

# Valve Linkages

## Application

For assembling electric gear train actuators to valve bodies.

The AV-390 through AV-396 linkages are used to field assemble Invensys gear train actuators and VB-9XXX and VB-7XXX series of valve bodies.

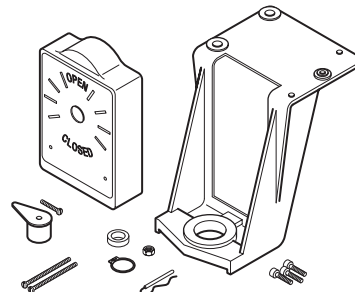
Features:

- Die case aluminum mounting bracket.
- Valve position indication provided as standard.

## Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.

## AV-29, AV-30, AV-9X Series , AV-300, AV-347, AV-39X Series Electric/Electronic Valve Linkage Kits



Model No.	Description	Minimum Actuator Torque Required (Actuator must be 180° Stroke) (lb-in.)	Stem Force (lb)
AV-29	Cam, Plunger and Connection Pin Kit	50	150
AV-30		100	300
AV-91	Cam, Plunger and Stem Extension Kit	40	150
AV-92 <sup>a</sup>		50	150
AV-93		70	300
AV-94 <sup>b</sup>		100	300
AV-300	Common Parts Kits Req. AV-29, 30	—	—
AV-347	Complete Linkage	50	150
AV-347-10		100	300
AV-347-20		50	150
AV-347-30		100	300
AV-390	Common Parts Kits Req. AV-91, 92, 93, 94	—	—
AV-391	Complete Linkages	40	150
AV-392 <sup>a</sup>		50	150
AV-393		70	300
AV-394 <sup>b</sup>		100	300
AV-395		50	150
AV-396		100	300

<sup>a</sup> Used on obsolete 1-1/2 & 2" VB-9XXX valves with spring return actuators only.

<sup>b</sup> Used on obsolete 1-1/2 & 2" VB-9XXX valves with non-spring return actuators only.

## Application

The AV-352 valve linkage is used to field-install gear train actuators on specified 2-1/2 to 6 in. valve bodies.

Features:

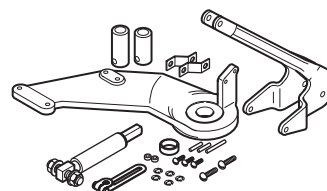
- Compatible with Invensys (Barber-Colman) 2-1/2 to 6 in. valves.
- Provides increased close-off pressure on 2-1/2 to 4 in. valves.
- Required for rated close-off pressure on 5 and 6 in. valves.

## Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.
- Minimum actuator torque required: 220 lb-in.
- Actuator travel required: 180°.

AV-352

## Gear Train Actuator Valve Linkage



## Application

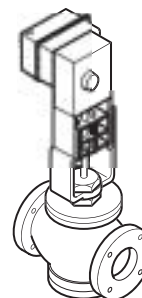
For assembling MP-9000 Series gear train actuators to 4 to 6 in. VB-9213 and VB-9313 valve bodies.

## Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.

AV-357, AV-358

## Electric/Electronic Valve Linkage Kits



## Application

The AV-400 valve linkage kit is used to field-install MK-2690 pneumatic actuators to a variety of 1/2 through 2 in. valve bodies.

Features:

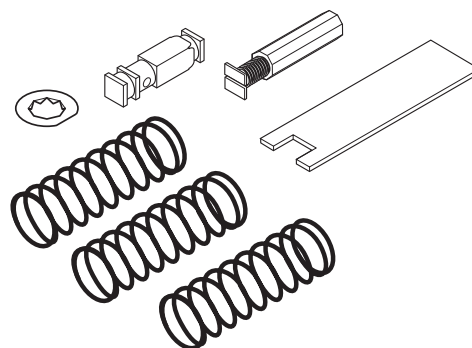
- Springs are provided for all control signal applications, including 3 to 7, 5 to 10, and 8 to 13 psig.
- Kit fits both current and obsolete Invensys (Barber-Colman) valve bodies.
- Contains parts for either VB-9XXX or VB-7XXX valve bodies.

## Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.

AV-400

## Pneumatic Actuator Valve Linkage Kit



Spring Range psig (kPa)	Spring Color
3 to 7 (21 to 46)	Yellow
5 to 10 (34 to 69)	Black
8 to 13 (55 to 90)	Blue

# Valve Linkages

## Application

For assembling MK-46XX Series pneumatic actuators to specific 1/2 to 2 in. VB-7XXX valve bodies.

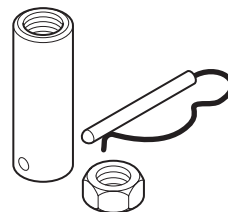
## Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.

Actuator Effective Area 11 sq. in. (21 cm <sup>2</sup> )	Spring Range psig (kPa)
MK-4601	3 to 6 (21 to 41)
MK-4611	5 to 10 (34 to 69)
MK-4621	10 to 13 (69 to 90)

**AV-401**

## Pneumatic Actuator Valve Linkage Kit



## Application

For assembling MK-6800 Series 50 sq. in. pneumatic actuators to 2-1/2 to 6 in. VB-9XXX valve bodies.

For assembling MK-6600 Series 50 sq. in. pneumatic actuators to 1-1/2 and 2 in. VB-7XXX valve bodies.

## Specifications

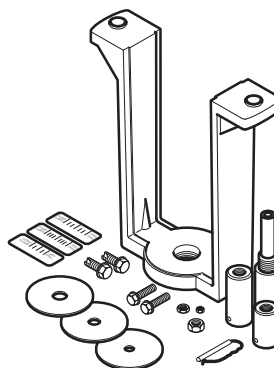
- Actuator mounting: In any upright position with actuator above the center line of the valve body.

Valve Body Description	Required Parts from AV-430-0-0-1			
	Lock Nut	Stem Extension	Indicator Plate	Scale Length
1-1/2 and 2 in. (VB-7XXX)	1/4 in.	For 1/4 in. Stem	With 1/4 in. Dia. Hole	1 in.
2-1/2 to 4 in. (VB-202, 252, 304, 804)	3/8 in.	For 3/8 in. Stem	With 3/8 in. Dia. Hole	1 in.
1-1/2 to 3 in. (VB-817) 2-1/2 & 3 in. (VB-9323)	3/8 in.	For 3/8 in. Stem <sup>a</sup>	With 3/8 Dia. Hole	1 in.
4 in. (VB-817, 9323)	3/8 in.	For 3/8 in. Stem	With 1/2 in. Dia. Hole	1 in.
5 and 6 in. (VB-817, 9323)	3/8 in.	For 3/8 in. Stem	With 3/8 in. Dia. Hole	1-1/2 in.

<sup>a</sup> Required stem extension may be shipped with valve body.

**AV-430**

## Electric/Electronic and Pneumatic Valve Linkage Kit



## Application

For assembling pneumatic actuators to 2-1/2 to 6 in. valve bodies.

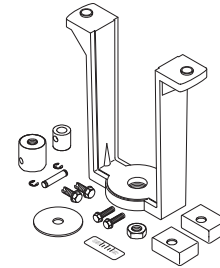
## Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.

Linkage Number	Valve Body Sizes Except VB-9323	Actuator
AV-496	2-1/2 to 6 in.	MK-88XX MK-89XX

**AV-496**

## Pneumatic Valve Linkage Kit



## Application

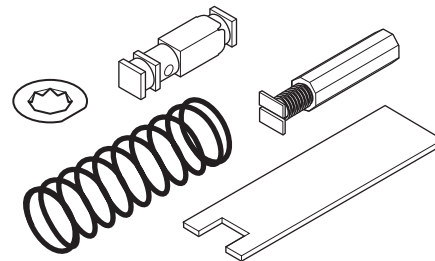
For assembling MA-521X, MF-5X13, MP-521X, MP-541X, MP-551X, MPR-561X, MPR-571X, and MPR-581X Series hydraulic actuators to (1/2 to 2 in.) VB-7XXX and obsolete VB-9XXX valve bodies. Device consists of spring retainer, spring and combination stem extension and lock nut. TOOL-19 spring compression tool is recommended for assembly.

