

SELECTION GUIDE

Terminal Unit Zone Valve

1 Select your valve body

- Female Thread
- Male Thread
- Solder
- Single Union
- Double Union

2 Select your cartridge type

- Choice of CV
- Hot and Chilled Water
- 50% Glycol
- Low Pressure Steam
- Pressure Balanced

3 Select your actuator

- Electric
- Pneumatic
- Thermoelectric
- Thermostatic
- Wireless
- Spring Return
- FLP Non Spring Return

Easily Selectable
Easily Serviceable

Interchangeability
as easy as 1-2-3



Once you have installed a Spartan valve body assembly you can easily change the cartridge or actuator while the valve body remains "in-line".

This makes servicing so much quicker and easier - it is the ultimate green solution for piping installations.

This selection guide will help you select the right assembly for your needs.

As easy as 1-2-3!



Broad selection of inlet and outlet configurations and choice of sizes

1 Select the valve body to best suit to your piping applications and choose from many connection types

Spartan Peripheral Devices 2 way V200 series and 3 way V300 series globe control valve bodies are available in a wide range of styles and connection types. These valve bodies are common to the complete line of Spartan Terminal Unit actuators (wireless, electric, electronic, pneumatic and thermostatic) and are easily

interchangeable with a thumb nut. The commercial application globe valve bodies utilize low zinc anti dezincification bronze.

All valve bodies are globe type rated ANSI 250 (PN 25).



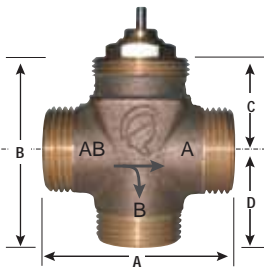
General Specifications for all Valve Bodies

Body Material	Low zinc bronze, alloy C84400
Pressure Rating	ANSI 250 (400 PSI to 150°F (66°C), 250 PSI to 250° F (120°C))
Max. Test Pressure	1200 PSI (81 bar)
Max. Differential P	50 PSI (3.5 bar) can be exceeded but with possible water noise

Valve Stem	"Mirror – maker" burnished stainless steel stems
Rangeability	See Internal Cartridge Specification table, on page 4
Stem Travel	5/32" (4mm)
Stem Position	UP = valve open, DOWN = valve closed

V300 Series 3 way Control Valve Bodies

V320 – 3 Way Diverting Valve Body. Unions on all 3 ports



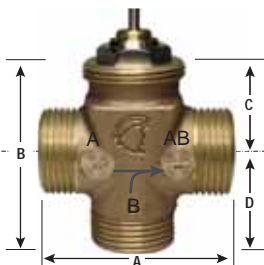
A	B	C	D
2.24 (56,90)	2.24 (56,90)	1.09 (27,69)	1.09 (27,69)

Weight: 1/2" and 3/4" - 8.5oz (240g)

Select to include:

- V320-12N for 1/2" threaded unions
- V320-12S for 1/2" solder unions (for 5/8" (16mm) OD copper pipe)
- V320-34N for 3/4" threaded unions
- V320-34S for 3/4" solder unions (for 7/8" (22mm) OD copper pipe)
- Select CV from cartridge type ED
- Stem UP flow AB to A (default position),
- Stem DOWN flow AB to B

V321 – 3 Way Mixing Valve Body. Unions on all 3 ports



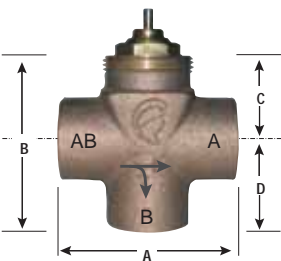
A	B	C	D
2.24 (56,90)	2.24 (56,90)	1.09 (27,69)	1.09 (27,69)

Weight: 1/2" and 3/4" - 8.5oz (240g)

Select to include:

