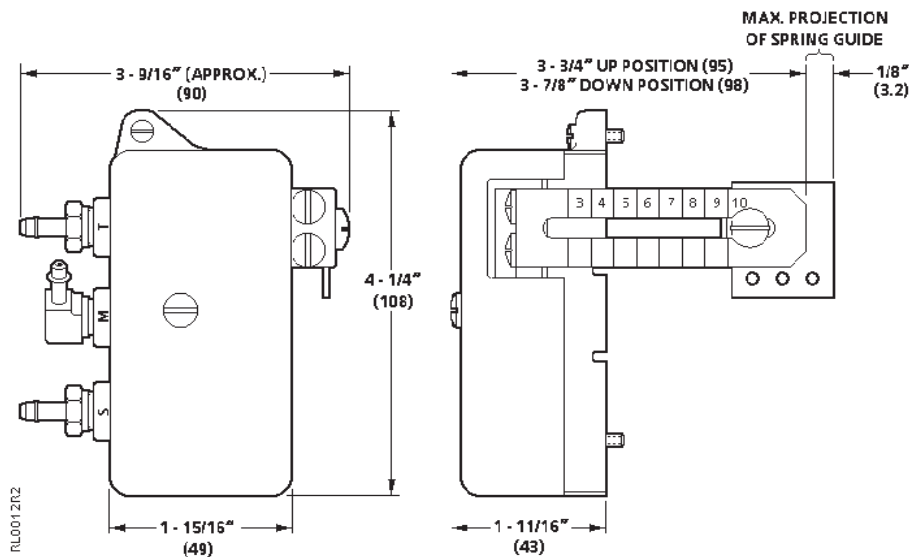
# Product Ordering

Description	Part No.	
	Positioning Relay	Mounting Kit
<b>Positioner</b>		
Field mount positioner for No. 3 Damper Actuator mfg. after 1/93	147-2000	147-104
Field mount positioner for No. 4	147-2000	147-314
Field mount positioner for No. 6	147-2000	147-276
<b>8-inch Valve Actuator</b>		
For 599 Series Flowrite actuators mfg. after 3/96	599-00426 <sup>1</sup>	
For Model 3 Flowrite actuators mfg between 3/93 and 1/96	147-2000	—
For Models 1 and 2 Flowrite actuators. <sup>2</sup>	147-2000	—
<b>12-inch Valve Actuator</b>		
For 599 Series Flowrite actuators mfg. after 1/96	599-00423 <sup>1</sup>	
For Flowrite actuators mfg. between 3/78 and 1/96	147-2000	—

**Ordering Note:**

1. Relay and mounting hardware included.
2. Also order spring arm, **147-307**, for use with 591 5 and 6-inch balanced valves.

# Dimensions

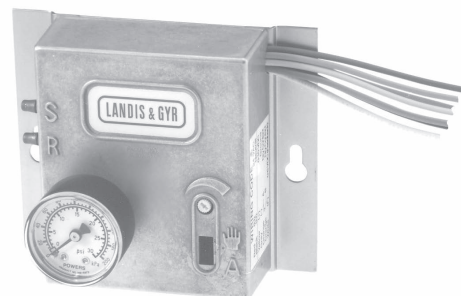


Dimensions shown in inches (mm).

## Electronic-to-Pneumatic Transducer



545-208 Electronic-to-Pneumatic Transducer.



545-113 Electronic-to-Pneumatic Transducer.

### Description

These products have entered retirement. They will be available for service parts only until 2025. The 545 Electronic-to-Pneumatic (AO-P) Transducer converts an electronic signal into a linear pneumatic signal; available in remote mount and panel mount.

### Features

- Insensitive to vibration and mounting position to allow mounting directly on equipment
- Hand-Auto switch and override dial allow for manual control of output pressure for troubleshooting and emergencies
- Accurate and repeatable output pressure signal
- Easy-to-install, no setup or calibration is required
- Wall-mount without an additional enclosure to reduce cost
- Factory-installed 0 to 30 psi (0 to 207 kPa) gauge included
- High capacity, non-bleed device

### Options

- Electrical connections to remotely monitor Hand-Auto switch position and output pressure

### Applications

The 545 Electronic-to-Pneumatic Transducers are used for accurate positioning of valve and damper actuators.

# Specifications

**Supply Voltage** ..... 19 to 26 Vac (24 Vac typical)  
**Power Consumption** ..... 1 VA max.  
**Input Signal/Impedance** ..... 0 to 10 Vdc/20 K Ohm  
**Output Signal** ..... 0 to 20 psi (0 to 138 kPa)  
**Output Capacity** ..... 500 scim (135 ml/s) min.  
 @ 5 psi (34.5 kPa) Drop  
 (20 psi input, 15 psi output)  
**Output Repeatability** ..... 0.05 psi (0.35 kPa) max.  
 (includes hysteresis)  
**Output Fail-safe** ..... 0 psi (0 kPa) in response  
 to sustained power loss  
**Output Fail-safe Exhaust Capacity** ..... 100 scim (27 ml/s)  
 @ 5 psi (34.5 kPa) drop (unpowered)  
**Air Supply Pressure** ..... 30 psi (207 kPa) max.  
 safe pressure, clean, dry,  
 (instrument quality air required)  
**Air Consumption for Compressor Sizing** ..... 8 scim (2.2 ml/s)  
**Tubing Connection** ..... Two-1/4" (6 mm) OD nominal,  
 barbed fitting  
**Conduit Connections** ..... Remote mount model has  
 Two - 1/2" (13 mm) conduit connections

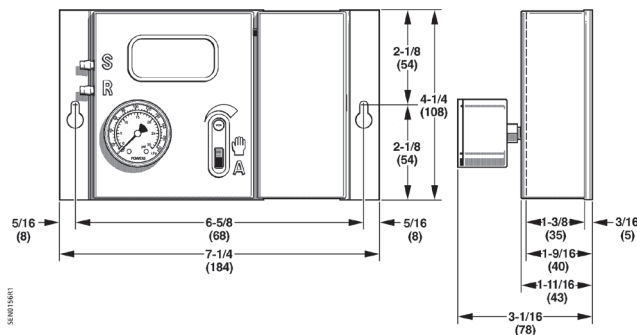
**Output Accuracy** ..... @ 77°F (25°C) ± 0.25 psi (1.72 kPa) max.  
 @ 32° to 122°F (0° to 50°C) ± 0.50 psi (3.45 kPa) max.  
 @ -40° to 185°F (-40° to 85°C) ± 1.0 psi (6.90 kPa) max.  
**Ambient Temperature Range**  
 Operating and Storage ..... -40° to 185°F (-40° to 85°C)  
**Operating Humidity** ..... 10% to 95% RH, non-condensing  
**Vibration** ..... Tested to EIA STD, RS-152B FEB 71  
**Override Controls** ..... Continuous variable output override  
 (does not function without power)  
**Override Monitoring**  
 Hand-Auto ..... A dry contact indicates the position  
 of the Hand-Auto Switch to an external device.  
**Hand-Auto Override**  
 Dry Contact Rating ..... 30 Vac @ 100 mA, 42 Vdc  
**Override Monitoring Output Pressure** ..... Optional 0 to 5 Vdc linear  
 signal monitors output pressure  
**Dimensions**  
 Remote Mount ..... 4.25" H x 7.25" W x 3.06" D  
 (108 mm H x 184 mm W x 78 mm D)  
 Panel Mount ..... 4.25" H x 5.75" W x 3.06" D  
 (108 mm H x 146 mm W x 78 mm D)  
**Shipping Weight** ..... 2.0 lb. (0.9 kg)

# Product Ordering

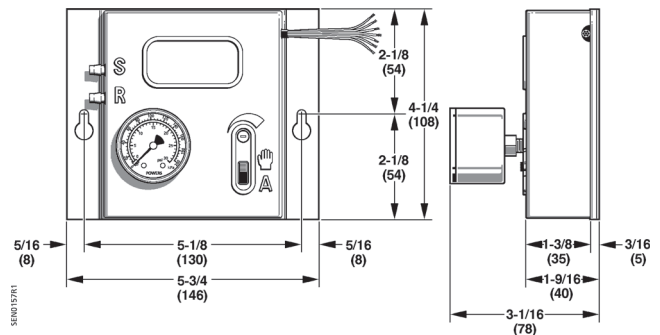
Description	Part No.
<b>Remote Mount</b>	
AO-P Transducer with Integral Enclosure	<b>545-208</b>
<b>Panel Mount</b>	
AO-P Transducer	<b>545-113</b>

# Dimensions and Engineering Drawings

545 AO-P Transducer with Integral Enclosure



545 AO-P Transducer



Dimensions shown in inches (mm).

## Analog to Pneumatic Pressure Transducer



Panel Mount and Enclosure AO-P Transducers

### Description

The TG-EPC2 Series analog-to-pneumatic pressure transducers convert an analog input signal to a proportional pneumatic output, modulating air control valve(s) to regulate the branch line pressure to the setpoint determined by the input signal. These devices offer four selectable input control signal ranges. Output pressure ranges are jumper shunt selectable and adjustable in all ranges. A pressure gauge provides local viewing of branch line pressure. A feedback signal indicating the resultant branch line pressure is also provided.

These AO-P transducers are designed with electrical terminals on one end and pneumatic connections on the other, allowing for maximum convenience in wiring and tubing installation when panel-mounted. These models incorporate two valves (one controls exhaust), do not bleed air at setpoint and have a 750 scfm supply and exhaust. Their branch exhaust flow and response time are not limited by an internal restrictor and are similar to their load rate.

#### FAIL-SAFE

The TG-EPC2GFS models have a 3-way branch valve that will exhaust branch line air upon power failure.

The TG-EPC2 Series transducers are available with or without an enclosure (bracket). The TG-EPC2GFS includes a plastic mounting rail and is suitable for mounting in an enclosure. The TG-EPC2GFSB includes an integral metal bracket and enclosure which protects the electronics. This model is suitable for wall-mounting outside of an enclosure. Other than the mounting hardware, the two models are identical in functionality.