## Specifications

- Actuator mounting: In any upright position above the center line of the valve body. For steam applications only, mount the actuator above the valve body at 45° from vertical.
- Contains parts for either VB-9XXX or VB-7XXX valve bodies.

**AV-600**

## Electric/Electronic Valve Linkage Kit



# Valve Linkages

## Application

The AV-601 valve extension kit is used to increase the allowable ambient temperature range of MA, MF, MP-5X1X-XXX, MPR-5X1X and MP-541X Series actuators. The MF-5X1X, MP-541X, and MPR-5X1X Series of actuators require the AV-601 extension. This kit provides thermal insulation between the valve and the actuator. It does not insulate the actuator from radiant or convective heat transfer.

## Specifications

- Kit consists of an extension coupling and a spacer.
- Dimensions: Add 2-1/32 in. (52 mm) to the “E” dimension for the valve assembly using an AV-601 linkage extension. Refer to complete dimensions:
  - Two-Way Valves, Union End and Flared.
  - Two-Way Valves, Screwed and Flanged.
  - Three-Way Mixing and Sequencing Valves, Flared.
  - Three-Way Mixing and Diverting Valves, Screwed.

## Restrictions on Maximum Ambient Temperature for Valve Actuators

Maximum Temperature of Media in Valve Body °F (°C) (Check Rating of Valve)	Maximum Ambient Temperature of MF-5X13, MP-541X, or MPR-5X1X)		Maximum Ambient Temperature of MA-521X, MP-551X or MP-521X	
	AV-600 <sup>a</sup> or AV-7600-1 <sup>b</sup> Only for Chilled Water Applications Only °F (°C)	AV-600 or AV-7600-1 and AV-601 °F (°C)	AV-600 or AV-7600-1 Only °F (°C)	AV-600 or AV-7600-1 and AV-601 °F (°C)
366 (180)	Do Not Use	88 (31)	90 (32)	90 (32)
340 (171)	Do Not Use	93 (34)	100 (38)	100 (38)
281 (138)	Do Not Use	103 (39)	115 (46)	140 (60) <sup>c</sup>
181 (83)	Do Not Use	120 (48)	140 (60) <sup>c</sup>	140 (60) <sup>c</sup>
80 (26))	140 (60) <sup>c</sup>	140 (60) <sup>c</sup>	140 (60) <sup>c</sup>	140 (60) <sup>c</sup>

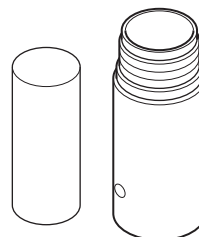
<sup>a</sup> For detailed valve linkage installation instructs, refer to AV-600 Hydraulic Actuator Valve Linkage Kit General Instructions, F-26279.

<sup>b</sup> For detailed valve linkage installation instructs, refer to AV-7600-1 Hydraulic Actuator Valve Linkage Kit General Instructions, F-26235.

<sup>c</sup> Maximum allowable ambient temperature of the actuator.

## AV-601

### Electric/Electronic Valve Linkage Extension Kit



## Application

The linkages are designed to link the Invensys actuators to VB-7XXX globe valves.

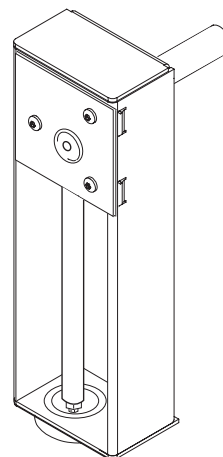
## Specifications

- Motor mounting: In any upright position with motor above center line of the valve body.

Actuator	Globe Valve	SR or NSR
MX40-717X	1-1/2 in. thru 2 in.	SR
MX40-6153	1-1/4 in. thru 2 in.	NSR
MX40-707X	1 in. thru 2 in.	SR
MX40-715X	1-1/4 in. thru 2 in.	