- V321-12N for 1/2" threaded unions
- V321-12S for 1/2" solder unions (for 5/8" (16mm) OD copper pipe)
- V321-34N for 3/4" threaded unions
- V321-34S for 3/4" solder unions (for 7/8" (22mm) OD copper pipe)
- Cartridge type EX2.0 (2.0CV), EX3.0 (3.0CV)
- Stem UP flow B to AB (default position),
- Stem DOWN flow A to AB

V323 – 3 Way Diverting Valve Body. Female Thread on all 3 Ports



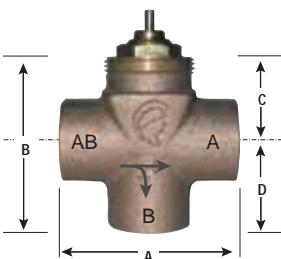
1/2" Valve	A	B	C	D
V323-12	2.50 (63,50)	2.30 (58,42)	1.13 (28,70)	1.20 (30,48)

Weight: 11.3oz (320g)

Select:

- V323-12N for 1/2" female thread
- Select CV from cartridge type ED
- Stem UP flow AB to A (default position),
- Stem DOWN flow AB to B

V325 – 3 Way Diverting Valve Body. Direct Solder



1/2" Valve	A	B	C	D
V325-12	2.24 (56,90)	2.21 (56,13)	1.09 (27,69)	1.12 (28,45)
3/4" Valve	A	B	C	D
V325-34	2.24 (56,90)	3.32 (84,30)	1.09 (25,00)	2.23 (56,64)

Weight: 1/2" - 8.1oz (230g), 3/4" - 8.5oz (240g)

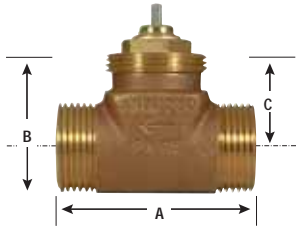
Select:

- V325-12S for 1/2" solder (for 5/8" (16mm) OD copper pipe)
- V325-34S for 3/4" solder (for 7/8" (22mm) OD copper pipe)
- Select CV from cartridge type ED
- Stem UP flow AB to A (default position),
- Stem DOWN flow AB to B

V200 Series 2 way Globe Control Valve Bodies

All dimensions in inches (mm).
Weight includes the internal cartridge.

V240 – 2 Way Valve Body with Union Connections on Both Ports



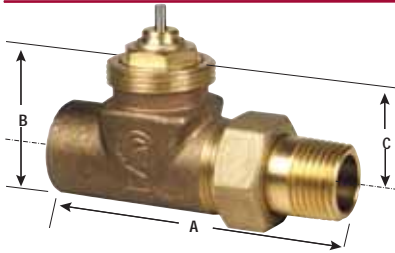
A	B	C
2.24 (56,90)	2.24 (56,90)	1.09 (27,69)

Weight: 7.8oz (220g)

Select to include:

V240-12N for 1/2" threaded unions
V240-12S for 1/2" solder unions (for 5/8" (16mm) OD copper pipe)
V240-34N for 3/4" threaded unions
V240-34S for 3/4" solder unions (for 7/8" (22mm) OD copper pipe)
Select CV from cartridge type EP, EB, EV or BC
Stem UP open (default position)

V241 – 2 Way Valve Body with Female Threaded Port In & Union Connection Port Out



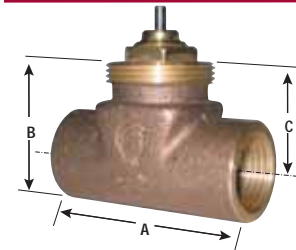
	A	B	C
1/2" Valve	3.34	1.76	1.09
V241-12	(84,84)	(44,70)	(27,69)
3/4" Valve	3.90	2.20	1.09
V241-34	(99,06)	(55,88)	(27,69)
1" Valve	5.44	2.50	1.24
V241-10	(138,00)	(63,50)	(31,50)

Select to include:

