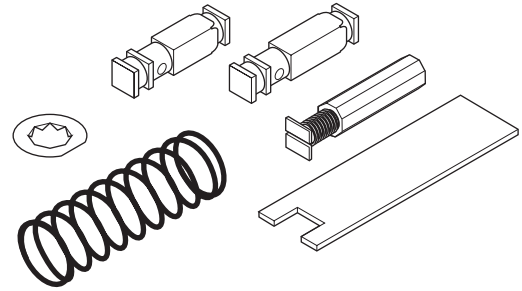


***Hydraulic Actuator Valve Linkage Kit
General Instructions***

Application

The AV-600 linkage is used to field assemble MA-521x, MF-5x13, MP-521x, MP-541x, MPR-561x, MPR-571x, and MPR-581x round hydraulic actuators to 1/2" through 2" VB-7xxx and obsolete VB-9xxx two-way and three-way valve bodies.



Features

- AV-600 provides direct couple interface between MA, MF, MP, and MPR-5xxx actuators and 1/2" to 1-1/4" VB-7xxx valve bodies.

Applicable Literature

- TAC Environmental Controls Cross-Reference Guide, F-23638
- TAC Environmental Controls Reference Manual, F-21683
- TAC Environmental Controls Application Manual, F-21335
- TAC Pneumatic Products Catalog, F-27383
- TAC Environmental Controls Valve Selection Guide, F-26094
- EN-205 Water System Guidelines, F-26080
- AV-601 Linkage Extension Kit General Instructions, F-26280

SPECIFICATIONS

Temperature Restrictions

Verify that temperature of the media in the valve versus the ambient temperature at the actuator does not exceed the ratings shown in Table-1.

Table-1 Restrictions on the Maximum Ambient Temperature for the Valve Actuator.

Maximum Temperature of Media in the Valve Body (Check Ratings of the Valve)	Maximum Ambient Temperature of MF-5x13, MP-541x, or MPR-5x1x		Maximum Ambient Temperature of MA-521x or MP-521x	
	AV-600 Only for Chilled Water Applications Only	AV-600 & AV-601 ^a	AV-600 Only	AV-600 & AV-601 ^a
366°F (180°C)	Do Not Use	88°F (31°C)	90°F (32°C)	90°F (32°C)
340°F (171°C)	Do Not Use	93°F (34°C)	100°F (38°C)	100°F (38°C)
281°F (138°C)	Do Not Use	103°F (39°C)	115°F (46°C)	140°F (60°C) ^b
181°F (83°C)	Do Not Use	120°F (48°C)	140°F (60°C) ^b	140°F (60°C) ^b
80°F (26°C)	140°F (60°C) ^b	140°F (60°C) ^b	140°F (60°C) ^b	140°F (60°C) ^b

^a For applications requiring AV-601 refer to **AV-601, Linkage Extension Kit General Instructions, F-26280**.

^b Maximum allowable ambient temperature of the actuator.

Close-off Pressure Rating

Close-off pressure ratings are listed in Table-2 and Table-3. For current valve bodies, make sure the close-off pressure is adequate for the application.

Required Components

AM-602	Adaptor for current actuators to obsolete linkages. See Figure-7 through Figure-9.
AM-603	Adaptor for obsolete actuators to AV-600. See Figure-7 through Figure-9.
AV-601	Linkage Extension Kit

INSTALLATION

Inspection

Inspect the package for damage. If damaged, notify the appropriate carrier immediately. If undamaged, open the package and inspect the device for obvious damage. Return damaged products.

Requirements

- Tools (not provided):
 - Two (2) 3/8" wrenches
 - TOOL-19, 1/8" diameter rod
 - TOOL-20-1, Packing and linkage wrench
 - TOOL-37, 1-5/8" open-ended wrench (optional)
 - 6" or longer ruler
- Linkage wrench (provided)
- Training: Installer must be a qualified, experienced technician.

Caution:

- Avoid locations where excessive moisture, corrosive fumes, or vibration is present.
 - Install all two-way valves so that they close against the flow. An arrow on the valve body or a tag indicates the proper flow direction.
 - Always install three-way mixing valves with two inlets and one outlet.
 - Always install three-way diverting valves with one inlet and two outlets.
 - Do not install the actuator below the center line of the valve. For steam applications mount the actuators above the valve body at 45° from vertical.
-

ASSEMBLY PROCEDURE

AV-600 Valve Linkage Kit Used with VB-7xxx Series Valves

The AV-600 linkage kit contains parts for installation on both current 1/2" to 2" VB-7xxx series valve bodies and on obsolete 1/2" to 1-1/4" VB-9xxx and older valve bodies.

The AV-600 linkage kit used on VB-7xxx series valve bodies require no stem height setting. Refer to **TAC Environmental Controls Valve Selection Guide, F-26094**, for valves accommodating the AV-600 linkage kit.