## AV-602

### Globe Valve Linkage Kit



## Application

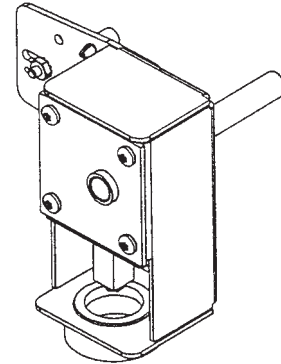
The AV-603 linkage is designed to link the Invensys MF40-6043 and MS40-6043 actuators to 1/2" through 2", 2-way or 3-way globe valves.

## Specifications

- Motor mounting: In any upright position with motor above center line of the valve body.

**AV-603**

## Globe Valve Linkage Kit



## Application

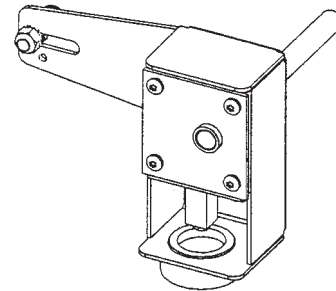
The AV-605 linkage is designed to link the Invensys MX40-6083 to 1/2" through 2", 2-way or 3-way globe valves and the MA40-704X, MF40-7043, and MS40-7043 actuators to 1/2" through 2", 2-way or 3-way globe valves.

## Specifications

- Motor mounting: In any upright position with motor above center line of the valve body.

**AV-605**

## Globe Valve Linkage Kit



## Application

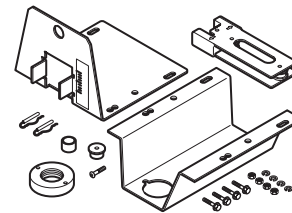
For assembling MM/ MMR-400 or MM/ MMR-500 Series actuators to 1/2 to 2 in. VB-7XXX, 2-1/2 to 4 in. VB-9XXX, and 2-1/2 to 3 in. VB-9323 valve bodies. Refer to table below.

## Specifications

- Motor mounting: In any upright position with motor above center line of the valve body.

**AV-630**

## Electric/Electronic Valve Linkage Kit



Valve Size	Linkage
1/2 to 1-1/4 in.	AV-630-010
2-1/2 to 4 in. except VB-9323	AV-630-030
2-1/2 and 3 in. VB-9323	AV-630-040
All the above valves	AV-630

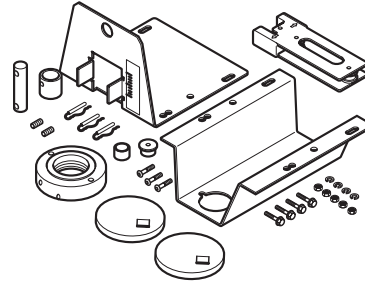
# Valve Linkages

AV-631

## Electric/Electronic Valve Linkage Kit

### Application

For assembling MM/ MMR-400 or MM/ MMR-500 Series to specific Honeywell valve bodies.



Valve Size	Honeywell Valve Body Part Number
<b>2-Way Valves</b>	
1/2"	V5011A1015
	V5011A1049
	V5011A1072
	V5011A1106
	V5011C1045
	V5011C1060
	V5011C1086
	V5011C1524
	V5011C1532
	V5011C1540
	V5011C1557
	V5011C1565
	3/4"
V5011C1144	
V5011C1151	
V5011C1599	
1"	V5011A1221
	V5011C1201
	V5011C1219
	V5011C1623
1-1/4"	V5011A1288
	V5011C1268
	V5011C1656
1-1/2"	V5011A1346
	V5011C1326
	V5011C1334
2"	V5011C1680
	V5011A1395
	V5011A1403
	V5011C1383
2-1/2"	V5011C1391
	V5011A1460
	V5011A1734
	V5011C1441
3"	V5011C1458
	V5011A1528
	V5011A1767
<b>3-Way Valves - Mixing</b>	
1/2"	V5013A1005
	V5013A1013
3/4"	V5013A1021
1"	V5013A1039
1-1/4"	V5013A1047
1-1/2"	V5013A1054
2"	V5013A1062
2-1/2"	V5013B1003
3"	V5013B1011
<b>3-Way Valves - Diverting</b>	
2-1/2"	V90CA-7
3"	V90CA-8

