DBOY (S) | DDBOY (S) | DBOS | DDBOS
Series 3 Control Valve
Installation and Operations Manual

Sizes: 2” to 8” | ANSI Class: 150# - 600#

DBOY Control Valve

Please read and save these instructions.

IOM-575

Armstrong®

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Safety

Icon Legend

If instructions in this manual are not followed:

Injury or death and property damage are ***imminent***.

Injury or death and property damage are ***possible***.

Potential property damage, expensive repairs, and/or voiding the warranty may result.

Hot water or metal may cause scald burns. Skin exposure to 140°F (60°C) water or metal for only five seconds may cause a second-degree burn.

Failure to comply with instructions following a safety icon may result in adverse consequences, including property damage, personal injury, or, in extreme cases, death.

General Safety Guidelines

1. Inappropriate use (beyond typical, intended use) could cause damage to the product and other property. It may also result in personal injury or, in extreme cases, death.
2. Only designated, qualified, and competent personnel should operate, maintain, and service this equipment in accordance with the directions in this product instruction manual.
3. Improper setup, operation, or maintenance may void the product's warranty.
4. When operating and maintaining this product:
   a. ALWAYS select and wear appropriate personal protective equipment (PPE) before carrying out any physical work at the job site, per site-specific requirements. Appropriate PPE may include hard hats, safety glasses, gloves, boots, or shoes with non-slip soles and toe guards, or protective overalls.
   b. ALWAYS scan the work area and take note of potential hazards before entering. Adjust your travel path or work position to avoid hazards and personal injury.
   c. ALWAYS observe designated safety procedures when working in hazardous locations (areas containing explosive and combustible gases, vapors, and dusts) and confined spaces (locations where breathable air supply is limited or variable, or where entrapment could occur).
   d. ALWAYS use proper lockout/tag-out procedures to disconnect power sources and de-energize machinery before conducting installation, service, or repair.
   e. ALWAYS use great care and appropriate safety gear when working above ground level, especially on ladders and platforms, or in the presence of overhead electrical power lines.
   f. ALWAYS shut off all "live" steam supply, water supply, and condensate return lines before breaking or loosening any plumbing joints.
   g. ALWAYS carefully relieve any residual internal pressure in the system or connecting pipe work before breaking or loosening any plumbing joints.
   h. ALWAYS allow hot parts to cool before serving to avoid the risk of skin burns.

1.0 - Installation

1.1 - Installing DBOY Control Valve

NOTE: Where noise may be a factor, follow recommendations for piping and fittings per the TSB for noise in steam piping systems.

Install the control valve in the highest horizontal line of piping, in an accessible location and with arrow on the side of the valve body pointing in the direction of fluid flow.

1.2 - Installation Preference Based on Ease of Maintenance

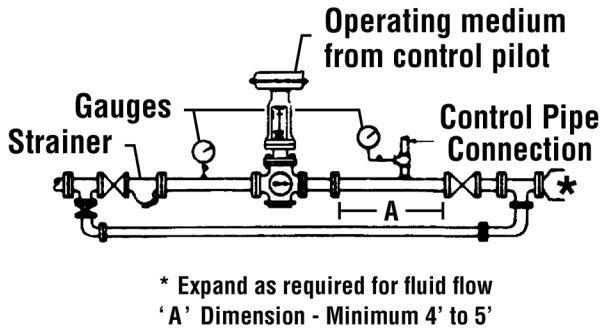
1. Mount the control valve in an **UPRIGHT** position.
2. Mount the control valve in an **INVERTED** position.
3. Mount the control valve in a side position only where absolutely necessary. When the control valve is mounted in a horizontal side position, it is necessary to remove the complete control valve from the line to facilitate a trim change or a valve rebuild.

In all cases, ensure there is sufficient space above, below, and around the control valve to easily remove the valve or its parts for maintenance. See **Figure 14**.

All piping should be cleaned thoroughly before installing the control valve.

Inlet and outlet piping should be well drained to prevent the valve parts from eroding during steam service. Adhere to good piping practices and install a bypass around the control valve.

1.3 - Typical Installations



*** Expand as required for fluid flow**
'A' Dimension - Minimum 4' to 5'

Figure 1 Typical Installation - Recommended Piping for Control of Compressible Fluids at Valves of 25% or Less of Inlet Pressure

Expand outlet pipe as required to limit velocity. Use a tapered expander.