Caution:

- It is essential that the proper parts be used for the valve body on which the linkage is being installed to ensure proper actuator operation and close off.
 - Do not attempt to use the square stem extension with VB-7xxx valves. Parts or valves may be damaged internally.
-

Linkage Installation

The linkage kit is assembled onto the VB-7xxx valve body with the stem in the up position.

1. Thread the hexagon coupler onto the valve stem all the way to the bottom of the stem thread, finger tight (Figure-1).

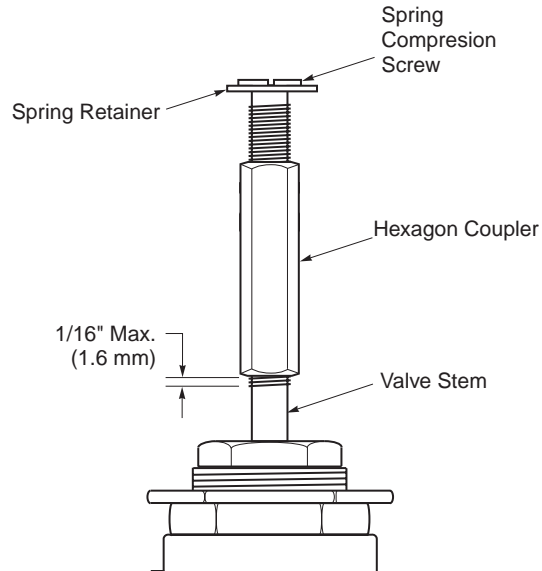


Figure-1 Installation of Hexagon Coupler and Spring Compression Screw.

Caution: The hexagon coupler must reach to within 1/16" (1.6 mm) of the smooth section of the stem to assure proper seating. Do not use the Spring Compression Screw to run the Hexagon Coupler down.

2. Start the spring compression screw one turn or more into the hexagon coupler. Pull the valve stem completely up.
3. Slip the spring over the coupler and screw.
4. Place the retainer over the screw. Twist the retainer 45° to lock it in place on the spring compression screw.
5. Insert the linkage wrench (supplied with kit, also included on TOOL-20-1) through the spring coils to hold hexagon coupler.

6. Tighten the spring compression screw. To establish proper linkage height, run the spring compression screw down until the screw end bottoms firmly on the stem top (Figure-2).
 - On stem up closed valves (VB-722x) or 3-way valve (VB-73xx), you will feel the screw bottom.
 - On stem up open valve (VB-721x), the stem and hexagon coupler will begin to turn.

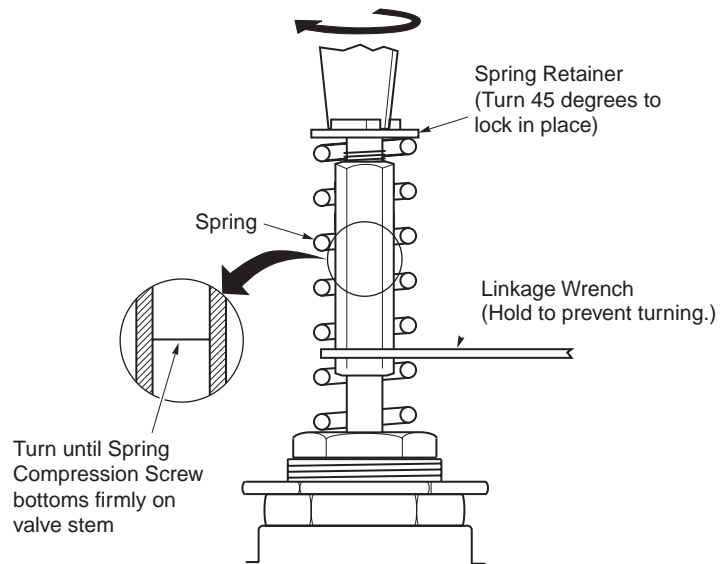


Figure-2 Completing Linkage Kit Assembly to Valve.

7. Confirm stem height setting:
 2-5/16" (59 mm) maximum after installation on stem up open valves (VB-721x)
 2-7/32" (56 mm) maximum on stem up closed (VB-722x) or 3-way (VB-73xx) valves.
8. Center the spring on top and bottom to assure smooth actuator operation. See Figure-3 for total assembly components required.