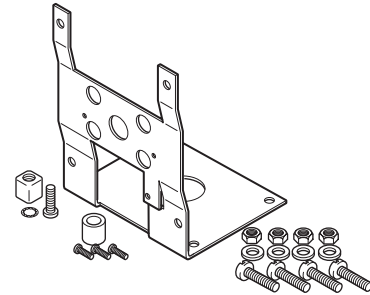
## Application

For mounting MM-400/500 modular actuator to Honeywell Q618A and Johnson Y20EBD valve linkages.

The kit is also used to mount Honeywell Q607 auxiliary switch and Q181A auxiliary potentiometer kits to MM-400/500 modular actuators.

AV-632

Adaptor Kit



## Application

The AV-641 Valve Linkage is designed for mounting MF-22XX3 series Floating Electric and MS-22353 Proportional actuators onto Invensys series valve bodies.

Features:

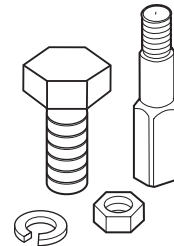
- Provides direct couple interface between actuators and valve bodies.

## Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.
- Also see AV-644 Valve Linkage Kit for hex (center section) stem extension.

AV-641

Valve Linkage Kit



## Application

The AV-642 Valve Linkage is designed for mounting MF-22XX3 series Floating Electric and MS-22353 Proportional actuators onto 15 mm and 20 mm GBX and VT Controlli series valve bodies.

Features:

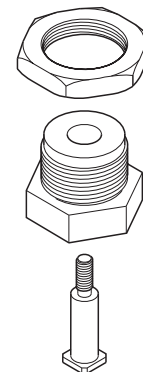
- Provides direct couple interface between actuators and Controlli valve bodies.

## Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.

AV-642

Valve Linkage Kit





# Valve Linkages

## Application

The AV-644 Valve Linkage is designed for mounting MF-22XX3 series Floating Electric and MS-22353 Proportional actuators onto Invensys series valve bodies.

Features:

- Provides direct couple interface between actuators and valve bodies.

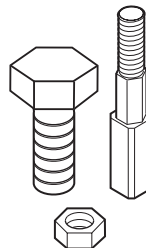
## Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.
- Replaces AV-643 Valve Linkage (plastic).

Note: AV-644-10 includes the drive screw.

## AV-644 and AV-644-10

### Valve Linkage Kit



## Application

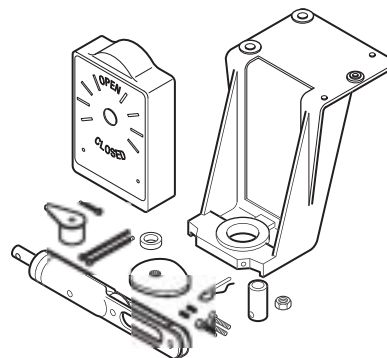
Provides the interface between electric gear train actuators and Honeywell V-5011 two-way and V-5013 three-way (1/2 to 3 in.) valve bodies with 1-3/8 in. bonnets.

## Specifications

- Actuator mounting: In any upright position with actuator above center line of the valve body.
- Minimum actuator torque required: 50 lb-in. (5.6 N-m). Actuator must have 180° stroke.
- Stem force: 150 lb (667 N).
- Typical actuators:
  - MA-318, 318-500, 416, 416-500, 418, 418-500, 419, 419-500.
  - MC-351, 421, 431, 4311 and MC5-4311.
  - MP-361, 371, 381, 382, 421, 422, 451, 452, 461-600, 465, 471-600, 475, 481-600, 485, 486, 4851.
  - MP5-4651, 4751, 4851.

