

## Angle/Flared/Sequence/Changeover Service Valves



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Valves

In this section, you will find flared, angled, sequence and changeover valves for use in service applications.

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Valves

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## Two-way Valves

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

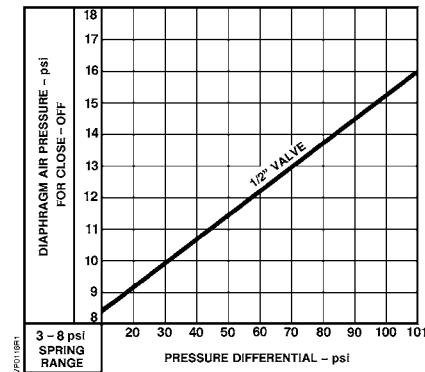
### Applications

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.

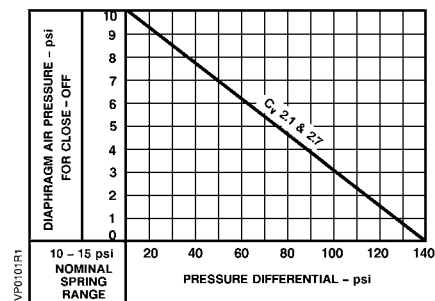
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Valves

### Nominal Close-off Ratings



Normally Open.



Normally Closed.

## 656 Powermite Two-way 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)

<b>Effective Diaphragm Area</b> .....	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> .....	20 psi (138 kPa)

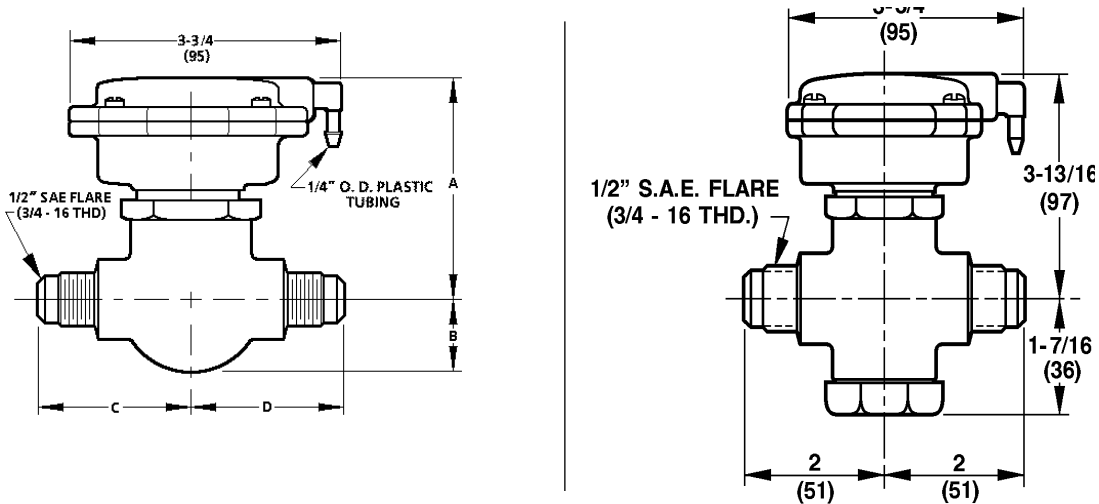
## 656 Powermite Two-way Product Ordering

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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## Dimensions and Weights

Valves



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

*Flared Type*



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 and NC 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

## 656 Powermite Three-way 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)		

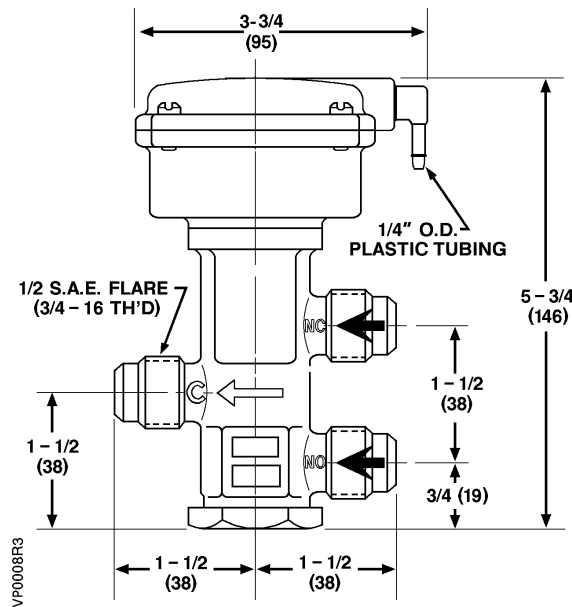
## 656 Powermite Three-way Product Ordering

Valve Size	Cv	Close-offs	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>

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Valves

## Dimensions and Weights



Dimensions shown in inches (mm).