V241-12N for 1/2" threaded union
V241-34N for 3/4" threaded union
V241-10N for 1" threaded union
Select CV from cartridge type EP, EB, EV or BC
Stem UP open (default position)

Weight: 1/2" - 10.6oz (300g), 3/4" - 16.9oz (480g), 1" - 35.3oz (1000g)

V243 – 2 Way Valve Body with Female Threaded Ports In and Out



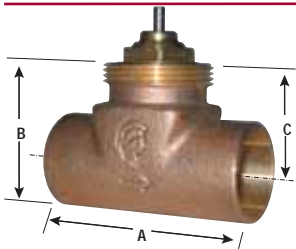
	A	B	C
1/2" Valve	2.29	1.60	1.09
V243-12	(58,17)	(40,64)	(27,69)
3/4" Valve	2.70	2.20	1.09
V243-34	(68,58)	(55,88)	(27,69)
1" Valve	3.88	2.84	1.80
V243-10	(98,50)	(71,10)	(45,70)

Select:

V243-12N 1/2" Valve Body
V243-34N 3/4" Valve Body
V243-10N 1" Valve Body
Select CV from cartridge type EP, EB, EV or BC
Stem UP open (default position)

Weight: 1/2" - 8.5oz (240g), 3/4" - 12.7oz (360g), 1" - 33.2oz (940g)

V245 – 2 Way Valve Body with Direct Solder Connections



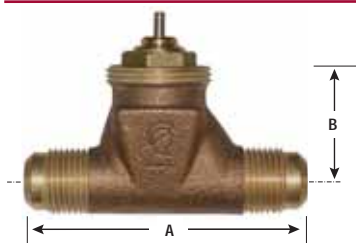
	A	B	C
1/2" Valve (16mm)	2.24	1.60	1.09
V245-12	(56,90)	(40,64)	(27,69)
3/4" Valve (22mm)	2.29	1.60	1.09
V245-34	(58,17)	(40,64)	(27,69)

Select:

V245-12S 1/2" Valve Body (for 5/8" (16mm) OD copper pipe)
V245-34S 3/4" Valve Body (for 7/8" (22mm) OD copper pipe)
Select CV from cartridge type EP, EB, EV or BC
Stem UP open (default position)

Weight: 1/2" - 7.8oz (220g), 3/4" - 8.1oz (230g)

V246 – 2 Way Valve Body with Flared Male Connection



A	B
3.125 (79,00)	1.32 (33,53)

Weight: 1/2" - 7.8oz (220g)

Select:

V246-12F for 1/2" Valve Size
Select CV from cartridge type EP, EB, EV or BC
Stem UP open (default position)

V243-12I – 2 Way Valve Body with Flared Female Connection



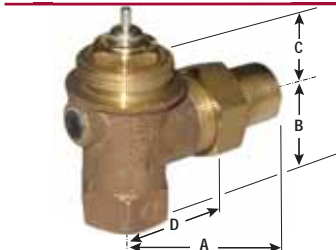
A	B
3.500 (90,00)	1.125 (29,00)

Weight: 1/2" - 12.7oz (360g)

Select:

V243-12I for 1/2" Valve Size
Select CV from cartridge type EP, EB, EV or BC
Stem UP open (default position)

V261 – 2 Way Angle Valve Body with Female Threaded Port In and Union Connection Port Out



	A	B	C	D
1/2" Valve	2.25	1.13	1.13	1.25
V261-12	(58,00)	(28,00)	(29,00)	(32,00)
3/4" Valve	2.68	1.13	0.75	1.138
V261-34	(67,00)	(30,00)	(19,00)	(36,00)
1" Valve	3.15	1.50	2.37	1.65
V261-10	(80,00)	(38,00)	(60,00)	(42,00)

Select

V261-12N for 1/2" Valve Size
V261-34N for 3/4" Valve Size
V261-10N for 1" Valve Size
Select CV from cartridge type EP, EB, EV or BC
Stem UP open (default position)

Weight: 1/2" - 7.8oz (221g), 3/4" - 8.1oz (230g), 1" - 32.5oz (921g)

2 Select the valve cartridge type and CV value to best suit your application such as hot and chilled water, low pressure steam or high close-off pressures.