## AV-650

### Electric/Electronic Valve Linkage Kit



## Close-Off Pressure Ratings

Valve Body		Close-Off Pressure Ratings psi (kPa) <sup>a</sup>	Valve Body		Close-Off Pressure Ratings psi (kPa) <sup>a</sup>
V-5011	1/2 in.	150 (1034)	V-5013	1/2 in.	150 (1034)
	3/4 in.			3/4 in.	
	1 in.			1 in.	
	1-1/4 in.	132 (910)		1-1/4 in.	137 (945)
	1-1/2 in.	85 (586)		1-1/2 in.	92 (634)
	2 in.	52 (359)		2 in.	63 (434)
	2-1/2 in.	30 (207)		2-1/2 in.	30 (207)
	3 in.	19 (131)		3 in.	21 (145)

<sup>a</sup> Based on 1050 lb (668 N) stem force.

## Application

For mounting MF-60000 Series actuators on 1/2- 2 in VB-7000 and VB-9000 valves.

Features:

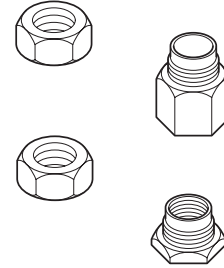
- Provides direct couple interface between actuator valve.

## Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.

AV-671

## Electric/Electronic Valve Linkage Kit



## Application

For mounting MF-60000 Series actuators on 2-1/2, 3, or 4 in. VB-921X and VB-931X valves.

Features:

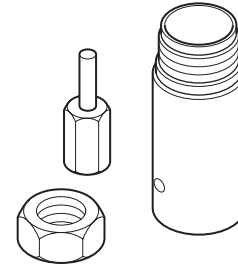
- Provides direct couple interface between MF-60000 actuator and 2-1/2 to 4 in. valve.

## Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.

AV-672

## Electric/Electronic Valve Linkage Kit



# Valve Linkages

**AV-673**

## Electric/Electronic Valve Linkage Kit

### Application

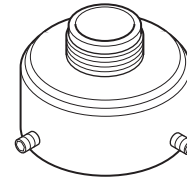
For mounting selected Invensys actuators on Johnson Controls 1/2 through 2 in. VB-3754, VB-3924, and VB-4324 valves.

Features:

- Provides direct couple interface between MF-631X3 actuator and 1/2 through 2 in. Johnson Controls VB-3754, VB-3924, and VB-4324 valves.

### Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.



### Close-Off Rating

#### Two-Way Valves

Johnson Controls Valve Body	P Code	Size in.	MF-631X3 Close-Off Pressure Ratings psig
VB-3754 (Push Down to Close)	-1	1/2	150
	-2		
	-3		
VB-3974 (Push Down to Open)	-4	3/4	95
	-5	1	
	-6	1-1/2	
	-7	2	

#### Three-Way Valves

Johnson Controls Valve Body	P Code	Size in.	Close-Off Pressure Ratings
VB-4324 (Three-Way Mixing)	-1	1/2	150
	-2		
	-3		
	-4	3/4	95
	-5	1	
	-6	1-1/2	
	-7	2	

**AV-674**

## Electric/Electronic Valve Linkage Kit

### Application

For mounting selected Invensys actuators on 1/2 to 3 in. Honeywell 3/4 in. stroke valves.

Features:

- Provides direct couple interface between MF-631X3 actuator and 1/2 to 3 in. Honeywell 3/4 in. stroke valve.

### Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.

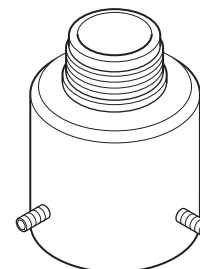
### Close-Off Rating

#### Two-Way Valves

Honeywell Valve Body	Size in.	Close-Off Pressure Ratings psig
V5011F (Screwed)	1/2	150
	3/4	
	1	
	1-1/4	
	1-1/2	123
	2	75
	2-1/2	44
V5011G (Screwed, Comp. Disc)	3	27
	2	75
	2-1/2	44
V5011G (Screwed, Metal-to-Metal Seating)	3	27
	1/2	150
	3/4	
	1	
	1-1/4	123

#### Three-Way Valves

Honeywell Valve Body	Size in.	Close-Off Pressure Ratings psig
V5013F (Screwed, Mixing)	1/2	150
	3/4	
	1	
	1-1/4	
	1-1/2	137
	2	96



# Valve Linkages

## Application

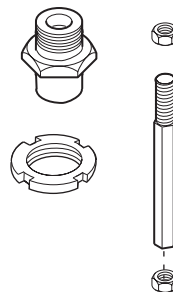
The AV-680 linkage is used to mount the MS-7913 and MS-7923 model actuators to 1-1/2 to 2 in. VB-7XXX globe valve bodies.