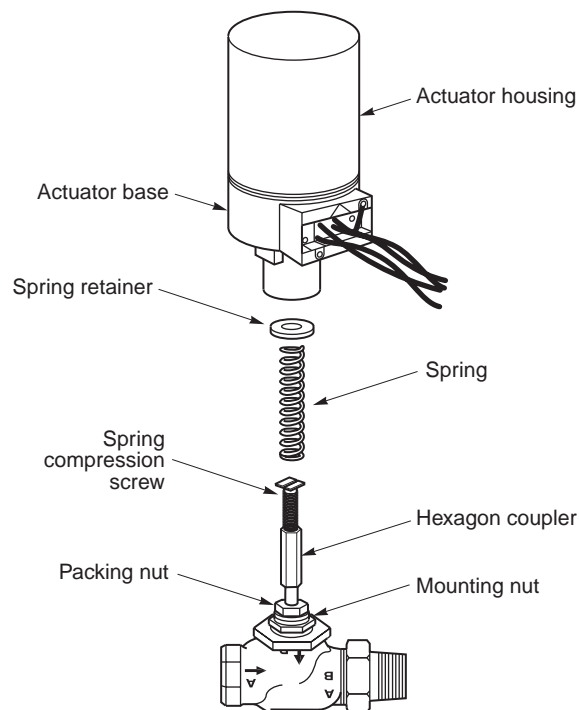


Figure-3 Assembly of AV-600 Linkage Kit onto VB-7xxx Series Valve.

AV-600 Linkage Used with VB-121, VB-324, and VB-9xxx Series Valves

Refer to the following tables to select compatible valves for the desired actuator using the AV-600 linkage kit that require stem height settings. Refer to Table-2 for current valves. Table-3 and Table-4 list the obsolete valve bodies using the AV-600 linkage kit. Follow the assembly procedures on pages 8 through 10.

Use Table-1 to determine if AV-601 linkage extension kit is required for the application. Consult Table-2, Table-3, and Table-4 to make sure the valve selected is compatible with AV-600 valve linkage kit. Follow the assembly procedures on page 10.

For replacement of obsolete actuators and linkages, refer to Figure-7 through Figure-9 and Table-3 or Table-4.

Table-2 Required Stem Height Settings for AV-600 with Current Valve Bodies.

Valve Assembly Number	Valve Body Part Number	Valve Body Type (Normal Position)	Stem Height Setting for Dim. "x" in inches (mm) (Note: Use short stem extension 1-15/32".)
VA-1219 VP-1219	VB-121-0-4-P (P Code -1 to -3)	2-Way 1/2" O.D. Flared Straightway (Normal Open)	1-25/32 (45) Stem Down
VA-3249 VP-3249	VB-324-0-5-4	3-Way 1/2" O.D. Flared Mixing	2-3/16 (56) Stem Up

Table-3 Required Stem Height Settings for AV-600 with Obsolete Valve Bodies and Close-off Ratings for the Combination of AV-600 Valve Body and Actuator Combination.

				ACTUATORS			Stem Height Setting for AV-600 Dimension “x” (Note: Use short stem extension 1-15/32".)
				MA-521x Series	MP-521x Series	MF-5x13, MP-541x & MPR-5xxx	
Valve Linkages Required				AV-600	AV-600	AV-600 & AV-601 ^a	
VALVE BODY INFORMATION				CLOSE-OFF PRESSURE (psi)			
Valve Body Part Number	Description	Cv	Size				
VB-111-0-3-1	2-Way Normally Open Union End NPT Angle Body	0.4	1/2"	100	100	100	1-13/16" Stem Down
VB-111-0-3-2		1.3	1/2"	100	100	100	
VB-111-0-3-3		2.2	1/2"	100	100	100	
VB-111-0-3-4		3.8	1/2"	100	100	100	
VB-111-0-3-5		5.5	3/4"	80	80	80	
VB-111-0-3-6		7.5	3/4"	80	80	80	
VB-111-0-3-7		8.5	1"	45	45	45	
VB-111-0-3-8		10.5	1"	45	45	45	
VB-111-0-3-9		15	1-1/4"	25	25	25	
VB-9211-0-4-1	2-Way Normally Open Union End NPT Straightway Body	0.4	1/2"	180	190	190	1-25/32" Stem Down
VB-9211-0-4-2		1.3	1/2"	180	190	190	
VB-9211-0-4-3		2.2	1/2"	180	190	190	
VB-9211-0-4-4		3.3	1/2"	180	190	190	
VB-9211-0-4-5		5	3/4"	75	85	85	
VB-9211-0-4-6		6.2	3/4"	75	85	85	
VB-9211-0-4-7		8.2	1"	40	45	45	
VB-9211-0-4-8		10.5	1"	40	45	45	
VB-9211-0-4-9		15	1-1/4"	25	30	30	
VB-9212-0-4-1	2-Way Normally Open SAE 45° Flared Straightway Body	0.4	5/8" O.D.	180	190	190	1-25/32" Stem Down
VB-9212-0-4-2		1.3	5/8" O.D.	180	190	190	
VB-9212-0-4-3		2.2	5/8" O.D.	180	190	190	
VB-9212-0-4-4		3.3	5/8" O.D.	180	190	190	
VB-9213-0-4-1	2-Way Normally Open FNPT Straightway Body	0.4	1/2"	180	190	190	1-25/32" Stem Down
VB-9213-0-4-2		1.3	1/2"	180	190	190	
VB-9213-0-4-3		2.2	1/2"	180	190	190	
VB-9213-0-4-4		3.6	1/2"	180	190	190	
VB-9213-0-4-5		5	3/4"	75	85	85	
VB-9213-0-4-6		6.2	3/4"	75	85	85	
VB-9213-0-4-7		8.2	1"	40	45	45	
VB-9213-0-4-8		11	1"	40	45	45	
VB-9213-0-4-9		16	1-1/4"	25	30	30	