Internal Cartridge Types - Field replaceable & interchangeable

All Spartan valve body assemblies are service/maintenance free with interchangeable internals (in the form of a replaceable cartridge) for specific applications with variations of equal percentage parabolic or linear characterized globe plungers. CV (KV) values can be changed without having to remove the valve from the line simply by changing the cartridge.

The internals are equipped with 1½ million cycles (3 million repositions), packings with burnished mirror finish stainless steel stems and micro machined accurate parabolic characterized plugs.



EP TYPE CARTRIDGE (for 2 way valve body)



Used for hot and chilled water and 50% glycol.
Select from available CV's 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5,
Can be installed in all 2 way ½" valve bodies
Select from available CV's 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.5
Can be installed in all 2 way ¾" valve bodies



EV TYPE CARTRIDGE (for 2 way valve body)



Used for low pressure up to 15PSI steam applications recognizable by nickel plated cap.
Select from available CV's 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, Can be installed in all 2 way ½" valve bodies
Select from available CV's 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.5 Can be installed in all 2 way ¾" valve bodies
Select from available CV's 6.0, 6.4, 8.0, 9.0
Can be installed in 2 way 1" valve bodies



BC TYPE CARTRIDGE (for 2 way valve body)



Cage type cartridge used for low CV values.
Select from available CV's 0.15, 0.25, 0.50
Can be installed in all 2 way ½" valve bodies



For ½" & ¾" valve bodies

EB TYPE CARTRIDGE (for 2 way valve body)



Balanced cartridge used for high close-off pressure applications (up to 100 psi) for hot and chilled water, and 50% glycol.

For 2 way ½" valve bodies select from CV's 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5
For 2 way ¾" valve bodies select from CV's 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.5



For 1" valve bodies

For 2 way 1" valve bodies select from CV's CV's 6.0, 6.4, 8.0, 9.0

◆ **The EB cartridge is recommended for use on certain spring return actuators. See note on page 5.**



ED TYPE CARTRIDGE (for 3 way valve body)



Used for 3 way diverting V320, V323, V325 valve bodies for hot and chilled water and 50% glycol.

Select from available CV's 1.0, 2.0, 3.0
Can be installed in 3 way ½" and ¾" valve bodies



EX TYPE CARTRIDGE (for 3 way valve body)



Used for 3 way mixing V321 valve bodies for hot and chilled water and 50% glycol.

Select from available CV's 2.0, 3.0
Can be installed in 3 way ½" and ¾" valve bodies

Internal Cartridge Specifications - each CV/KV is stamped on the face of the cartridge

Replaceable Cartridge Type	EP Type	EV Type	BC Type	EB Type	ED Type	EX Type
Valve seat	Integral bronze	Integral bronze	Bronze - replaceable	Integral bronze	Integral bronze	Integral bronze
Valve disc/plunger	EPDM / brass	Hi-temperature EPDM	Brass cage	EPDM / brass	EPDM / brass	EPDM / brass
Valve spring	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Valve stem	Burnished 303 Stainless Steel	(same as EP Type)	(same as EP Type)	(same as EP Type)	(same as EP Type)	(same as EP Type)
Packing	Double EPDM	Hi-temperature Double EPDM	Double EPDM	Double EPDM	Double EPDM	Double EPDM
Stroke	4mm	4mm	4mm	4mm	4mm	4mm
Tight close off	100 %	100 %	0.1% of Cv	100%	100%	100%
Steam rated	N / A	15 psi. (250°F / 120°C)	N / A	N / A	N / A	N / A
Water rated	(250°F / 120°C)	N / A	(250°F / 120°C)	(250°F / 120°C)	(250°F / 120°C)	(250°F / 120°C)
Glycol rated	To 50%	N / A	To 50%	To 50%	To 50%	To 50%
Cv Equal % - 4mm lift	0.5, 1.0, 1.5, 2.0, 2.5, 3.0	0.5, 1.0, 1.5, 2.0, 2.5, 3.0	0.15, 0.25, 0.50	0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 6.0, 8.0	N/A	N/A
Rangeability	100:1	100:1	100:1	100:1	-	-
Cv Linear - 4mm lift	2.2, 3.5, 4.5	2.2, 3.5, 4.5, 6.4, 9.0	N/A	2.2, 3.5, 4.5, 6.4, 9.0	1.0, 2.0, 3.0 Bottom port CV 2.0	2.0, 3.0