### Features

- Insensitive to vibration and mounting position to allow mounting directly on equipment for stable performance.
- Hand-Auto switch and override dial allow for manual control of output pressure for troubleshooting and emergencies.
- Accurate and repeatable output pressure signal.
- Direct mounting to a wall or equipment eliminates the need for an additional enclosure and reduces cost.
- Factory-installed 0 to 30 psi (0 to 207 kPa) gauge is included.

# Specifications

## Electrical

**Supply Voltage** ..... 24 Vac (+/-10%) or 24 Vdc (+10%/-5%), 50/60Hz

**Supply Current**.....180 mA maximum, 200 mA on fail safe models

**Input Signal Ranges** ..... 0 to 5 Vdc, 0 to 10 Vdc, 0 to 15 Vdc (infinite  $\Omega$ ), 0 to 20 mA (250 $\Omega$ )

**Feedback Signal Output Range** ..... 0 to 5 Vdc proportional to output pressure range selected

**Manual/Auto Override** ..... When switched to MANUAL, output can be varied. When switched to AUTO, output is controlled from input signal

**Man/Auto Override Feedback**... Dry Contacts (24 Vac or 24 Vdc, 1A max). N.O. in AUTO operation (optional: N.O. in MANUAL operation)

**Override Dry Contact Rating** ..... 24 Vac or 24 Vdc, 1 Amp maximum

## Accuracy

+/-1% @ room temperature or 2% full scale @ 32 to 120°F (0 to 49°C)

## Mechanical

**Supply Pressure** ..... Maximum 25 psig (172.4 kPa), minimum 18 psig (124.11 kPa) Main air pressure must be minimum of 2 psig (13.79 kPa) above maximum output pressure desired.

**Air Consumption** ..... 750 SCIM (12.29 Liters) Supply and Exhaust

**Output Pressure Range** ..... Field Calibration Possible: 0 to 20 psig (0 to 138 kPa) maximum

**Selectable Pressure Ranges** ..... 0 to 10 psig (0 to 69 kPa), 0 to 15 psig (0 to 103 kPa), 0 to 20 psig (0 to 138 kPa)

**Airflow** ..... Supply valves @ 25 psig (172 kPa) main; 20 psig (138 kPa) out, 750 scim  
Branch line requires 2 cu in volume minimum.  
Branch line min. of 25 feet of 1/4" O.D. Poly tubing, for optimum result.

**Filtering** .....Furnished with 80 to 100 integral-in-barb micron filter.

**Storage Temperature**.....-20 to 150°F (-6.7 to 65.6°C)

**Operating Humidity Range** .....5 to 95% non-condensing

**Product Dimensions**.....4.37" L x 4.25" W x 1.87" H (11.1 cm) x (10.8 cm) x (4.75 cm)

# Product Ordering

Description	Part No.
<b>Panel Mount</b>	
AO-P with valved exhaust, pressure gauge, Fail-Safe exhaust	<b>TG-EPC2GFS</b>
<b>Enclosure Models</b>	
AO-P with valved exhaust, pressure gauge, Fail-Safe exhaust, enclosure	<b>TG-EPC2GFSB</b>



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## Accessories & Service Kits

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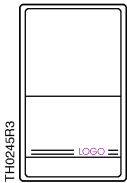
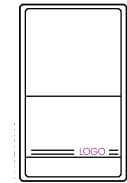
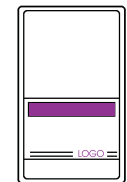
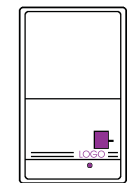
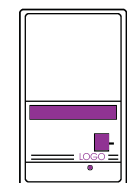
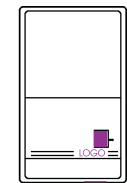
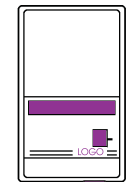
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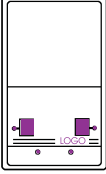
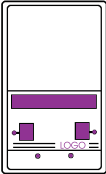
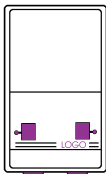
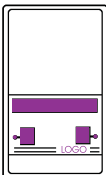
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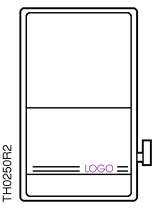
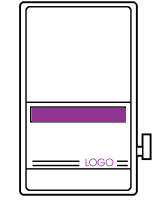
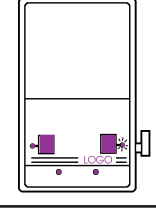
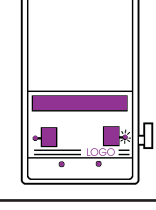
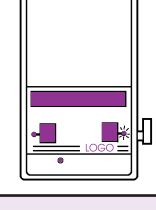
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# Accessories & Service Kits








	Pneumatic Thermostat Cover Feature Description (Sold Separately)	Fits Models			Part No. Quantity 1 (each)		
		192 S	192 HC	193 HC	Plastic Beige	Plastic White	Metal Beige
<b>Single Setpoint 192 Series Pneumatic Thermostat Covers</b>							
	<b>“No-Access” Blank Cover without Logo.</b> <ul style="list-style-type: none"> <li>Setpoint Adjustment Knob – Concealed</li> <li>Setpoint Key Adjustment Port – Concealed</li> <li>Setpoint Indicator Dial – Concealed</li> <li>Thermometer on Thermostat – Concealed</li> <li>Logo – None</li> </ul>	●	●	●	192-257	192-257W	192-357
	<b>“No-Access” Blank Cover with Logo.</b> <ul style="list-style-type: none"> <li>Setpoint Adjustment Knob – Concealed</li> <li>Setpoint Key Adjustment Port – Concealed</li> <li>Setpoint Indicator Dial – Concealed</li> <li>Thermometer on Thermostat – Concealed</li> <li>Logo – POWERS</li> </ul>	●	●	●	192-256	192-256W	192-356
	<b>“No-Access” Cover with Thermometer.</b> <ul style="list-style-type: none"> <li>Setpoint Adjustment Knob – Concealed</li> <li>Setpoint Key Adjustment Port – Concealed</li> <li>Setpoint Indicator Dial – Concealed</li> <li>Thermometer on Thermostat – Exposed</li> <li>Logo – POWERS</li> </ul>	●	●	●	192-254	—	192-354
	<b>Key Setpoint Adjust with Setpoint Indicator.</b> <ul style="list-style-type: none"> <li>Setpoint Adjustment Knob – Concealed</li> <li>Setpoint Key Adjustment Port – Exposed</li> <li>Setpoint Indicator Dial – Exposed</li> <li>Thermometer on Thermostat – Concealed</li> <li>Logo – POWERS</li> </ul> <i>Use with 1/2" diameter setpoint knob stats ("K" suffix)</i>	●			192-265	—	—
	<b>Key Setpoint Adjust, Setpoint Indicator, Thermometer.</b> <ul style="list-style-type: none"> <li>Setpoint Adjustment Knob – Concealed</li> <li>Setpoint Key Adjustment Port – Exposed</li> <li>Setpoint Indicator Dial – Exposed</li> <li>Thermometer on Thermostat – Exposed</li> <li>Logo – POWERS</li> </ul> <i>Use with 1/2" diameter setpoint knob stats ("K" suffix)</i>	●			192-266	192-266W	192-366
	<b>Full Access, Setpoint Adjust Knob, Setpoint Indicator.</b> <ul style="list-style-type: none"> <li>Setpoint Adjustment Knob – Exposed</li> <li>Setpoint Key Adjustment Port – Concealed</li> <li>Setpoint Indicator Dial – Exposed</li> <li>Thermometer on Thermostat – Concealed</li> <li>Logo – POWERS</li> </ul>	●			192-250	192-250W	—
	<b>Full Access, Setpoint Adj Knob, Indicator, Thermometer.</b> <ul style="list-style-type: none"> <li>Setpoint Adjustment Knob – Exposed</li> <li>Setpoint Key Adjustment Port – Concealed</li> <li>Setpoint Indicator Dial – Exposed</li> <li>Thermometer on Thermostat – Exposed</li> <li>Logo – POWERS</li> </ul>	●			192-252	192-252W	—

	Pneumatic Thermostat Cover Feature Description (Sold Separately)	Fits Models		Part No. Quantity 1 (each)		
		192 HC	193 HC	Plastic Beige	Plastic White	Metal Beige
<b>Dual Setpoint 192 Series Pneumatic Thermostat Covers</b>						
	<p><b>Key Setpoint Adjust with Setpoint Indicator.</b></p> <ul style="list-style-type: none"> <li>• Setpoint Adjustment Knobs – Concealed</li> <li>• Setpoint Key Adjustment Ports (both) – Exposed</li> <li>• Setpoint Indicator Dials (both) – Exposed</li> <li>• Thermometer on Thermostat – Concealed</li> <li>• Logo – POWERS</li> </ul> <p><i>Use with 1/2" diameter setpoint knob stats ("K" suffix)</i></p>	●	●	192-267	—	—
	<p><b>Key Setpoint Adjust, Setpoint Indicator, Thermometer.</b></p> <ul style="list-style-type: none"> <li>• Setpoint Adjustment Knobs – Concealed</li> <li>• Setpoint Key Adjustment Ports (both) – Exposed</li> <li>• Setpoint Indicator Dials (both) – Exposed</li> <li>• Thermometer on Thermostat – Exposed</li> <li>• Logo – POWERS</li> </ul> <p><i>Use with 1/2" diameter setpoint knob stats ("K" suffix)</i></p>	●	●	192-268	—	—
	<p><b>Full Access, Setpoint Adjust Knob, Setpoint Indicator.</b></p> <ul style="list-style-type: none"> <li>• Setpoint Adjustment Knobs (both) – Exposed</li> <li>• Setpoint Key Adjustment Ports – Concealed</li> <li>• Setpoint Indicator Dials (both) – Exposed</li> <li>• Thermometer on Thermostat – Concealed</li> <li>• Logo – POWERS</li> </ul>	●	●	192-258	—	—
	<p><b>Full Access, Setpoint Adj Knob, Indicator, Thermometer.</b></p> <ul style="list-style-type: none"> <li>• Setpoint Adjustment Knobs (both) – Exposed</li> <li>• Setpoint Key Adjustment Ports – Concealed</li> <li>• Setpoint Indicator Dials (both) – Exposed</li> <li>• Thermometer on Thermostat – Exposed</li> <li>• Logo – POWERS</li> </ul>	●	●	192-260	—	—