Table-3 Required Stem Height Settings for AV-600 with Obsolete Valve Bodies and Close-off Ratings for the Combination of AV-600 Valve Body and Actuator Combination. (Continued)

Valve Linkages Required				ACTUATORS			Stem Height Setting for AV-600 Dimension “x” (Note: Use short stem extension 1-15/32".)
				MA-521x Series	MP-521x Series	MF-5x13, MP-541x & MPR-5xxx	
VALVE BODY INFORMATION				CLOSE-OFF PRESSURE (psi)			
Valve Body Part Number	Description	Cv	Size				
VB-9214-0-4-1	2-Way Normally Open Union Sweat Straightway Body	0.4	1/2"	180	190	190	1-25/32" Stem Down
VB-9214-0-4-2		1.3	1/2"	180	190	190	
VB-9214-0-4-3		2.2	1/2"	180	190	190	
VB-9214-0-4-4		3.6	1/2"	180	190	190	
VB-9214-0-4-5		5	3/4"	75	85	85	
VB-9214-0-4-6		6.2	3/4"	75	85	85	
VB-9214-0-4-7		8.2	1"	40	45	45	
VB-9214-0-4-8		11	1"	40	45	45	
VB-9214-0-4-9		16	1-1/4"	25	30	30	
VB-9221-0-4-1	2-Way Normally Closed Union End NPT Straightway Body	0.4	1/2"	250	220	220	2-1/8" Stem Up
VB-9221-0-4-2		1.3	1/2"	250	220	220	
VB-9221-0-4-3		2.2	1/2"	250	220	220	
VB-9221-0-4-4		3.3	1/2"	250	220	220	
VB-9221-0-4-5		5	3/4"	140	90	90	
VB-9221-0-4-6		6.2	3/4"	140	90	90	
VB-9221-0-4-7		8.2	1"	75	50	50	
VB-9221-0-4-8		10.5	1"	75	50	50	
VB-9221-0-4-9		15	1-1/4"	45	30	30	
VB-9222-0-4-1	2-Way Normally Closed SAE 45° Flared Straightway Body	0.4	5/8" O.D.	250	220	220	2-1/8" Stem Up
VB-9222-0-4-2		1.3	5/8" O.D.	250	220	220	
VB-9222-0-4-3		2.2	5/8" O.D.	250	220	220	
VB-9222-0-4-4		3.3	5/8" O.D.	250	220	220	
VB-9223-0-4-1	2-Way Normally Closed FNPT Straightway Body	0.4	1/2"	250	220	220	2-1/8" Stem Up
VB-9223-0-4-2		1.3	1/2"	250	220	220	
VB-9223-0-4-3		2.2	1/2"	250	220	220	
VB-9223-0-4-4		3.6	1/2"	250	220	220	
VB-9223-0-4-5		5	3/4"	140	90	90	
VB-9223-0-4-6		6.2	3/4"	140	90	90	
VB-9223-0-4-7		8.2	1"	75	50	50	
VB-9223-0-4-8		11	1"	75	50	50	
VB-9223-0-4-9		16	1-1/4"	45	30	30	
VB-9224-0-4-1	2-Way Normally Closed Union Sweat Straightway Body	0.4	1/2"	250	220	220	2-1/8" Stem Up
VB-9224-0-4-2		1.3	1/2"	250	220	220	
VB-9224-0-4-3		2.2	1/2"	250	220	220	
VB-9224-0-4-4		3.6	1/2"	250	220	220	
VB-9224-0-4-5		5	3/4"	140	90	90	
VB-9224-0-4-6		6.2	3/4"	140	90	90	
VB-9224-0-4-7		8.2	1"	75	50	50	
VB-9224-0-4-8		11	1"	75	50	50	
VB-9224-0-4-9		16	1-1/4"	45	30	30	
VB-9253-0-4-1	2-Way Normally Open FNPT Straightway Body Stainless Steel Trim Teflon Disc	0.4	1/2"	180	190	190	1-25/32" Stem Down
VB-9253-0-4-2		1.3	1/2"	180	190	190	
VB-9253-0-4-3		2.2	1/2"	180	190	190	
VB-9253-0-4-4		3.6	1/2"	180	190	190	
VB-9253-0-4-5		5	3/4"	75	85	85	
VB-9253-0-4-6		6.2	3/4"	75	85	85	
VB-9253-0-4-7		8.2	1"	40	45	45	
VB-9253-0-4-8		11	1"	40	45	45	
VB-9253-0-4-9		16	1-1/4"	25	30	30	