3 Select the valve actuator to best suit your control signal, voltage application, spring return or FLP requirements

Terminal Unit Actuators Selection Guide

ELECTRIC - FAIL LAST POSITION - SYNCUBE ACTUATORS

MODEL	SIGNAL	VOLT	FEATURES
ME4140	Floating	24Vac	End of travel switch-off, complete shutdown *
ME4240	PWM	24Vac	Pulse Width Modulation 0.25-5.0 secs. Feedback 1-5 Vdc *
ME4340	Modulating	24Vac	Selectable 0-10Vdc, 2-10Vdc, 4-20mA. Feedback 1-5 Vdc *
ME4344	Modulating	24Vac	Selectable 0-5Vdc, 5-10Vdc. Feedback 1-5 Vdc *



Standard clear cover
Optional white cover

3 YEAR WARRANTY
SPARTAN PERIPHERAL DEVICES

ELECTRIC - SPRING RETURN (FAIL SAFE) - POWERCUBE ACTUATORS

ME4430	ON-OFF	24Vac	N.O. (Normally open) *
ME4430S	ON-OFF	24Vac	N.O. (Normally open) with an end switch
ME4431	ON-OFF	110Vac	N.O. (Normally open)
ME4431S	ON-OFF	110Vac	N.O. (Normally open) with an end switch
ME4530	ON-OFF	24Vac	N.C. (Normally closed) *
ME4530S	ON-OFF	24Vac	N.C. (Normally closed) with an end switch
ME4531	ON-OFF	110Vac	N.C. (Normally closed)
ME4531S	ON-OFF	110Vac	N.C. (Normally closed) with an end switch
ME4640	Floating	24Vac	N.O. (Normally open) *
ME4740	PWM	24Vac	N.O. (Normally open), Pulse Width Modulation 0.25-5.0 secs. Feedback 1-5 Vdc *
ME4840	Modulating	24Vac	N.O. (Normally open), Selectable 0-10Vdc, 2-10Vdc, 4-20mA. Feedback 1-5 Vdc *
ME4844	Modulating	24Vac	N.O. (Normally open), Selectable 0-5Vdc, 5-10Vdc. Feedback 1-5 Vdc *
ME4940	Modulating	24Vac	N.C. (Normally closed), Selectable 0-10Vdc, 2-10Vdc, 4-20mA. Feedback 1-5 Vdc *
ME4944	Modulating	24Vac	N.C. (Normally closed), Selectable 0-5Vdc, 5-10Vdc. Feedback 1-5 Vdc *



3 YEAR WARRANTY
SPARTAN PERIPHERAL DEVICES

* Available wire connections
1. Standard 1m (3ft) cable
2. Optional 3m (9ft) cable

WIRELESS ACTUATORS - many other Wireless Actuators available at www.spartan-pd.com

ME8200	Modulating 24Vac FLP, operates on RF 433MHz
ME8300	Modulating 24Vac FLP, operates on EnOcean TCM320(c) Dolphin module
ME8400	Modulating 24Vac FLP, operates on Zigbee IEEE 802.15.4 network protocol



3 YEAR WARRANTY
SPARTAN PERIPHERAL DEVICES

THERMO-ELECTRIC ACTUATORS - SPRING RETURN (FAIL SAFE)