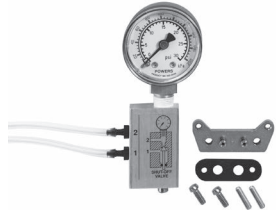

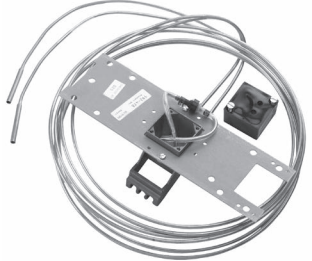
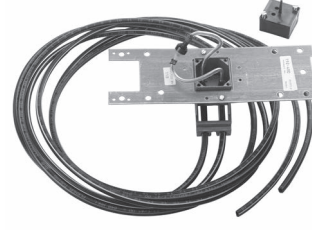

# Accessories & Service Kits

	Pneumatic Thermostat Cover Feature Description (Sold Separately)	Fits Model	Part No. Quantity 1 (each)		
		192 DN, DNV	Plastic Beige	Plastic White	Metal Beige
<b>Day-Night-Vent 192 Series Pneumatic Thermostat Covers</b>					
	<b>"No-Access" Blank Cover with D/N Switch.</b> <ul style="list-style-type: none"> <li>• Setpoint Adjustment Knobs – Concealed</li> <li>• Setpoint Key Adjustment Ports – Concealed</li> <li>• Setpoint Indicator Dials – Concealed</li> <li>• Thermometer on Thermostat – Concealed</li> <li>• Logo – POWERS</li> </ul>	●	192-262	192-262W	192-362
	<b>"No-Access" Cover with Thermometer and D/N Switch.</b> <ul style="list-style-type: none"> <li>• Setpoint Adjustment Knobs – Concealed</li> <li>• Setpoint Key Adjustment Ports – Concealed</li> <li>• Setpoint Indicator Dials – Concealed</li> <li>• Thermometer on Thermostat – Exposed</li> <li>• Logo – POWERS</li> </ul>	●	192-264	—	—
	<b>Key Setpoint Adjust with Setpoint Indicator, D/N Switch.</b> <ul style="list-style-type: none"> <li>• Setpoint Adjustment Knobs – Concealed</li> <li>• Setpoint Key Adjustment Ports (both) – Exposed</li> <li>• Setpoint Indicator Dials (both) – Exposed</li> <li>• Thermometer on Thermostat – Concealed</li> <li>• Logo – POWERS</li> </ul> <i>Use with 1/2" diameter setpoint knob stats ("K" suffix)</i>	●	192-269	—	—
	<b>Key Setpoint Adjust with Indicator, Thermometer, D/N.</b> <ul style="list-style-type: none"> <li>• Setpoint Adjustment Knobs – Concealed</li> <li>• Setpoint Key Adjustment Ports (both) – Exposed</li> <li>• Setpoint Indicator Dials (both) – Exposed</li> <li>• Thermometer on Thermostat – Exposed</li> <li>• Logo – POWERS</li> </ul> <i>Use with 1/2" diameter setpoint knob stats ("K" suffix)</i>	●	192-270	—	—
	<b>Key Setpoint Adjust, Indicator, Thermometer, D/N Switch.</b> <ul style="list-style-type: none"> <li>• Setpoint Adjustment Knob – Concealed</li> <li>• Setpoint Key Adjustment Port (night only) – Exposed</li> <li>• Setpoint Indicator Dial (both day &amp; night) – Exposed</li> <li>• Thermometer on Thermostat – Exposed</li> <li>• Logo – POWERS</li> </ul> <i>Use with 1/2" diameter setpoint knob stats ("K" suffix)</i>	●	192-271	—	—

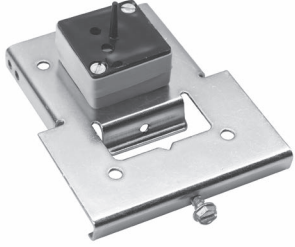
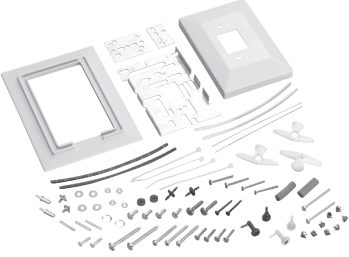
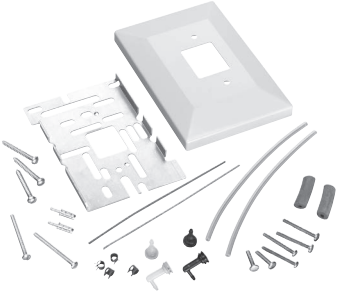
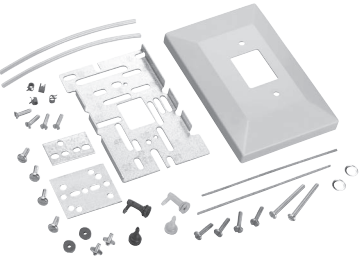
Pneumatics

	Description	Product Group	Quantity	Part No.
<b>All Models</b>				
	<b>Calibration Gauge.</b> <ul style="list-style-type: none"> <li>• 0 to 30 psi (0 to 207 kPa)</li> <li>• Dual scale in psi/kPa</li> <li>• 1% accuracy (ANSI grade 1A)</li> <li>• 2-1/2" (64 mm) dial face</li> <li>• 1/8" NPT bottom connection</li> </ul> <i>(See POWERS™ installation guide #144-133)</i>	All models	1	<b>142-0455</b>
	<b>Calibration Thermometer.</b> <ul style="list-style-type: none"> <li>• 40 to 140°F (4 to 60°C), 1% accuracy</li> <li>• With pocket case and clip</li> </ul> <i>(See POWERS™ installation guide #144-133)</i>	All models	1	<b>141-0573</b>
	<b>Lockable Thermostat Guard.</b> <ul style="list-style-type: none"> <li>• Clear cover locking guard</li> <li>• Clear plastic locking ring base</li> <li>• Desert beige locking mounting base</li> <li>• One key and mounting screws included</li> </ul> <i>(See technical instruction # 155-723)</i>	Any Siemens Thermostat	1	<b>141-570</b>
<b>POWERSTAR™</b>				
	<b>Pressure Gauge.</b> <ul style="list-style-type: none"> <li>• Dual scale 0 to 30 psi (0 to 200 kPa)</li> <li>• Compound gauge</li> <li>• Back connected 1/8" NPT male</li> </ul> <i>(See technical instruction #155-025)</i>	19X 356 184 195	1	<b>142-0473</b>
	<b>Pressure Gauge.</b> <ul style="list-style-type: none"> <li>• 0 to 30 psi compound gauge</li> <li>• Bottom connected 1/8" NPT male</li> <li>• Replacement gauge or use with #192-633</li> </ul> <i>(See technical instruction #155-025)</i>	19X 356	1	<b>142-0476</b>
	<b>Needle Probe Kit.</b> <ul style="list-style-type: none"> <li>• 1-1/2" (38 mm) diameter gauge</li> <li>• 0 to 30 psi (0 to 200 kPa)</li> <li>• Calibration cover wrench</li> </ul> <i>(See POWERS™ installation guide #144-133)</i>	19X 356	1	<b>192-633</b>
	<b>Needle Probe Only.</b> <ul style="list-style-type: none"> <li>• No gauge or cover wrench</li> </ul>	19X 356	Pkg of 5	<b>192-759</b>
	<b>Pneumatic Thermostat Calibration Kit.</b> <p>Contains thermometer, gauge squeeze bulb, and fittings for testing room and duct thermostats, pneumatic valve and damper actuators. Includes convenient carrying case. Includes tools contained in 832-178.</p> <i>(See technical bulletin # 155-253P25)</i> <i>(See POWERS™ installation guide #144-133)</i>	19X 180 182 832	1	<b>832-177</b>







## Accessories & Service Kits

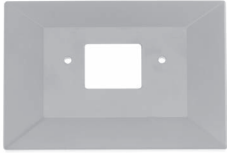
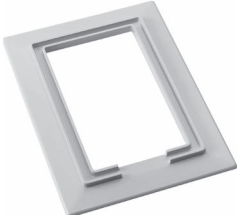
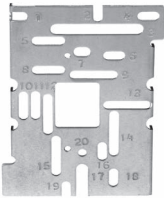

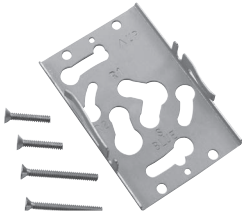
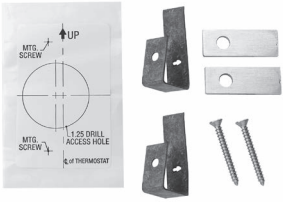
	Description	Product Group	Quantity	Part No.
<b>POWERSTAR™</b>				
	<p><b>Calibration Tools.</b> Special tools for calibrating 180, 182, 192, and 832 thermostats. Packed in polyethylene box that fits into carrying case of kit, 832-177</p> <p><i>(See technical bulletin # 155-253P25)</i> <i>(See POWERS™ installation guide #144-133)</i></p>	192 180 182 832	1	<b>832-178</b>
	<p><b>Test Head Kit.</b> Used for testing 1-pipe transmitters, thermostat air lines for leakage. Packed in polyethylene box that fits into carrying case of kit, 832-177.</p> <p><i>(See technical bulletin #155-255P25)</i> <i>(See POWERS™ installation guide #144-133)</i></p>	192 180 182 832	1	<b>832-179</b>
	<p><b>192 Series Pneumatic Thermostat Calibration and Cover Screw Wrench.</b></p> <ul style="list-style-type: none"> <li>• With pocket clip</li> <li>• 1/16" hex with ball end</li> </ul>	19X	Pkg of 5	<b>192-632</b>
	<p><b>Wall Box Rough-In.</b> For 2-pipe dual 1/8" (3 mm) OD copper with plaster plate. 8' (2 m) long belled to 3/16" (5 m) OD. With thermostat chassis plug-in adapters for easy maintenance.</p> <p><i>(See technical bulletins #155-244P25, #155-210P25)</i></p>	19X 832 186	1	<b>192-478</b>
	<p><b>Wall Box Rough-In.</b> For 1 or 2-pipe dual 1/4" (6 mm) OD poly tubing with plaster plate. 10' (2 m) long. With thermostat chassis plug-in adapters for easy maintenance.</p> <p><i>(See technical bulletins #155-244P25, #155-210P25)</i></p>	19X 186	1	<b>192-480</b>
	<p><b>Stud Mounting Bracket.</b></p> <ul style="list-style-type: none"> <li>• 6' (2 m) L. Cut to required length</li> </ul>	192	1	<b>141-098</b>