## Specifications

- Parts needed to mount MX-7913 and MX-7923 actuators to VB-7XXX valves.
- If fluid temperatures exceed 300°F (150°C), mount actuator above horizontal, but at least 45° from vertical.

**AV-680**

## Electric/Electronic Valve Linkage Kit



## Application

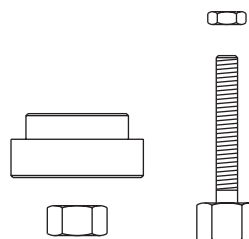
The AV-681 linkage is used to mount the MS-7913 and MS-7923 model actuators to 2-1/2 to 4 in. VB-9XXX globe valves.

## Specifications

- Parts to mount MX-7913 and MX-7923 actuators to obsolete VB-9XXX valves.
- If fluid temperatures exceed 300°F (150°C), mount actuator above horizontal, but at least 45° from vertical.

**AV-681**

## Electric/Electronic Valve Linkage Kit



## Application

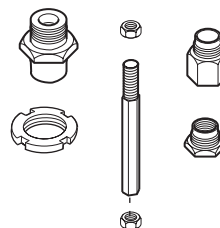
The AV-682 linkage is used to mount the MS-7913 and MS-7923 model actuators to style A and B (obsolete) 1-1/2 and 2 in. VB-9XXX valves.

## Specifications

- Parts needed to mount MX-7913 and MX-7923 actuators to obsolete VB-9XXX valves.
- If fluid temperatures exceed 300°F (150°C), mount actuator above horizontal, but at least 45° from vertical.

**AV-682**

## Electric/Electronic Valve Linkage Kit



## Application

The AV-7400 valve linkage kit is used to field-install MK-2690 pneumatic actuators to a variety of VB-7XXX series 1/2 through 2 in. valve bodies.

Features:

- Springs are provided for all control signal applications, including 3 to 7, 5 to 10, and 8 to 13 psig.
- Kit fits all VB-7XXX series valve bodies.
- Blue spring used with AV-7600-1 supports hydraulic 4-20 mA and 0-10 Vdc applications.

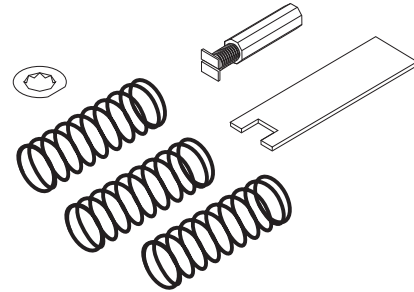
## Specifications

- Actuator mounting: In any upright position with actuator above the center line of the valve body.

Spring Range psig (kPa)	Spring Color
3 to 7 (21 to 48)	Yellow
5 to 10 (34 to 68)	Black
8 to 13 (55 to 89)	Blue

AV-7400

## Pneumatic Actuator Valve Linkage Kit



## Application

The AV-7600-1 valve linkage kit is used to field assemble MA-521X, MF-5X13, MP-521X, MP-541X, MP-551X, MPR-561X, MPR-571X, and MPR-581X round hydraulic actuators to 1/2 through 2 in. VB-7XXX series valve bodies.

Features:

- Provides direct couple interface between MA, MF, MP, and MPR-5XXX actuators and valve bodies.
- Kit fits all VB-7XXX series valve bodies.
- Includes spring choices for higher 2-way valve close off.

## Specifications

- Actuator mounting: In any upright position above the center line of the valve body. For steam applications only, mount the actuator above the valve body at 45° from vertical.

AV-7600-1

## Hydraulic Actuator Valve Linkage Kit