ME1605	ON/OFF or PWM	24Vac	N.O. (Normally open)
ME1705	ON/OFF or PWM	24Vac	N.C. (Normally closed)



5 YEAR WARRANTY
SPARTAN PERIPHERAL DEVICES

PNEUMATIC ACTUATORS

MP5100	On-Off Modulating	3-6#	N.O. Normally Open
MP5300	On-Off Modulating	7-11#	N.O. Normally Open
MP5400	On-Off Modulating	5-11#	N.O. Normally Open



5 YEAR WARRANTY
SPARTAN PERIPHERAL DEVICES

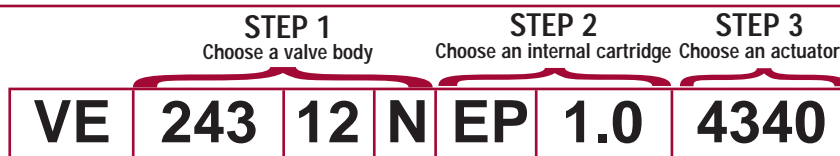
THERMOSTATIC ACTUATORS

OT1100	Valve mounted self-acting thermostatic actuator 40-80°F (6-26°C)
OT2100/2115	Remote bulb self-acting thermostatic actuator with 6.5/16.5ft capillary 40-80°F (6-26°C)
OT5100	Remote bulb wall-mounted self-acting thermostatic actuator with 6.5ft capillary 40-80°F (6-26°C)



3 YEAR WARRANTY
SPARTAN PERIPHERAL DEVICES

Terminal Unit Nomenclature



◆ The EB cartridge is recommended when using these actuators

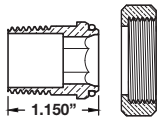
Actuator Type
Cv Value
Cartridge Type
Union Type - N = NPT, B = BSP, S = Solder
Valve Size

Valve Body Type - select from connection type

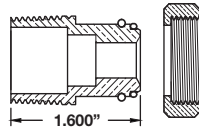
Valve Assembly Type - Select E for Electric, P for Pneumatic, or T for Thermostatic

Terminal Unit Accessories

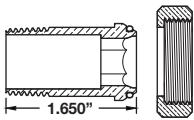
1/2" Unions (includes nut and nipple) - used with V240, V241-12, V261-12, V320-20, V321 Valve Bodies
 Union nut fits on 3/4" BSPP threads



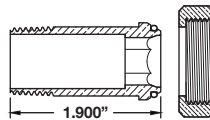
AV6112 - 1/2" NPT Union, 1" nominal length nipple



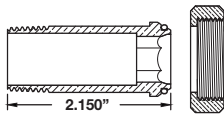
AV6134 - 1/2" Union with 1 1/2" nominal length. Step up 3/4" NPT nipple



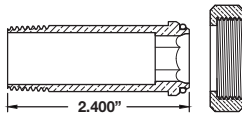
AV6112D - 1/2" NPT Union, 1 1/2" nominal length nipple



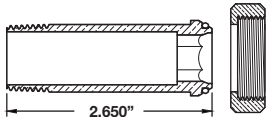
AV6112E - 1/2" NPT Union, 1 3/4" nominal length nipple



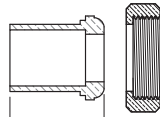
AV6112F - 1/2" NPT Union, 2" nominal length nipple



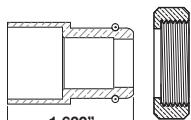
AV6112G - 1/2" NPT Union, 2 1/4" nominal length nipple



AV6112H - 1/2" NPT Union 2 1/2" nominal length nipple



AV6312 - 1/2" solder union for 3/8" (16mm) OD copper pipe (for 1/2" valves)

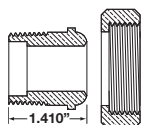


AV6334 - 3/4" solder union step up for 7/8" (22mm) OD copper pipe (for 1/2" valves)