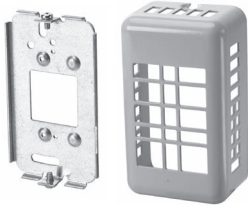

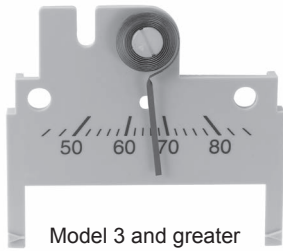

	Description	Product Group	Quantity	Part No.
<b>POWERSTAR™</b>				
	<p><b>Metal/Wood Stud Bracket.</b></p> <ul style="list-style-type: none"> <li>• Drywall rough-in</li> </ul> <p>(See technical bulletins #155-244P25, #155-210P25) (See installation instruction #129-072)</p>	19X 186	Pkg of 5	<b>182-683</b>
	<p><b>Universal Kit.</b></p> <ul style="list-style-type: none"> <li>• Retrofit thermostats including Honeywell, Johnson Controls, and others</li> <li>• Desert beige color</li> </ul>	19X	1	<b>192-300</b>
	<p><b>Universal Kit in White Color.</b></p> <p>(See technical bulletins #155-231P25, #155-244P25) (See installation instruction #129-116)</p>	19X	1	<b>192-300W</b>
	<p><b>Honeywell Kit.</b></p> <ul style="list-style-type: none"> <li>• Fits Honeywell and others</li> <li>• Desert Beige color</li> </ul> <p>(See technical bulletins #155-231P25, #155-244P25, #155-210P25) (See installation instruction #129-116)</p>	19X	1	<b>192-483</b>
	<p><b>Johnson Kit.</b></p> <ul style="list-style-type: none"> <li>• Retrofit to 19X thermostat. Fits Johnson Controls and others</li> <li>• Desert beige</li> </ul> <p>(See technical bulletins #155-231P25, #155-244P25)</p>	19X	1	<b>192-484</b>



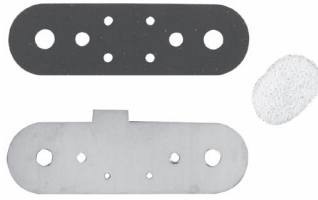
## Accessories & Service Kits

	Description	Product Group	Quantity	Part No.
<b>POWERSTAR™</b>				
	<p><b>1- or 2-pipe; split for 3-pipe.</b> Dual 1/4" (6 mm) OD polyethylene with plug-in adapters. 10' (2 m) long.</p> <p><i>(See technical bulletin #155-244P25 for products 192-600)</i></p>	19X	1	<b>192-600</b>
	<p><b>Preassembled Plastic Tubing Loop.</b> 8" (203 mm) long, with anti-kink spring, plug-in thermostat adapter. Mates to 1/4" (6.4 mm) OD polyethylene tube barbed fitting.</p> <p><i>(See technical bulletin #155-244P25)</i> <i>(See installation instruct. #129-072, #129-056)</i></p>	19X	Pkg of 10	<b>192-481</b>
	<p><b>Preassembled Plastic Tubing Loop.</b> 8" (203 mm) long, with anti-kink spring, thermostat plug-in adapter. Mates to 5/32" (4 mm) OD polyethylene tubing.</p> <p><i>(See technical bulletin #155-244P25)</i></p>	19X	Pkg of 10	<b>192-505</b>
	<p><b>Preassembled Plastic Tubing Loop.</b> 8" (203 mm) long, with anti-kink spring. Cut and attach directly to thermostat chassis. Attach compression rings to prevent air leakage. Mates to 1/4" (6 mm) OD polyethylene tubing.</p> <p><i>(See technical bulletin #155-244P25)</i> <i>(See installation instruction #129-131)</i></p>	19X 184	Pkg of 10	<b>180-896</b>
	<p><b>20 scim (5 ml/s) In-line Restrictors.</b></p> <p><i>(See technical instructions #155-213)</i></p>	192 184	Pkg of 5	<b>184-116</b>
	<p><b>20 scim (5 ml/s) Restrictor Tee.</b></p> <p><i>(See technical instructions #155-213)</i></p>	192 184	Pkg of 5	<b>184-113</b>





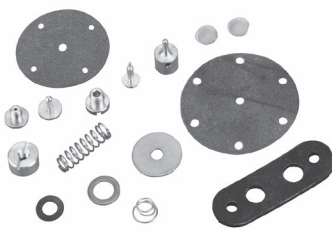
	Description	Product Group	Quantity	Part No.
<b>POWERSTAR™</b>				
	<b>Adapter Base.</b> • 3.38" W x 5.69" H (86 mm W x 18 mm H)			
	• Desert Beige (standard) • White (See technical bulletin #155-244P25)	19X	1	192-307
	<b>Adapter Frame.</b> • 4.38" W x 5.31" H x 0.09" D (111 mm W x 151 mm H x 2 mm D)			
	• Desert Beige (standard) • White (See technical bulletin #155-244P25) (See installation instructions #129-116)	19X	1	192-308
	<b>Multi-Slotted Plate.</b> Use with adapter bases. Not for use with thin profile adapter base.	19X	1	192-301
	<b>Thin Profile Adapter Base.</b> • Measures 3.38" x 4.97" H (86 mm x 126 mm) • Desert Beige (standard) (See technical bulletin #155-244P25)	19X	Pkg of 5	192-507
	<b>Extra Wall Plate and Mounting Screws.</b> Order only if required for repair or advance mounting prior to factory delivery for chassis (chassis P/N includes wall plate and screws). (See technical bulletin #155-244P25)	19X	1	192-644
	<b>Mounting Clips, Spacer and Template.</b> • For finished drywall (See technical bulletin #155-244P25) (See installation instructions #129-056, #129-131)	19X	Pkg of 10	182-685



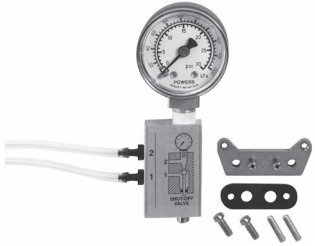
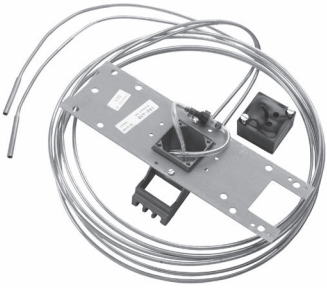
## Accessories & Service Kits

	Description	Product Group	Quantity	Part No.
<b>POWERSTAR™</b>				
	<b>Retrostat Plastic Thermostat Cover Kit.</b> With dial plates that expose or conceal the setpoint indicator and/or thermometer. Thumb wheel covers to conceal setpoint adjustment. Snap-out tab for Day/Night lever.			
	<ul style="list-style-type: none"> <li>• Desert Beige (standard)</li> </ul>	19X	1	<b>192-868</b>
	<ul style="list-style-type: none"> <li>• White</li> </ul> (See installation instructions #129-144)	19X	1	<b>192-868W</b>
	<b>Gym Guards.</b> <ul style="list-style-type: none"> <li>• Desert Beige</li> </ul> (See technical instructions #155-222P25)	19X DN or DNV	1	<b>182-624</b>
	<b>Lockable Wall Box.</b> (See installation instructions #129-450) (See technical instructions #155-222P25, #155-723)	Any Siemens Thermostat	1	<b>141-570</b>
 <p>Model 3 and greater</p>	<b>Thermostat Thermometer Kits.</b> <ul style="list-style-type: none"> <li>• Scale Range: 45 to 85°F</li> <li>• Use with Model 3 and greater</li> </ul>	19X	Pkg of 5	<b>192-786</b>
	<ul style="list-style-type: none"> <li>• Scale Range: 10 to 30°C</li> <li>• Use with Model 3 and greater</li> </ul>	19X	Pkg of 5	<b>192-785</b>
	<b>Setpoint Dials.</b>  Fahrenheit of D.A.      Right Side	19X	Pkg of 10	<b>192-779</b>





	Description	Product Group	Quantity	Part No.
<b>POWERSTAR™</b>				
	<p><b>Plug-in Adapters.</b> For quick thermostat removal. Fits on 5/32" (4 mm) OD polyethylene tubing. Use with compression rings, listed below.</p> <ul style="list-style-type: none"> <li>• Straight, blue</li> </ul>	19X	Pkg of 20	<b>192-485</b>
	<ul style="list-style-type: none"> <li>• Straight, white</li> </ul> <p>(See technical bulletin #155-244P25, #155-210P25)</p>	19X	Pkg of 20	<b>192-486</b>
	<p><b>Plug-in Adapters (Elbow).</b></p> <ul style="list-style-type: none"> <li>• Blue (provides quick thermostat removal)</li> </ul>	19X	Pkg of 20	<b>192-487</b>
	<ul style="list-style-type: none"> <li>• White (provides quick thermostat removal)</li> </ul> <p>(See technical bulletin #155-244P25)</p>	19X	Pkg of 20	<b>192-488</b>
	<p><b>Restrictor Plate Replacement Kit.</b> Contains replacement filters, restrictor plates, and gaskets.</p> <p>(See technical instructions #155-213) (See installation instructions #129-067, #129-085)</p>	19X	Material for 10 thermostats	<b>192-321</b>