Accessories & Service Kits

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## Two-way Angle Union Valves

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

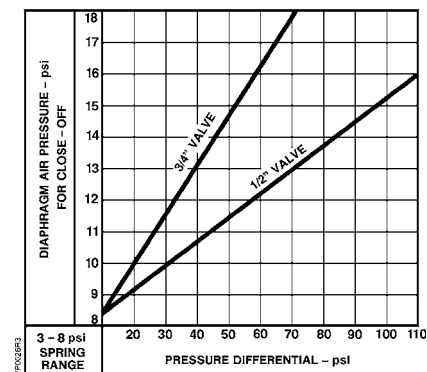
### Applications

The Powermite 656 Series Angle Union Valves are recommended for control of hot or chilled water 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







## Two-way Valves

Flared type

Normally Open or Normally Closed



658 Powertop  
Normally Open Valve.



658 Powertop  
Normally Closed Valve.

### Description

Designed to control the flow of steam, water and ethylene glycol solutions, the 658 Powertop Two-way Valve is available with normally open or normally closed action.

### Features

- 2 body styles to suit installation needs
- Stainless steel stem for smooth operation and durability
- Large diaphragm area for control accuracy and tight close-off
- Equal percentage plugs and long strokes for controllability
- Removable actuator for ease of servicing
- Replaceable disc

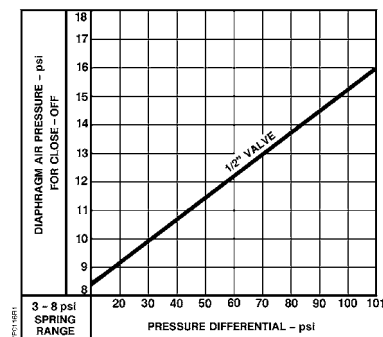
### Applications

The 658 Powertop Valves are used for the control of heating/cooling coils in terminal units, such as unit ventilators, reheat coils, fan coil units, induction units and radiant panels.

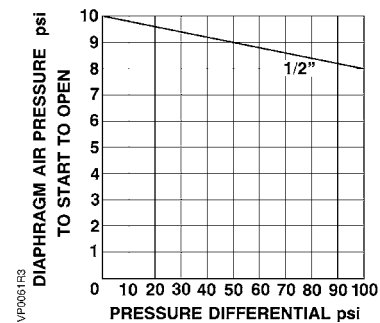
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Valves

### Nominal Close-off Ratings



Normally Open.



10 to 15 psi Spring Range/  
Normally Closed.

# 658 Powertop Two-way Specifications

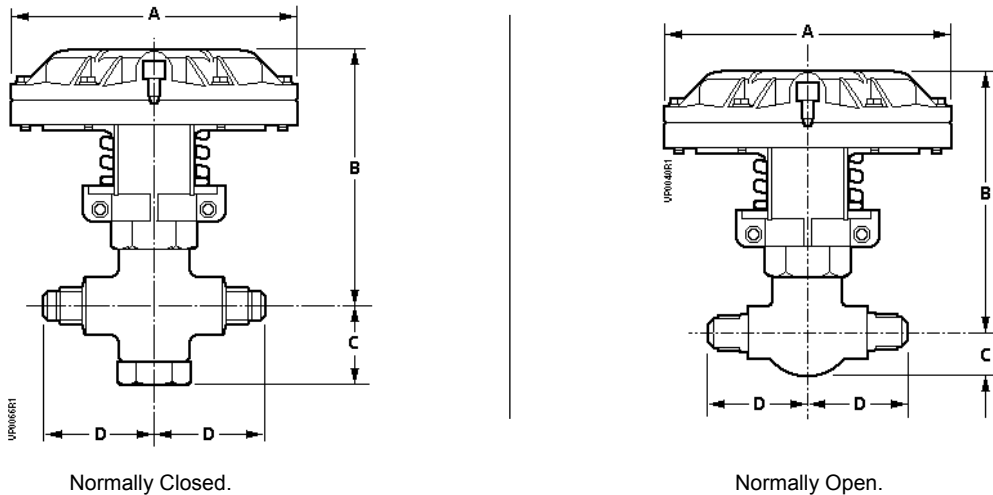
**Valve Size** ..... 1/2" (15 mm)  
**Valve Body Style** ..... Flared end  
**Flow Characteristic** ..... Equal Percentage  
**Valve Action** ..... Normally Open/Normally Closed  
**Stem Travel** ..... 1/2" (15 mm)  
**Valve Body Rating** ..... ANSI Class 250  
**Materials**  
 Valve Body ..... Bronze  
 Disc & Packing ..... EPT Rubber  
**Effective Diaphragm Area** ..... 11 in.<sup>2</sup> (71 cm<sup>2</sup>)  
**Nominal Spring Range**  
 NO ..... 2 to 6 psi (14 to 41 kPa)  
 NO/NC ..... 10 to 14 psi (70 to 100 kPa)