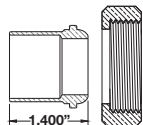


AV199-13 - Pack of 10 "O" rings for 1/2" unions (3/4" BSPP thread)

1" Unions (includes nut and nipple) - used with V241-10, V261-10, V345-10 Valve Bodies
 Union nut fits on 1 1/4" BSPP threads

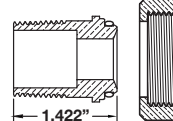


AV6810 1" NPT union, 1 1/4" nominal length nipple

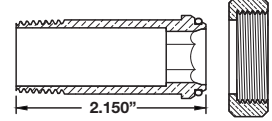


AV6810S 1" Solder union

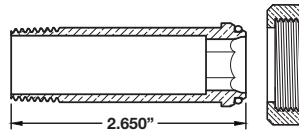
3/4" Unions (includes nut and nipple) - used with V241-34, V261-34, V345-34 Valve Bodies
 Union nut fits on 1" BSPP threads



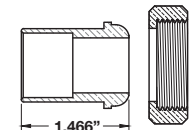
AV6534 3/4" NPT Union, 1 1/4" nominal length nipple



AV6534F 3/4" NPT Union, 2" nominal length nipple



AV6534H 3/4" NPT Union, 2 1/2" nominal length nipple



AV6534S 3/4" Solder Union



AV199-08 Pack of 10 "O" rings for 3/4" union (1" BSPP thread)

Terminal Unit Accessories



AVP20 Cap plug to replace any 1/2", 3/4" valve cartridge for pipe flushing.



AVP116 Cap plug to replace any 1" valve cartridge for pipe flushing



VM1125 1/2" union ball valve (select and add union)



AVMAV18-20 (Pack of 20) Air vent



AV199-03 Pack of 10 "O" rings for internal cartridges for 1/2" and 3/4" valve bodies



AV199-14 Pack of 10 "O" rings for internal cartridges for 1" valve bodies

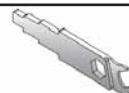


OM1100 Manual adjuster for all valve bodies



AVK100 Union Selection Kit. Consisting of different size and length unions

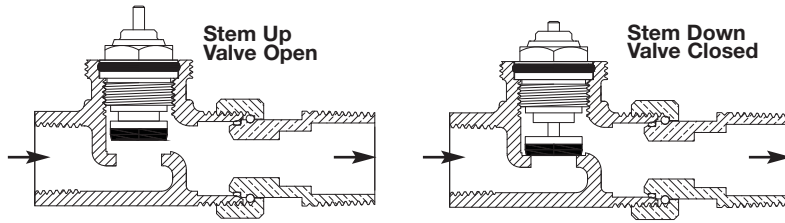
Installation Tools



AV08 Spud Tool for union nipple installation

2 way and 3 way Terminal Unit Piping Diagrams

2 WAY - V240, V241, V243, V245, V246, V261 VALVE BODIES



V240, V241, V243, V245, V246, V261, V246I

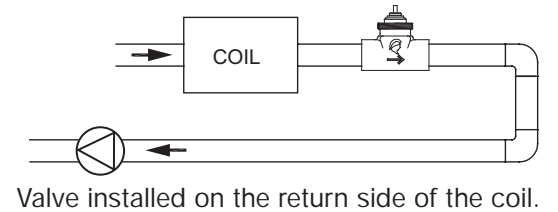
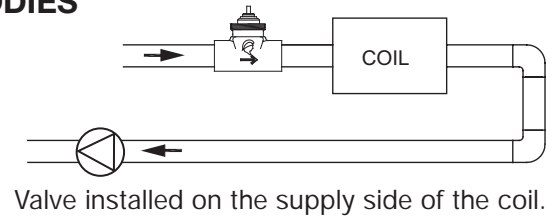
TERMINAL UNIT BODIES ARE NORMALLY OPEN

STEM UP: VALVE IS OPEN

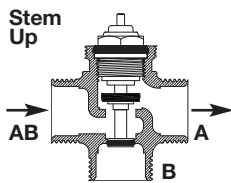
STEM DOWN: VALVE IS CLOSE

When used in conjunction with direct acting actuators they become normally open valve assemblies.