## Accessories & Service Kits








	Description	Product Group	Quantity	Part No.
<b>POWERS™ Pneumatic Room Thermostats</b>				
	<p><b>Adjustment Key.</b></p> <ul style="list-style-type: none"> <li>• Opens Powers cover and changes setpoint</li> </ul> <p>(See technical instructions #155-072P25) (See installation instructions #129-427)</p>	832D 832DN	1	<b>856-055</b>
	<p><b>“D” Base Kit.</b></p> <p>For mounting “D” thermostat with exposed tubing. Black base with cutout on top.</p> <p>(See technical instructions #155-072P25) (See installation instructions #129-427)</p>	832D 832DN	1	<b>832-034</b>
	<p><b>“D” Thermostat Friction Knob.</b></p> <p>(See technical instructions #155-072P25)</p>	832	1	<b>833-033</b>
	<p><b>“D” Thermostat Replacement Unit.</b></p> <ul style="list-style-type: none"> <li>• Contains chassis only</li> </ul> <p>(See installation instructions #129-427) (See technical instructions #155-072P25)</p>	832D	1	<b>832-040</b>
	<p><b>Exhaust and Supply Valve Repair Kit.</b></p> <p>Contains parts for replacement of supply and exhaust valves in one thermostat.</p> <p>(See installation instructions #129-427) (See technical instructions #155-072P25)</p>	832	1	<b>832-164</b>

	Description	Product Group	Quantity	Part No.
<b>POWERS™ Pneumatic Room Thermostats</b>				
	<p><b>Pneumatic Thermostat Calibration Kit.</b> Contains thermometer, gauge squeeze bulb, and fittings for testing room and duct thermostats, pneumatic valve and damper actuators. Includes convenient carrying case. Includes tools contained in 832-178.</p> <p><i>(See technical bulletin #155-253P25)</i> <i>(See installation instructions #129-427)</i></p>	832 19X	1	832-177
	<p><b>Calibration Tools.</b> Special tools for calibrating 180, 182, 192, and 832 thermostats. Packed in polyethylene box that fits into carrying case of kit, 832-177.</p> <p><i>(See installation instructions #129-427)</i> <i>(See technical bulletin #155-253P25, #155-254P25)</i></p>	832 19X	1	832-178
	<p><b>Test Head Kit.</b> Used for testing 1-pipe transmitters, thermostat air lines for leakage. Packed in polyethylene box that fits into carrying case of kit, 832-177.</p> <p><i>(See technical bulletin #155-255P25)</i></p>	832 19X	1	832-179
	<p><b>Wall Box Rough-In.</b> For 2-pipe dual 1/8" (3 mm) OD copper with plaster plate. 8' (2 m) long belled to 3/16" (5 m) OD with thermostat chassis plug-in adapters for easy maintenance.</p> <p><i>(See technical bulletin #155-331, #155-210P25, #155-244P25)</i></p>	832 19X 186	1	192-478

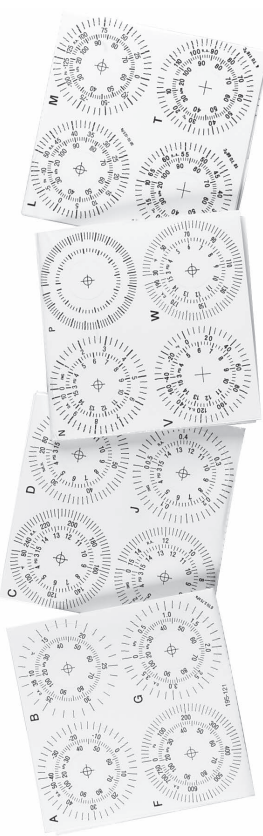
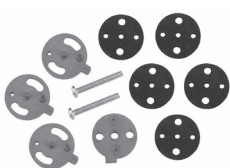


## Accessories & Service Kits

	Description	Product Group	Quantity	Part No.
<b>POWERS CONTROLS™ Unit Mounted, High/Low Detection Thermostats</b>				
	<b>Remote Bulb Duct Mounting Kit.</b> (See technical instructions #155-071P25) (See installation instructions #129-323)	188 134	1	<b>808-517</b>
	<b>Capillary Clip.</b> (See installation instructions #129-166) (See technical instructions #155-071P25)	134 357	Box of 100	<b>7421700060</b>
	<b>Electric Thermostat Guard.</b> For electric thermostats no larger than 5-1/4" H x 3/4" W x 2" D. (133 mm H x 19 mm W x 51 mm D). Made of cast aluminum. Allen Key included. (See technical instructions #155-017P25)	134	1	<b>134-117</b>
	<b>Lockable Thermostat Guard.</b> (See technical instruction # 155-723)	Any Siemens Thermostat	1	<b>141-570</b>








	Description	Product Group	Quantity	Part No.
<b>LIMITEM™ Rigid Duct and Remote Bulb Thermostats</b>				
	<b>Coil Clip.</b>	357	1	<b>356-115</b>
	<b>Capillary Clip.</b> <i>(See installation instructions #129-166)</i> <i>(See technical instructions #155-071P25)</i>	134 357	Box of 100	<b>7421700060</b>
	<b>Flange Kit.</b> <i>(See technical bulletin #155-209P25)</i> <i>(See installation instructions #129-166)</i>	356	1	<b>808-412</b>
	<b>Allen Wrench Kit.</b> (pack of 5)	356 357	5	<b>192-623</b>
	<b>Pressure Gauge.</b> • 0 to 30 psi compound gauge • Bottom connected 1/8" NPT male • Replacement gauge or use with #192-633 <i>(See technical instruction #155-025)</i>	19X 356	1	<b>142-0476</b>
	<b>Pressure Gauge.</b> • Dual scale 0 to 30 psi (0 to 200 kPa) • Compound gauge • Back connected 1/8" NPT male <i>(See technical instruction #155-025)</i>	356 19X 184 195	1	<b>142-0473</b>
	<b>Needle Probe Kit.</b> • 1-1/2" (38 mm) diameter gauge • 0 to 30 psi (0 to 200 kPa) • Calibration cover wrench <i>(See POWERS™ installation guide #144-133)</i>	19X 356	1	<b>192-633</b>
	<b>Needle Probe Only.</b> • No gauge or cover wrench	19X 356	Pkg of 5	<b>192-759</b>

# Accessories & Service Kits






	Description	Product Group	Quantity	Part No.																																																															
<b>POWERS™ Receiver-Controllers</b>																																																																			
	<b>Setpoint Dial Sheets.</b> • Direct Acting and Reverse Acting	195	4 Sheets	195-130																																																															
	<table border="1"> <thead> <tr> <th>English Units</th> <th>Metric Units</th> <th>Scale ID</th> </tr> </thead> <tbody> <tr> <td>-40 to +120°F</td> <td>-40 to +50°C</td> <td>A</td> </tr> <tr> <td>50 to 100°F</td> <td>10 to 38°C</td> <td>B</td> </tr> <tr> <td>80 to 240°F</td> <td>26 to 117°C</td> <td>C</td> </tr> <tr> <td>20 to 80% RH</td> <td>-18 to +38°C</td> <td>D</td> </tr> <tr> <td>0 to 100°F</td> <td>1 to 58°C</td> <td>E</td> </tr> <tr> <td>35 to 135°F</td> <td>0 to 750 Pa</td> <td>F</td> </tr> <tr> <td>0 to 3 W.G.</td> <td>0 to 3.75 kPa</td> <td>G</td> </tr> <tr> <td>0 to 15 W.G.</td> <td>20 to 80% RH</td> <td>H</td> </tr> <tr> <td>0 to 0.5 W.G.</td> <td>0 to 125 Pa</td> <td>J</td> </tr> <tr> <td>Blank 10 divisions</td> <td>Blank 9 divisions</td> <td>K (DA)</td> </tr> <tr> <td>Blank 16 divisions</td> <td>Blank 11 divisions</td> <td>K (RA)</td> </tr> <tr> <td>-0.05 to ±0.2" W.G.</td> <td>-12.5 to +50 Pa</td> <td>L</td> </tr> <tr> <td>-0.5 to +0.5" W.G.</td> <td>-125 to +125 Pa</td> <td>M</td> </tr> <tr> <td>0 to 10" W.G.</td> <td>0 to 2.5 kPa</td> <td>N</td> </tr> <tr> <td>Blank 20 divisions</td> <td>Blank 15 divisions</td> <td>P</td> </tr> <tr> <td>0 to 50 psi</td> <td>0 to 345 kPa</td> <td>R</td> </tr> <tr> <td>50 to 150°F</td> <td>10 to 66°C</td> <td>S</td> </tr> <tr> <td>40 to 240°F</td> <td>4 to 116°C</td> <td>T</td> </tr> <tr> <td>-40 to +160°F</td> <td>-40 to +71°C</td> <td>V</td> </tr> <tr> <td>30 to 190°F</td> <td>-1 to +88°C</td> <td>W</td> </tr> </tbody> </table>	English Units	Metric Units	Scale ID	-40 to +120°F	-40 to +50°C	A	50 to 100°F	10 to 38°C	B	80 to 240°F	26 to 117°C	C	20 to 80% RH	-18 to +38°C	D	0 to 100°F	1 to 58°C	E	35 to 135°F	0 to 750 Pa	F	0 to 3 W.G.	0 to 3.75 kPa	G	0 to 15 W.G.	20 to 80% RH	H	0 to 0.5 W.G.	0 to 125 Pa	J	Blank 10 divisions	Blank 9 divisions	K (DA)	Blank 16 divisions	Blank 11 divisions	K (RA)	-0.05 to ±0.2" W.G.	-12.5 to +50 Pa	L	-0.5 to +0.5" W.G.	-125 to +125 Pa	M	0 to 10" W.G.	0 to 2.5 kPa	N	Blank 20 divisions	Blank 15 divisions	P	0 to 50 psi	0 to 345 kPa	R	50 to 150°F	10 to 66°C	S	40 to 240°F	4 to 116°C	T	-40 to +160°F	-40 to +71°C	V	30 to 190°F	-1 to +88°C	W	<b>Ordering Notes:</b> • Add Scale ID as suffix to Part No.      • Indicate English or Metric units		
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<i>(See technical instructions #155-036P25) (See installation instructions #129-122)</i>																																																																			
	<b>Receiver-Controller Restriction Kit.</b> Includes three input restriction plates, one pilot relay restriction plate, gaskets, and two screws.  <i>(See technical instructions #155-213)</i> <i>(See installation instructions #129-084)</i>	195	1 Kit	195-066																																																															
	<b>Receiver-Controller Connector Kit.</b> Includes two plug-in connector assemblies, one 3-barb input connector assembly. Multiple-Input.  <i>(See installation instructions #129-084)</i> <i>(See technical instructions #155-036P25)</i>	195	1 Kit	195-067																																																															
	<b>Pressure Gauge.</b> • Dual scale 0 to 30 psi (0 to 200 kPa) • Compound gauge • Back connected 1/8" NPT male  <i>(See technical instruction #155-025)</i>	195 19X 356 184	1	142-0473																																																															