Table-3 Required Stem Height Settings for AV-600 with Obsolete Valve Bodies and Close-off Ratings for the Combination of AV-600 Valve Body and Actuator Combination. (Continued)

				ACTUATORS			Stem Height Setting for AV-600 Dimension “x” (Note: Use short stem extension 1-15/32".)
				MA-521x Series	MP-521x Series	MF-5x13, MP-541x & MPR-5xxx	
Valve Linkages Required				AV-600	AV-600	AV-600 & AV-601 ^a	
VALVE BODY INFORMATION				CLOSE-OFF PRESSURE (psi)			
Valve Body Part Number	Description	Cv	Size				
VB-9263-0-4-1	2-Way Normally Closed FNPT Straightway Body Stainless Steel Trim Teflon Disc	0.4	1/2"	250	220	220	2-1/8" Stem Up
VB-9263-0-4-2		1.3	1/2"	250	220	220	
VB-9263-0-4-3		2.2	1/2"	250	220	220	
VB-9263-0-4-4		3.6	1/2"	250	220	220	
VB-9263-0-4-5		5	3/4"	140	90	90	
VB-9263-0-4-6		6.2	3/4"	140	90	90	
VB-9263-0-4-7		8.2	1"	75	50	50	
VB-9263-0-4-8		11	1"	75	50	50	
VB-9263-0-4-9		16	1-1/4"	45	30	30	
VB-9273-0-4-1	2-Way Normally Open FNPT Straightway Body Stainless Steel Trim	0.4	1/2"	180	190	190	1-25/32" Stem Down
VB-9273-0-4-2		1.3	1/2"	180	190	190	
VB-9273-0-4-3		2.2	1/2"	180	190	190	
VB-9273-0-4-4		3.6	1/2"	180	190	190	
VB-9273-0-4-5		5	3/4"	75	85	85	
VB-9273-0-4-6		6.2	3/4"	75	85	85	
VB-9273-0-4-7		8.2	1"	40	45	45	
VB-9273-0-4-8		11	1"	40	45	45	
VB-9273-0-4-9		16	1-1/4"	25	30	30	
VB-9283-0-4-1	2-Way Normally Closed FNPT Straightway Body Stainless Steel Trim	0.4	1/2"	250	220	220	2-1/8" Stem Up
VB-9283-0-4-2		1.3	1/2"	250	220	220	
VB-9283-0-4-3		2.2	1/2"	250	220	220	
VB-9283-0-4-4		3.6	1/2"	250	220	220	
VB-9283-0-4-5		5	3/4"	140	90	90	
VB-9283-0-4-6		6.2	3/4"	140	90	90	
VB-9283-0-4-7		8.2	1"	75	50	50	
VB-9283-0-4-8		11	1"	75	50	50	
VB-9283-0-4-9		16	1-1/4"	45	30	30	
VB-9312-0-4-2	3-Way Mixing SAE 45° Flared Normal Position Flow B to AB	2	5/8" O.D.	100	100	100	2-1/8" Stem Up
VB-9312-0-4-4		4	5/8" O.D.	100	100	100	
VB-9313-0-4-2	3-Way Mixing FNPT Normal Position Flow B to AB	2	1/2"	100	100	100	2-1/8" Stem Up
VB-9313-0-4-4		4	1/2"	100	100	100	
VB-9313-0-4-6		6.8	3/4"	55	55	55	
VB-9313-0-4-8		12	1"	35	35	35	
VB-9313-0-4-9		16	1-1/4"	22	22	22	
VB-9314-0-4-2	3-Way Mixing Union Sweat Normal Position Flow B to AB	2	1/2"	100	100	100	2-1/8" Stem Up
VB-9314-0-4-4		4	1/2"	100	100	100	
VB-9314-0-4-6		6.8	3/4"	55	55	55	
VB-9314-0-4-8		12	1"	35	35	35	
VB-9314-0-4-9		16	1-1/4"	22	22	22	
VB-9323-0-4-4	3-Way Diverting FNPT Normal Position Flow B to AB	6	1/2"	250	250	250	2-1/8" Stem Up
VB-9323-0-4-6		8	3/4"	250	250	250	
VB-9323-0-4-8		12	1"	250	250	250	
VB-9323-0-4-9		16	1-1/4"	250	250	250	
VB-9332-0-4-2	3-Way Sequencing 45° SAE Flared Normal Position Flow B to AB	1.7	5/8" O.D.	Not Available	35	35	1-15/16" ^b
VB-9332-0-4-3		2.4	5/8" O.D.		35	35	
VB-9332-0-4-4		4	5/8" O.D.		35	35	

^a For applications requiring AV-601 refer to **AV-601, Linkage Extension Kit General Instructions, F-26280**.