**Max. Diaphragm Pressure** ..... 30 psi (210 kPa)  
**Controlled Medium** ..... Steam, water, glycol solution  
**Max. Medium Temperature** ..... 250°F (121°C)  
**Maximum Inlet Pressure**  
 Water ..... Refer to Changeover/Flared/Sequence Reference section.  
 Steam ..... 15 psi (102 kPa)  
**Maximum Differential Pressure for Modulating Service**  
 Water ..... 20 psi (138 kPa)  
 Steam ..... 15 psi (103 kPa)  
**Ambient Operating Temperature** ..... 35 to 140°F (2 to 60°C)

# 658 Powertop Two-way Product Ordering

Valve Size	Cv	Close-offs	Nominal Spring Range	Part No.
<b>Normally Open</b>				
1/2" (15 mm)	1.0	100 psi (689 kPa)	2 to 6 psi (14 to 41 kPa)	<b>658-0004</b>
1/2" (15 mm)	2.5	100 psi (689 kPa)	2 to 6 psi (14 to 41 kPa)	<b>658-0005</b>
1/2" (15 mm)	1.0	40 psi (275 kPa)	10 to 14 psi (69 to 97 kPa)	<b>658-0062</b>
1/2" (15 mm)	2.5	40 psi (275 kPa)	10 to 14 psi (69 to 97 kPa)	<b>658-0063</b>
<b>Normally Closed</b>				
1/2" (15 mm)	1.0	100 psi (689 kPa)	10 to 14 psi (69 to 97 kPa)	<b>658-0085</b>
1/2" (15 mm)	2.5	100 psi (689 kPa)	10 to 14 psi (69 to 97 kPa)	<b>658-0043</b>

# Dimensions and Weights



Valve Size	Valve Action	Dimensions				Weight
		A	B	C	D	
1/2" (15 mm)	Normally Open	5-1/2" (140 mm)	5-1/4" (134 mm)	1" (25 mm)	2" (51 mm)	3.0 lb. (1.4 kg)
1/2" (15 mm)	Normally Closed	5-1/2" (140 mm)	5-1/4" (134 mm)	1-5/16" (33 mm)	2" (51 mm)	4.0 lb. (1.8 kg)

## Sequence and Changeover Valves



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
- Durable actuator made to eliminate electrolytic action
- Replaceable disc assemblies
- Matched sequencing or 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	HOT WATER RETURN			CHILLED WATER RETURN			
CHANGEOVER VALVE	OPEN	HOT WATER SUPPLY			CHILLED WATER SUPPLY			
	CLOSED	HOT WATER RETURN			CHILLED WATER RETURN			

## 658 Powertop Specifications

Valve Size .....	1/2" (15 mm)
Valve Body Style .....	Flared end
<b>Flow Characteristics</b>	
Sequence .....	Equal percentage
Changeover .....	Quick-opening
<b>Valve Type</b>	
Sequence .....	2 inlets/1 outlet
Changeover .....	1 inlet/2 outlets
<b>Valve Action</b> .....	
	NO/Hot to Common
	NC/Cold to Common
Stem Travel .....	13/32" (10 mm)
Valve Body Rating .....	ANSI Class 250

<b>Materials</b>	
Valve Body .....	Bronze
Disc .....	Styrene Butadiene
Stem .....	Stainless Steel
Packing .....	Dual EPT Rubber
<b>Diaphragm Area</b> .....	11 in. <sup>2</sup> (71 cm <sup>2</sup> )
<b>Max. Diaphragm Pressure</b> .....	30 psi (210 kPa)
<b>Controlled Medium</b> .....	Water, glycol solution
<b>Max. Medium Temperature</b> .....	250°F (121°C)
<b>Maximum Inlet Pressure</b> .....	250 psi (1720 kPa)
<b>Max. Differential Pressure Between Hot and Cold Ports</b>	
Sequence .....	50 psi (350 kPa)
Changeover .....	10 psi (69 kPa)
<b>Max. Differential Pressure for Modulating Service</b>	
Sequence Valve .....	25 psi (170 kPa)
<b>Ambient Operating Temperature</b> .....	35 to 140°F (2 to 60°C)

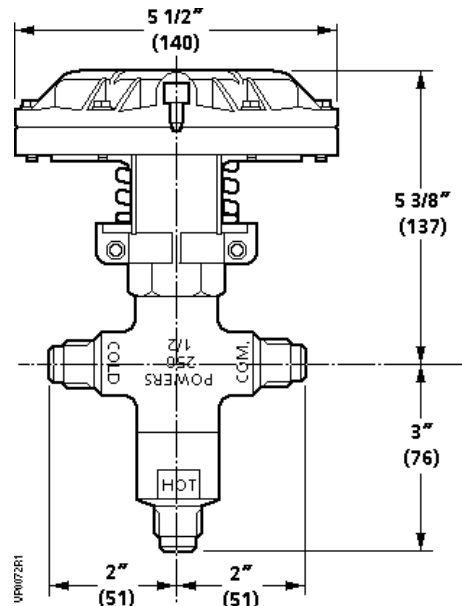
## 658 Powertop Product Ordering

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).

## Two-way Angle Union Valves

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

### Nominal Close-off Ratings