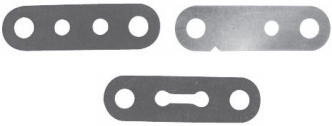
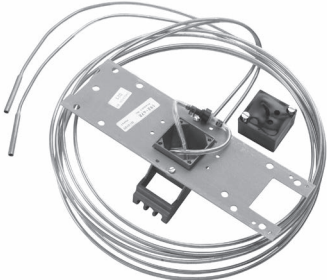
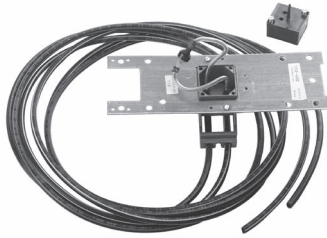

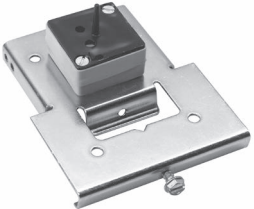

Pneumatics

F-98

	Description	Product Group	Quantity	Part No.
<b>POWERS RETROLINE™ Pneumatic Temperature Transmitters</b>				
	<b>Copper Well.</b> • 1/4" D x 4" L (6 mm D x 102 mm L) (See installation instructions #129-131) (See technical instructions #155-077P25)	184	1	<b>184-119</b>
	<b>20 scim (5 ml/s) In-line Restrictors.</b> (See technical instructions #155-213)	192 184	Pkg of 5	<b>184-116</b>
	<b>20 scim (5 ml/s) Restrictor Tee.</b> (See technical instructions #155-213)	192 184	Pkg of 5	<b>184-113</b>
	<b>Preassembled Plastic Tubing Loop.</b> 8" (203 mm) long, with anti-kink spring. Cut and attach directly to thermostat chassis. Attach compression rings to prevent air leakage. Mates to 1/4" (6 mm) OD polyethylene tubing. (See technical bulletin #155-244P25) (See installation instruction #129-131)	184 19X	Pkg of 10	<b>180-896</b>
	<b>Pressure Gauge.</b> • Dual scale 0 to 30 psi (0 to 200 kPa) • Compound gauge • Back connected 1/8" NPT male (See technical instruction #155-025)	184 19X 356 195	1	<b>142-0473</b>

## Accessories & Service Kits

	Description	Product Group	Quantity	Part No.
<b>Static Pressure Sensor Probe Accessories</b>				
	<b>Static Pressure Sensor Probe.</b> <i>(See technical instructions #155-052P25)</i>	141	1	<b>269-062</b>
	<b>Static Pressure Probe Kit.</b> <i>(See technical instructions #155-061P25)</i>	SW269	1	<b>189-142</b>
<b>Multiple Applications</b>				
	<b>Copper to Polyethylene Tubing Adapters.</b> 24" length. Adapts 1/4" (6 mm) OD polyethylene tubing to 1/4" (6 mm) OD copper tubing. Eliminates the need for compression fitting. <i>(See installation instructions #129-192)</i>	Multiple Applications	Package of 50	<b>141-426</b>
<b>Air Station Equipment</b>				
	<b>Air Filter Replacement Element.</b> • For use with 908-051 <i>(See installation instructions #129-288)</i> <i>(See technical instructions #155-312P25)</i>	Air Station Equipment	1	<b>908-052</b>
	<b>Cartridge Kit.</b> For use with 1 908-046 Filter. 500 scim (137 ml/sec) with 25 psi (127 kPa) supply for oil removal.	Air Station Equipment	1	<b>908-042</b>

	Description	Product Group	Quantity	Part No.
<b>Pneumatic Room and Duct Hygrostats</b>				
	<p><b>Hygrostat Restrictor Repair Kit.</b> Includes enough restrictor for plates and upper and lower Hygrostats gaskets. <i>(See installation instructions #129-060)</i> <i>(See technical instructions #155-213, #155-027P25)</i></p>	186	Material for 10 Hygrostats	<b>180-893</b>
	<p><b>Wall Box Rough-In.</b> For 2-pipe dual 1/8" (3 mm) OD copper with plaster plate. 8' (2 m) long, belled to 3/16" (5 m) OD. With thermostat chassis plug-in adapters for easy maintenance. <i>(See technical bulletins #155-244P25, #155-210P25)</i></p>	19X 832 186	1	<b>192-478</b>
	<p><b>Wall Box Rough-In.</b> For 1- or 2-pipe dual 1/4" (6 mm) OD polyethylene with plaster plate. 10' (2 m) long. With thermostat chassis plug-in adapters for easy maintenance. <i>(See technical bulletins # 155-244P25, #155-210P25)</i></p>	19X 186	1	<b>192-480</b>
	<p><b>Mounting Clips, Spacer and Template for Finished Drywall.</b> <i>(See technical bulletin #155-244P25)</i> <i>(See installation instructions #129-056, #129-131)</i></p>	19X	Package of 10	<b>182-685</b>
	<p><b>Metal/Wood Stud Bracket.</b> • Drywall rough-in <i>(See technical bulletins #155-244P25, #155-210P25)</i> <i>(See installation instruction #129-072)</i></p>	19X 186	Package of 5	<b>182-683</b>
	<p><b>Dual 1/8" (3 mm) OD Copper Tubing with Plug-in Adapters.</b> • For 1- or 2-pipe. Split for 3-pipe <i>(See technical bulletin #155-210P25, #155-244P25)</i></p>	186	1	<b>192-479</b>



# Rooftop unit performance made easy with the Climatrix RTU Solution

The Climatrix RTU solution simplifies maintenance and management of rooftop units to make life easy. It's a pre-engineered package specially designed to optimize RTU performance out of the box. No special controller programming is required — it's done for you. The sensors you need are included in one kit that works with any manufacturer's rooftop unit with up to three cooling compressors and two stages of heating.

Visit [usa.siemens.com/rtu](http://usa.siemens.com/rtu) to learn more.



F-102

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## Climatix Rooftop Unit Optimization Solution

No matter the age of the equipment, optimizing RTU performance is essential to prevent smaller issues from becoming larger problems. Rooftop units may be out of sight, but shouldn't be out of mind.









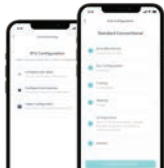




Equipment performance declines over time without proper attention leading to poor indoor air quality, poor temperature management, nuisance noise, escalating energy bills and unexpected system downtime with more costly repairs.

The Climatix RTU solution simplifies maintenance and management of rooftop units to make life easy. It's a pre-engineered package specially designed to optimize RTU performance out of the box. No special controller programming is required – it's done for you. The sensors you need are included in one kit that works with any manufacturer's rooftop unit with up to three cooling compressors and two stages of heating.

### Easy to learn. Easy to install. Easy to program.

The Climatix RTU solution is designed to be used with minimal interface. The kit you order includes the Climatix RT controller paired with room unit sensors for demand-controlled ventilation plus sensors for temperature, humidity and differential pressure. This kit addresses the core RTU performance optimization, and you have the option to include the Climatix VFD for enhanced efficiency along with OpenAir™ damper actuators and the OpenAir intelligent VAV actuator for reliable, long-lasting fresh air management.

Core Performance Kit	Enhanced Efficiency Options	Easy Installation and Remote Management
 <p>Airflow Monitoring Sensor</p>  <p>Room Unit Sensors</p>  <p>Outdoor Temperature and Humidity Sensor</p>  <p>Mixed Air and Discharge Air Temperature Sensors</p> 	<p>Climatix VFD</p>  <p>OpenAir Intelligent VAV Actuator</p>  <p>OpenAir™ Damper Actuators</p> 	<p>Climatix Mobile App</p>  <p>WiFi Commissioning Stick</p>  <p>Climatix IC</p> 



## A true controller-driven solution for optimized RTU performance with Climatix RT



### Pre-defined applications

Designed exclusively for rooftop units, Climatix RT includes fault detection diagnostics and pre-configured alarms that monitor points such as filter status, damper alarm cycles, excessive or insufficient outside air, freeze alarms, compressor alarms, heater alarms, sensor alarms and more

### Operates with Siemens Room Unit Sensors

Climatix RT controller is specially designed to deliver peak RTU performance used in conjunction with Siemens room unit sensors for demand-controlled ventilation and CO<sub>2</sub> monitoring.

### Title 24 energy compliance

No additional controllers are required to supply outdoor air to reduce or eliminate mechanical cooling during ideal conditions. This helps reduce energy consumption and increases the lifespan of the RTU compressors and condensers.

### Onboard communication for scalability

Operates with Modbus TCP, Modbus RTU, BACnet IP and BACnet MS/TP.

### Commands Climatix VFD

Climatix RT takes VFD configuration to a new level of simplicity, reducing the parameters that need to be programmed...all easily managed through the Climatix mobile app.

### Multi-Zone control made easy

Controlling air flow in multi-zone VAV environments has never been as easy with the OpenAir Intelligent VAV actuator. This solution paired with the Climatix RTU merges air flow control functionalities with the monitoring of other parameters such as temperature, indoor air quality, humidity and fine dust particles.