^b Depress stem to lower seat, release stem, and adjust height in this position.

Table-4 Required Stem Height Setting for AV-600 with Obsolete Valve Bodies
(Note: Use the long stem extension 1-21/32".)

Valve Body Part Number Series	Valve Assembly Part Number Series	Description of Valve Body	Obsolete Linkage Stem Height Setting Dimension "x"	AV-600 Stem Height Setting Dimension "x"
VB-111-0-3-P	VA-1102, VA-1112, VP-1112	2-Way, Normally Open, Union End, Angle	1-7/32"Stem Down	1-13/16"Stem Down
VB-111-0-4-P	VA-1102, VA-1112, VP-1112	2-Way, Normally Open, Union End, Stwy	1-7/32"Stem Down	1-13/16"Stem Down
VB-121-0-3-P	VA-1212, VP-1212	2-Way, N.O., 1/2" O.D. Flared, Angle	1-7/32"Stem Down	1-13/16"Stem Down
VB-121-0-4-P	VA-1212, VP-1212	2-Way, N.O., 1/2" O.D. Flared, Straightway	1-7/32"Stem Down	1-13/16"Stem Down
VB-131-001-3-4	VA-1302, VP-1312	2-Way, N.O., 5/8" O.D. Flared, Angle	1-11/32"Stem Down	1-13/16"Stem Down
VB-131-001-3-7	VA-1302, VP-1312	2-Way, N.O., 7/8" O.D. Flared, Angle	1-9/32"Stem Down	1-13/16"Stem Down
VB-131-001-4-P	VA-1302, VP-1312	2-Way, Normally Open, Flared, Straightway	1-7/32"Stem Down	1-13/16"Stem Down
VB-131-002-3-4	VA-1302, VP-1312	2-Way, N.C., 5/8" O.D. Flared, Angle	1-11/32"Stem Down	2-1/8"Stem Up
VB-131-002-3-7	VA-1302, VP-1312	2-Way, N.C., 7/8" O.D. Flared, Angle	1-9/32"Stem Down	2-1/8"Stem Up
VB-131-002-4-P	VA-1302, VP-1312	2-Way, Normally Closed, Flared, Straightway	1-9/16"Stem Up	2-1/8"Stem Up
VB-151-0-1-P	VA-1512, VP-1512	2-Way, Normally Closed, FNPT, Straightway	1-17/32"Stem Up	2-1/8"Stem Up
OYBB-233-4	VA-2402, VP-2452	2-Way, Normally Closed, 1/2" FNPT, Stwy	1-9/32"Stem Down	2-1/8"Stem Up
OYBB-233-7	VA-2402, VP-2452	2-Way, Normally Closed, 3/4" FNPT, Stwy	1-5/32"Stem Down	2-1/8"Stem Up
VB-314-0-1-4	VA-3142, VP-3142	3-Way, Mixing, 1/2" FNPT	1-11/32"Stem Down	2-1/8"Stem Up ^a
VB-314-0-1-7	VA-3142, VP-3142	3-Way, Mixing, 3/4" FNPT	1-9/32"Stem Down	2-1/8"Stem Up
VB-314-0-1-8	VA-3142, VP-3142	3-Way, Mixing, 1" FNPT	1-9/32"Stem Down	2-1/8"Stem Up
VB-324-0-5-4	VA-3242, VP-3242	3-Way, Mixing, 1/2" O.D., Flared	1-11/32"Stem Down	2-13/16"Stem Up
VB-334-0-5-4	VP-3342	3-Way, Sequencing, 1/2" O.D. Flared	2-3/8" ^b	1-15/16" ^b
VB-354-0-5-4	VA-3542, VP-3542	3-Way, Mixing, 5/8" O.D. Flared	1-11/32"Stem Down	2-1/8"Stem Up ^a
VB-354-0-5-7	VA-3542, VP-3542	3-Way, Mixing, 7/8" O.D. Flared	1-9/32"Stem Down	2-1/8"Stem Up
VB-701-0-5-P	VP-7012	4-Pipe Valve	2-3/8" ^b	1-15/16" ^b
VB-711-0-5-P	VP-7112	5-Pipe Valve	2-3/8" ^b	1-15/16" ^b

^a Use the locknut enclosed in the coin envelope. Do not break the locknut on the stem extension.

^b Depress stem to lower seat, release stem, and adjust height in this position.