When used in conjunction with reverse acting actuators they become normally closed valve assemblies.



The valve body must be installed in the direction indicated on the valve body cavity



3 WAY - V320, V323, V325, V345 DIVERTING VALVE BODIES

The diverting valve body is installed on the supply side of the coil.

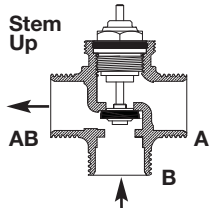
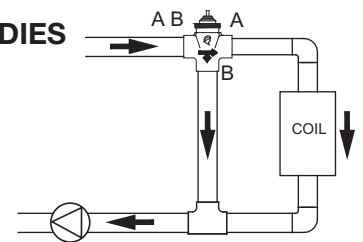
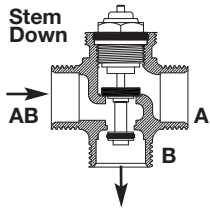
The water diverts in the valve and mixes in the "T" the flow enters the common port AB

The side port A must be connected to the supply of the coil

The bottom port B must be connected to the bypass around the coil.

STEM UP: FLOW AB-A

STEM DOWN: FLOW AB-B



3 WAY - V321 MIXING VALVE BODY

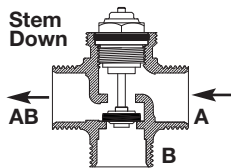
The mixing valve body is installed on the return side of the coil.

The water diverts in the "T" and mixes in the valve.

Piping example No1: The flow enters port A from the coil and port B from the bypass and exits from the common port AB

STEM UP: FLOW B-AB

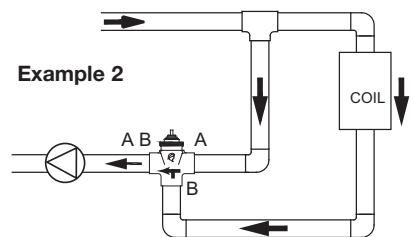
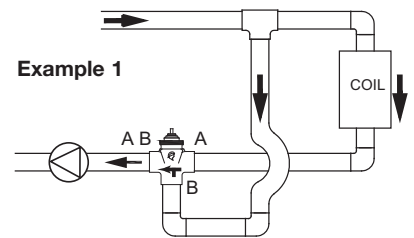
STEM DOWN: FLOW A-AB



Piping example No 2: The flow enters port B from the coil and port A from the bypass and exits from the common port AB

STEM UP: FLOW B-AB

STEM DOWN: FLOW A-AB



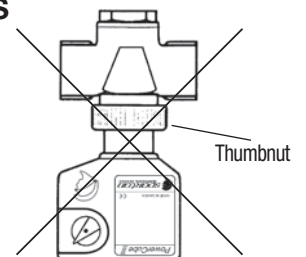
SOLDER INSTRUCTIONS

If direct solder bodies are used, remove the stem packing cartridge before installation as the heat will damage the packing.

If solder unions are used, solder the unions without the sealing O-ring.

IMPORTANT INSTALLATION NOTES

The complete valve assembly can be installed vertically or horizontally; it cannot be installed upside down. The Actuator mounting thumbnut is to be tightened by hand only, using tools may result in over-tightening.





CONTROLS WITHOUT COMPROMISE

CANADA

187 Joseph Carrier, Vaudreuil,
Quebec. J7V 5V5

UNITED STATES

100 Walnut Street, Champlain,
N.Y. 12919

telephone TOLL-FREE in North America: (888) 554-4465

telephone: (450) 424-6067

fax: (450) 424-6071

email: info@spartan-pd.com

website: www.spartan-pd.com