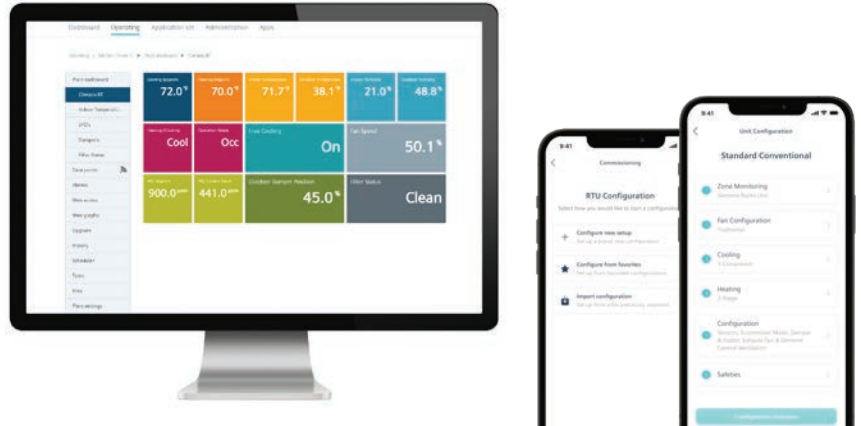
### Pre-engineered with pre-defined applications optimized for RTUs

- Mobile app with preassigned I/O setup
- Pre-configured alarms
- Remote monitoring with customized dashboard
- Application-driven VFD with simple configuration
- Multi-use sensors for fault detection and diagnostics
- Onboard communication for scalability
- Title 24 compliant economization
- Integrated actuators with feedback for free cooling
- Enhanced indoor air quality applications
- Operates with Modbus TCP, Modbus RTU, BACnet IP and BACnet MS/TP
- Multi zone control with the Intelligent VAV Actuator distributes air flow from the RTU and controls temperature, humidity and CO<sub>2</sub> into each area.
- Dehumidification control ensures comfort and climate control for all types of environments.
- Ionizer activation enables the control of cleaning the air of contaminants before the air goes out into the space.

# Mobile App and Remote Monitoring

## Configuration and monitoring made easy

The Climatix mobile app securely connects point to point with the Climatix RT controller and allows even junior techs to easily commission an entire system using the mobile app's guided wizard.



## Always keep rooftop unit performance in sight

Mitigate downtime with real-time access from anywhere.

Remotely monitor rooftop unit operating parameters to mitigate downtime. As a cloud-based solution, you can securely monitor multiple locations and equipment anytime from anywhere.

Climatix IC works with the Climatix RT controller and state-of-the-art Climatix mobile app for RTU configuration, commissioning and operations.

## Climatix IC Remote Management

- Secure connection built directly into the controller. No need for additional hardware or IT setup
- Multi-Site operation gives the ability to see all your sites
- Real time analysis and troubleshooting
- Long term storage of data
- Alarm and Fault Detection built in

## The Mobile App

The pre-configured sequence simplifies the setup procedure and allows for saving favorite configurations for even faster implementation on additional units.

Download OSX App



Download Android App



## Core Performance Optimization



QMX3.P70 or P74 DCV

See Sect D



RH & Temp Sensor

See Sect E



Climatix RT Controller

See pg G-3



Temperature Sensors (2)

See Sect E



Air DP Filter

See Sect E

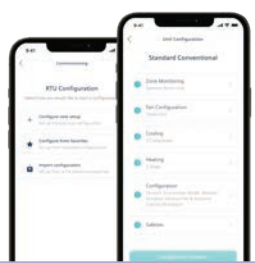
### RTU Kit

## Simple Installation



WiFi Commissioning Stick

See Sect B



Climatix Mobile App

See pg G-4

### Mobile App

## Remote Management



See pg G-4

### Cloud Software

## Multi-Zone Control



Climatix VFD (3-30HP)

See Sect C

### Fan Efficiency



OpenAir Intelligent VAV Actuator

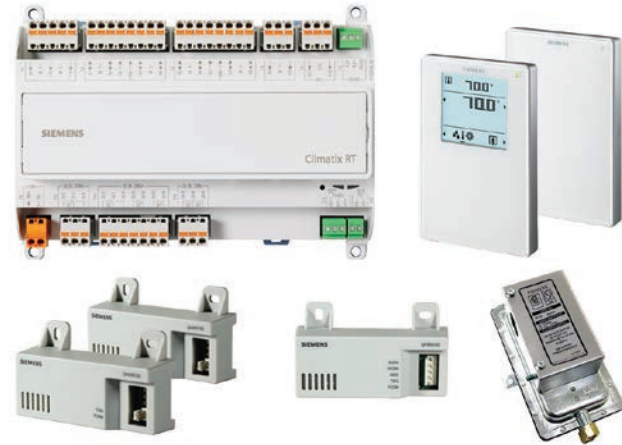


OpenAir™ Damper Actuators

See Sect B

### Economization

## Climatix RTU Solution Kits



RTU P-70

### Description

Pre-engineered package with a configurable application that is designed to optimize rooftop unit performance.

### Application

The pre-defined application improves performance and Indoor Air Quality while saving Energy and increasing efficiency.

Fresh Air purge enables maximum fresh air intake into your space without re-circulation of mixed or return air.

### Features

- Pre-defined application optimized for RTU's
- Improve IAQ functionality with DCV and Purge
- Pre-configured alarms and FDD
- Mobile app with preassigned terminations for simple and accurate setup
- Title 24 compliant economization with automatic climate zone setup
- Application drive VFD with simple Mobile App setup
- Remote monitoring with customized dashboard

## RTU Solution Kits

Product Bundle	Description	Part Number
Climatix IC	Climatix IC Subscription for RTU	<b>P55693-L121-A100</b>
WiFi stick	Wireless dongle for Climatix Mobile Application (POL903.00/100)	<b>S55803-Y130-A100</b>
Climatix RTU Bundle with QMX3.P74	Climatix RTU controller with predefined application. Configurable I/O and Mobile commissioning. DP Switch (1), Temperature Sensors (2), RH & Temp Sensor (1) Room Unit AQ, RH & Temp (w/ Local HMI)	<b>POL648.10/RTU-P74</b>
Climatix RTU Bundle with QMX3.P70	Climatix RTU controller with predefined application. Configurable I/O and Mobile commissioning. DP Switch (1), Temperature Sensors (2), RH & Temp Sensor (1) Room Sensor HMI AQ, RH & Temp (w/o Local HMI)	<b>POL648.10/RTU-P70</b>
Climatix VFD	Climatix VFD, 460VAC, 3-ph, 3HP	<b>RT003X-43N*</b>

\* Sample Part Number

# Climatix RTU Optimization Solution At-A-Glance

## A true controller-driven solution with simple integration

[usa.siemens.com/rtu](http://usa.siemens.com/rtu)

### RTU Capabilities

Outside temperature and humidity sensor

Built-in Title 24 economizer functionality

Easily integrate outdoor damper and economizer actuators

Application-driven VFD for fan speed control

3 compressors for cooling default setting

Configurable application with Climatix mobile app

Mixed and discharge air temperature sensors

2 heat stages default setting

### Additional Built-in Functionality

Ability to monitor filter status

BACnet IP and MS/TP Modbus RTU and TCP

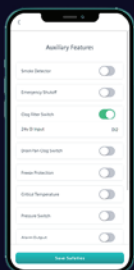
Built-in alarms for fault detection and diagnostics

Remote monitoring available with customizable dashboard

Demand Control Ventilation (DCV)

Air Purge

### Expanded Functionality



- |                     |                    |                            |
|---------------------|--------------------|----------------------------|
| Stages of heating   | Pressure switch    | Smoke detector             |
| Stages of cooling   | Alarm output       | Emergency shutoff          |
| Return air temp     | Ionizer/UV control | Drain plug clog switch     |
| Return air humidity | Humidification     | Freeze protection          |
| Exhaust fan         | De-humidification  | Critical temperature input |



# Implement effective free cooling and **increase energy savings**

The flexible, easy to commission Climatix ECO Title 24 compliant controller combined with reliable sensors, damper actuators and thermostats provide a cost-effective bundle for both retrofit and new rooftop units.

The economizer controller is easily configured with the Climatix mobile app or built-in HMI and determines when outdoor air should be allowed to enter the building and controls the damper actuator accordingly. Indoor air quality can be enhanced via demand-controlled ventilation (DCV) by monitoring CO<sub>2</sub> levels and directing outside air in when CO<sub>2</sub> levels become too high.

Visit [usa.siemens.com/climatix-eco](http://usa.siemens.com/climatix-eco) to learn more.

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## Climatix ECO Title 24 Economizer Controller



### Implement effective free cooling and increase energy savings.

Siemens Climatix ECO allows a cooling system to supply outdoor air to reduce or eliminate mechanical cooling during ideal conditions. A properly functioning economizer reduces energy consumption and increases the lifespan of expensive rooftop unit compressors and condensers.

Easily configured with the Climatix mobile app, the easy to commission Climatix ECO Title 24 compliant controller combined with reliable sensors, damper actuators and thermostats provide a cost-effective bundle for both retrofit and new rooftop units.