Caution:

- It is essential that the proper parts be used for the valve body on which the linkage is being installed to ensure proper actuator operation and close off.
- Do not attempt to use the hexagon coupler and spring compression screw with VB-121, VB-324, or VB-9xxx valves. Stroke or close off maybe affected.

Linkage Installation

The AV-600 linkage includes of two (2) different lengths of combination square stem extension and breakaway locknut, spring, spring retainer, and a locknut (used with certain obsolete valve bodies only).

1. Select the correct square stem extension.
 - The short square stem extension [1-15/32" (37.3 mm)] is used with the obsolete VB-9xxx valves shown in Table-3.
 - The long stem extension [1-21/32" (42 mm)] is used with current VB-121 and VB-324 valves shown in Table-2 and obsolete VB-9xxx valve bodies shown in Table-4.
2. Thread the correct stem extension several threads on to the valve stem (Figure-4).

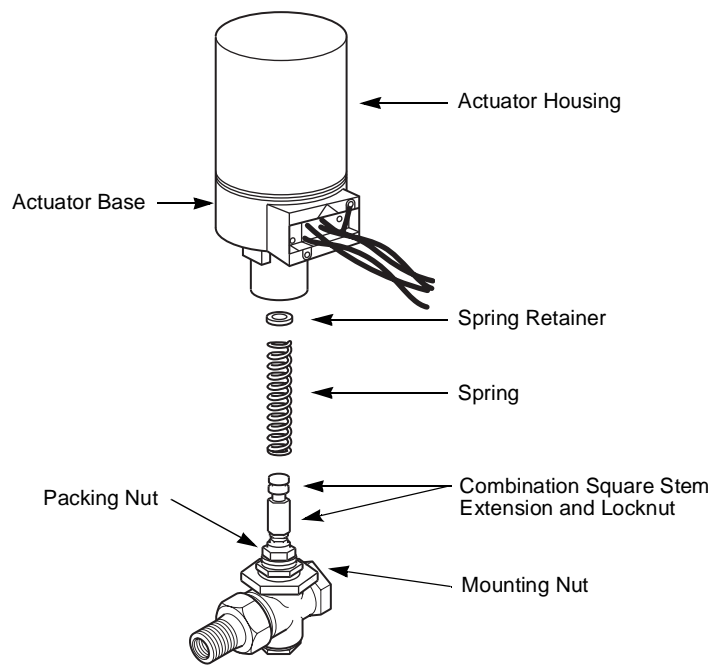


Figure-4 Installation of AV-600.

3. Position the valve stem as indicated for the appropriate valve body shown in Table-3 or Table-4, stem up or stem down.

Caution: Do not twist or exert any force on the actuator housing during installation (Figure-4). Either turn the base of the actuator by hand or, if necessary, use a 1-5/8" open end wrench (TOOL-37) on flats provided on the actuator base and valve body mounting nut (Figure-4).

4. Adjust the height of the stem extension to the "x" dimension shown in Table-3 or Table-4 for the appropriate valve body. The "x" dimension is from the top of the stem extension to the top of the valve packing nut (Figure-5).

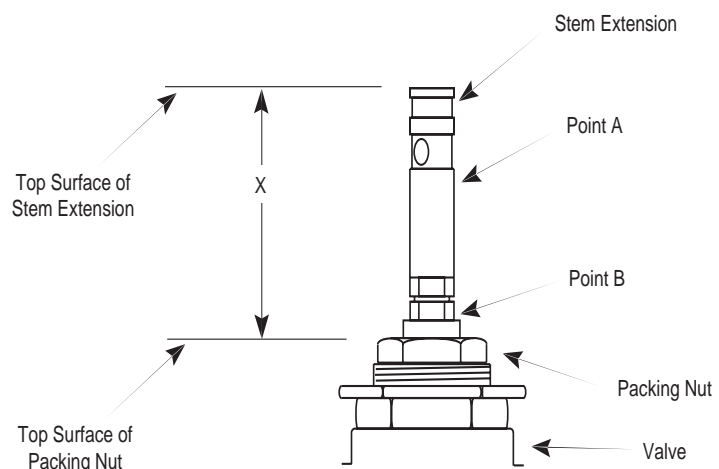


Figure-5 Height Adjustment of Combination Stem Extension and Locknut.

5. Using one 3/8" wrench on the square stem extension and one on the locknut, hold the wrench stationary at the stem extension while turning the wrench at the locknut clockwise. The locknut should separate from the stem extension. Next, while still holding the wrench stationary at the stem extension, turn the wrench at the locknut counterclockwise to jam the locknut against the stem extension, securing it in position.

6. With the valve stem in the up position, place the spring over the valve stem (Figure-4).
7. Insert TOOL-19, 1/8" (3 mm) diameter rod, through the spring coil and through the hole in the stem extension (Figure-6).