# Ordering Information



## Product Ordering Information

Product	Description	Specification	Part Number
Climatix ECO	POL224.00 Title 24 Economizer Controller	Complies with 2016 Title 24 part 6 Economizer Fault Detection and Diagnostics (FDD)	<b>S55392-C202-A100</b>
	POL224.05 Title 24 Econ Cont, no housing		<b>S55392-C203-A100</b>
WiFi Commissioning Stick	WLAN interface for controller to smartphone or tablet	USB B interface	<b>S55803-Y130-A100</b>
Damper Actuators	Spring Return, 2 to 10 Vdc Signal, Plenum-rated	20 lb.-in.	<b>GQD151.1P</b>
	Spring Return, 0(2) to 10 Vdc Signal, Plenum-rated	35 lb.-in.	<b>GPC161.1P</b>
	Spring Return, 2 to 10 Vdc Signal, Plenum-rated	62 lb.-in.	<b>GMA151.1P</b>
	Spring Return, 2 to 10 Vdc Signal, Plenum-rated	160 lb.-in.	<b>GCA151.1P</b>
CO2 Sensors	QPA2000 Room CO2 Sensor	0-10 Vdc	<b>QPA2000</b>
	QPA2002D Room CO2 Sensor with display	0-10 Vdc	<b>QPA2002D</b>
	QPM2102 Duct CO2 Sensor	0-10 Vdc	<b>QPM2102</b>
	QPM2102D Duct CO2 Sensor with display	0-10 Vdc	<b>QPM2102D</b>
Combo Temp + Humidity Sensor	QFR9530 Duct Surface Mount RH&T Sensor	0-10 Vdc (RH) and 10k Ohm NTC II (Temp)	<b>S55720-S501</b>
Temperature Sensor	QAR9530 Duct Surface Mount Temp Sensor	10k Ohm, NTC II	<b>S55720-S503</b>
Humidity Sensor	QFR9500 Duct Surface Mount RH Sensor	0-10V Vdc	<b>S55720-S502</b>
Thermostats	Programmable Thermostat	24V	<b>RDY2000</b>
	Programmable Thermostat with BACnet	24V	<b>RDY2000BN</b>
	WiFi Thermostat – RDS120	24V	<b>S55772-T101</b>
	WiFi Thermostat with BACnet – RDS120.B	24V	<b>S55772-T106</b>
Climatix VFD	Climatix VFD, Avail. from 100-575V, up to 30HP	Sample Part: 230VAC, 1HP, 3-PH	<b>RT-001X-23N</b>
Wiring Harnesses	Basic wiring harness kit: AQM.KIT4112	Includes 4 AQM2H, 1 AQM3H, 1 AQM4H and 2 AQM5H	<b>S55720-S562</b>
	Wiring harness for 2 pin terminal	2 pin connector with 8 inch 18AWG wire leads and one wire nut per conductor	<b>AQM2H</b>
	Wiring harness for 3 pin terminal	3 pin connector with 8 inch 18AWG wire leads and one wire nut per conductor	<b>AQM3H</b>
	Wiring harness for 4 pin terminal	4 pin connector with 8 inch 18AWG wire leads and one wire nut per conductor	<b>AQM4H</b>
	Wiring harness for 5 pin terminal	5 pin connector with 8 inch 18AWG wire leads and one wire nut per conductor	<b>AQM5</b>



## Climatix ECO Kits



### Description

Title 24 compliant economizer controller that allows you to take advantage of free cooling and save overall energy costs. It will maintain functionality of proper economizer dampers and ensure components are operating at peak performance with a cost-effective bundle for both retrofit and new rooftop units.

### Application

Climatix ECO works in combination with a range of peripheral devices such as sensors, damper actuators, thermostat, fans and compressors to cool a building using unconditioned outside air and improve inside air quality. By switching to outside fresh air and reducing mechanical cooling, it saves energy and extends the lifespan of peripheral devices.

### Features

- Open protocols for networking (BACnet MS/TP, Modbus RTU)
- 4 types of Economizer logic
- Additional I/O for expanded capability – additional cooling stages, add an exhaust fan, alarm output or ERV
- Mobile app with preassigned terminations for simple and accurate setup
- GPS commissioning for automatic setup of shutoff setpoints according to the ASHRAE Climate Zone
- Factory API for integration into test framework

### Dry Bulb Kits

Control Type	Siemens Part Numbers
Dry Bulb with 20 lb.-in. Actuator	S55392-C202-A100 ECO Controller QAR9530 OAT Sensor QAR9530 MAT Sensor GQD151.1P 20lb.-in. Actuator Wiring Harness: S55720-S562
Dry Bulb with 35 lb.-in. Actuator	S55392-C202-A100 ECO Controller QAR9530 OAT Sensor QAR9530 MAT Sensor GPC161.1P 35 lb.-in. Actuator Wiring Harness: S55720-S562
Dry Bulb with 62 lb.-in. Actuator	S55392-C202-A100 ECO Controller QAR9530 OAT Sensor QAR9530 MAT Sensor GMA151.1P 62 lb.-in. Actuator Wiring Harness: S55720-S562

Control Type	Siemens Part Numbers
Dry Bulb with 160 lb.-in. Actuator	S55392-C202-A100 ECO Controller QAR9530 OAT Sensor QAR9530 MAT Sensor GCA151.1P 160 lb.-in. Actuator Wiring Harness: S55720-S562
Dry Bulb with 35 lb.-in. Actuator + CO2 Wall Sensor without display	S55392-C202-A100 ECO Controller QAR9530 OAT Sensor QAR9530 MAT Sensor GPC161.1P 35 lb.-in. Actuator QPA2000 Wiring Harness: S55720-S562 + AQM3H

Enthalpy and Dual Enthalpy kits are on the next page

# Ordering Information

## Enthalpy Kits

Control Type	Siemens Part Numbers
Enthalpy with 20 lb.-in. Actuator	S55392-C202-A100 ECO Controller QFR9530 Outdoor RH+T Sensor QAR9530 MAT Sensor GQD151.1P 20lb.-in. Actuator Wiring Harness: S55720-S562
Enthalpy with 20 lb.-in. Actuator +CO2 Wall Sensor	S55392-C202-A100 ECO Controller QFR9530 Outdoor RH+T Sensor QAR9530 MAT Sensor GQD151.1P 20 b.-in. Actuator QPA2000 Wiring Harness: S55720-S562 + AQM3H
Enthalpy with 20 lb.-in. Actuator +CO2 duct Sensor with Display	S55392-C202-A100 ECO Controller QFR9530 Outdoor RH+T Sensor QAR9530 MAT Sensor GQD151.1P 20lb.-in. Actuator QPM2102D Wiring Harness: S55720-S562
Enthalpy with 35 lb.-in. Actuator	S55392-C202-A100 ECO Controller QFR9530 Outdoor RH+T Sensor QAR9530 MAT Sensor GPC161.1P 35 lb.-in. Actuator Wiring Harness: S55720-S562

Control Type	Siemens Part Numbers
Enthalpy with 62 lb.-in. Actuator	S55392-C202-A100 ECO Controller QFR9530 Outdoor RH+T Sensor QAR9530 MAT Sensor GMA151.1P 62 lb.-in. Actuator Wiring Harness: S55720-S562
Enthalpy with 160 lb.-in. Actuator	S55392-C202-A100 ECO Controller QFR9530 Outdoor RH+T Sensor QAR9530 MAT Sensor GCA151.1P 160 lb.-in. Actuator Wiring Harness: S55720-S562
Enthalpy with 35 lb.-in. Actuator +CO2 Wall Sensor	S55392-C202-A100 ECO Controller QFR9530 Outdoor RH+T Sensor QAR9530 MAT Sensor GPC161.1P 35 lb.-in. Actuator QPA2000 Wiring Harness: S55720-S562 + AQM3H
Enthalpy with 35 lb.-in. Actuator +CO2 duct Sensor with Display	S55392-C202-A100 ECO Controller QFR9530 Outdoor RH+T Sensor QAR9530 MAT Sensor GPC161.1P 35 lb.-in. Actuator QPM2102D Wiring Harness: S55720-S562 + AQM3H

## Dual Enthalpy Kits

Control Type	Siemens Part Numbers
Dual Enthalpy with 20 lb.-in. Actuator	S55392-C202-A100 ECO Controller QFR9530 Outdoor RH+T Sensor QAR9530 MAT Sensor QFR9530 Return RH+T Sensor GQD151.1P 20 lb.-in. Actuator Wiring Harness: S55720-S562 + AQM5H X 2
Dual Enthalpy with .35 lb.-in. Actuator	S55392-C202-A100 ECO Controller QFR9530 Outdoor RH+T Sensor QAR9530 MAT Sensor QFR9530 Return RH+T Sensor GPC161.1P 35 lb.-in. Actuator Wiring Harness: S55720-S562 + AQM5H X 2

Control Type	Siemens Part Numbers
Dual Enthalpy with 62 lb.-in. Actuator	S55392-C202-A100 ECO Controller QFR9530 Outdoor RH+T Sensor QAR9530 MAT Sensor QFR9530 Return RH+T Sensor GMA151.1P 62 lb.-in. Actuator Wiring Harness: S55720-S562 + AQM5H X 2
Dual Enthalpy with 120 lb.-in. Actuator	S55392-C202-A100 ECO Controller QFR9530 Outdoor RH+T Sensor QAR9530 MAT Sensor QFR9530 Return RH+T Sensor GCA151.1P 160 lb.-in. Actuator Wiring Harness: S55720-S562 + AQM5H X 2

**2x**  
Bull Valley grew their membership by 100% in 2020, due in part to the peace of mind afforded by the Climatix RTU fresh air purge functionality.

**Better efficiency**  
Climatix RTU solution monitors performance to drive energy efficiency, enhance system lifespan, and improve uptime.

**Automatic indoor air quality**  
Climatix RTU monitors carbon dioxide and increases fresh air supply when CO2 levels become too high (demand-controlled ventilation).

**50% Labor savings**  
"It's plug and play. You don't need to be a seasoned technician with tons of controls experience. You just work through the steps on the app, which is fairly intuitive. They're quick too. **We can do each one in about two to three hours. It's fair to say it's at least a 50% reduction in labor,**" says contractor, Mark Stranges.

**Remote access for better control**  
The Climatix RT controller and mobile app create a combined, cloud-based solution that enables remote monitoring, which means fewer truck rolls for service and maintenance.

**Fresh air purge**  
Created in response to the COVID-19 pandemic this feature enables maximum fresh air intake into buildings without using mixed or return air.

# Bull Valley achieves **energy efficiency and comfort** for their guests



With dozens of events and thousands of people visiting the clubhouse every year, Bull Valley needed to address some deficiencies within the HVAC system and the rooftop units in particular.

Bull Valley knew the Climatix RTU Solution was a no-brainer and jumped on the opportunity knowing that it would save them money on their energy bills and make for a safer indoor environment for members.

Visit [usa.siemens.com/bullvalley](https://usa.siemens.com/bullvalley) to learn more.

We have not seen anything else on the market that is as easy to use as this product. It is something we can train our people on at a national level, making it a very good fit for our business model."

— **Mark Stranges**

Contractor / Owner Rabine Mechanical

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