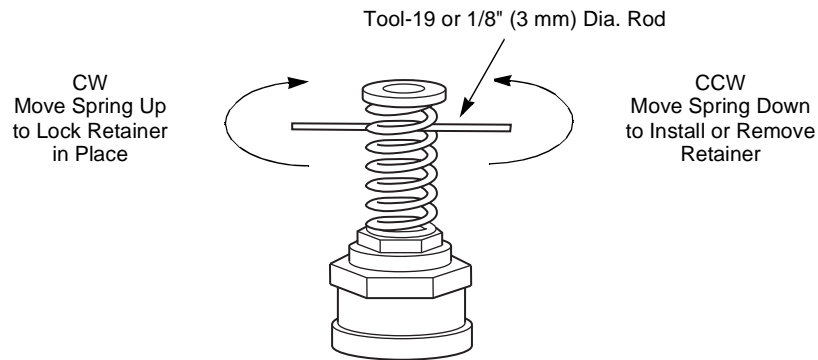


Figure-6 Installation of Spring and Spring Retainer.

8. Hold the spring to keep it from turning and “walk” the tool up the spring by turning it counterclockwise. Pushing down on the tool reduces the torque required to turn the stem and plug into the seat.
9. Set the retainer over the stem extension when the boss on the stem extension projects above the top of the spring coil.
10. Turn the retainer 45° to lock it in place.
11. Turn the tool clockwise down the spring coil to release the tension. Remove the tool from the assembly.
12. If AV-601 linkage extension is required, refer to the AV-601 the installation instructions contained in **AV-601, Linkage Extension Kit General Instructions, F-26280**.
13. The actuator is attached by screwing the mounting nut of the valve into the base of the actuator. The actuator may be rotated as desired for ease in making wiring connections.

MAINTENANCE

The actuator linkage requires no maintenance.

Regular maintenance of the total system is recommended to assure sustained, optimum performance. Hard water leaves abrasive deposits and reduces component life. To maximize valve life consult **EN-205, Water System Guidelines, F-26080**.

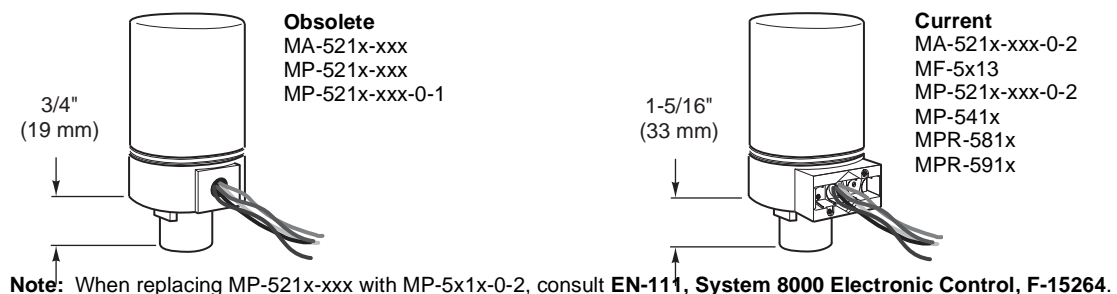


Figure-7 Identification of Obsolete and Current Actuators.

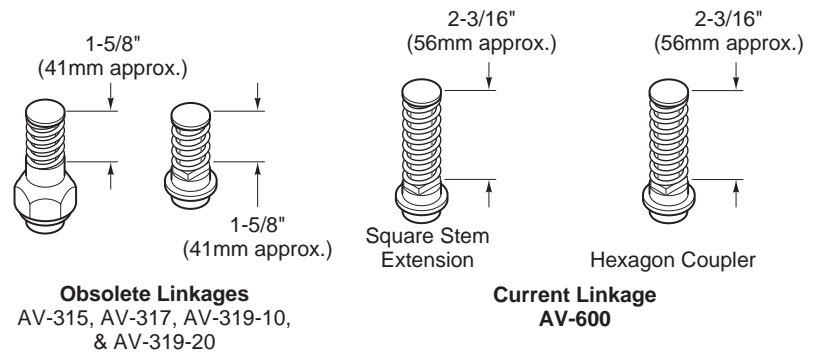


Figure-8 Identification of Obsolete Valve Linkages and Current AV-600.

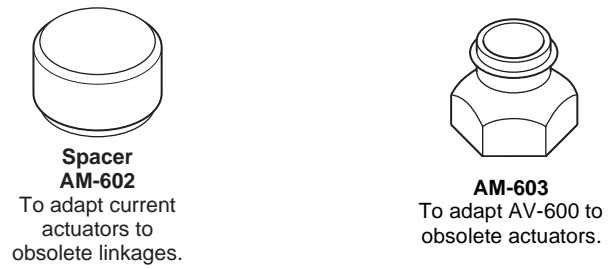


Figure-9 Adaptors for Obsolete Linkages and Actuators.

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