Connect control pipe for control pilot ahead of outlet stop valve and at least 2' - 3' feet downstream from the end of the expander. Make the control pipe connection at least 18" inches from the outlet stop valve, any elbow, or other source of turbulence.

NOTE: Where sensing impulse is taken 2' - 3' downstream from control valve (expander), then dimension 'A' of 6' - 10' will provide the lowest noise and velocity factors, accurate pressure sensing, and reasonable bypass length.

2.0 - Operation and Maintenance

2.1 - Operating DBOY Control Valve

NOTE: Before placing the control valve in service, close the inlet and outlet stop valve and check the control valve for rated travel in relation to changes in operating air pressure on the diaphragm.

Place the control valve in operation in accordance with the instructions furnished with the control pilot or other control device.

2.2 - Disassembling DBOY Control Valve for Service

1. Close the inlet and outlet stop valve and relieve all pressure from the valve body. Remove all compression from adjusting spring(s).

2a. For **Direct Acting Actuators** - **DBOY(S)-3** and **DBOS-3** - **Normally open valves**
Relieve air pressure from the actuator. Remove the tubing from upper diaphragm case.

2b. For **Reverse Acting Actuators** - **DDBOY(S)-3** and **DDBOS-3** - **Normally closed valves**
Apply sufficient air to the actuator diaphragm to keep the valve plug form touching the seat while disengaging the valve plug stem from the actuator stem.

3. Loosen the valve stem nut. Use wrench on plug stem flats and turn valve plug out of actuator stem until stems separate. Remove the tubing from the lower diaphragm case. Do NOT grasp the stem with pliers.
4. Remove (4) cap screws, holding the actuator to the bonnet, and lift off the actuator. Use caution not to damage the valve stem with the yoke.
5. Remove the stem nut, travel indicator, packing flange nuts, packing flange, and packing follower.
6. Remove bonnet nuts and lift bonnet straight up until it clears the valve plug stem, being careful not to damage the threads. Take out bonnet gasket.
7. Lift the valve plug assembly and cage out.
8. Remove the load ring, seat ring, and seat ring gasket.
9. Hold plug with a wrench on stem flats and remove cap screws, holding the piston disc in place. Remove the disc and piston cup washer. (NOTE: For piston type rings, remove the piston ring and clean the piston groove).

2.3 - Cleaning the DBOY Control Valve

Remove the old packing from the bonnet and clean and polish the stuffing box. Clean all parts with solvent. Then, polish parts with a fine aluminum oxide cloth to remove any foreign matter.

Replace any worn or damaged parts. Be sure that all gasket seating surfaces are clean and smooth. If any of the gasket faces are steam cut and re-machining is needed, it is strongly recommended that the valve be returned to the factory for repair. ALL CRITICAL DIMENSIONS must be maintained during the re-machining process.

2.3.1 - Lapping-In of Valve Plug and Seat Ring

NOTE: Do not install piston cup washer or piston ring until the lapping procedure is complete.

1. Place the seat ring in the body recess with seating surface facing upward.
2. Lower the cage into the body with the window opening facing downward. Ensure the cage fits into the body with window openings downward. Ensure that the cage fits over the raised face of seat ring.
3. Use a small amount of carborundum grade (“CF”) lapping compound (or equal) evenly spread around the valve plug seating surface. Carefully insert the valve plug into the valve body until he plug contacts the seat ring.
4. Lower the bonnet over the valve stem, making sure stem threads are not damaged.

Operation and Maintenance, cont.

5. Place one metal packing ring over the valve stem and into the bottom of the stuffing box to act as a guide while lapping the plug. See **Figure 16**.
6. Lightly lap the plug to seat ring using the weight of the plug only by rotating the plug in 1/4 turn increments. Lift and rotate the plug 90° three or four times during the lapping procedure to ensure even distribution of the compound. DO NOT lap excessively - 10 to 12 turns should be sufficient.
7. Remove the parts and clean them thoroughly after lapping. Plug and seat ring contact may be checked by the bluing method before reassembly.

2.4 - Reassembling the DBOY Valve Body

IMPORTANT NOTE: The load ring MUST be installed in the proper position. See the following images for reference:

- **Class DBOS and DDBOS (High Temperature): Figure 15**
- **Class DBOY(S) and DDBOY(S): Figure 16**

2.4.1 - Class DBOS-3 and DDBOS-3 (Piston Ring Type)

1. Carefully position a new seat ring gasket in the body recess. Install the seat ring with the seating surface facing upward. Position the load ring on top of the seat ring flange as shown in **Figure 15**.

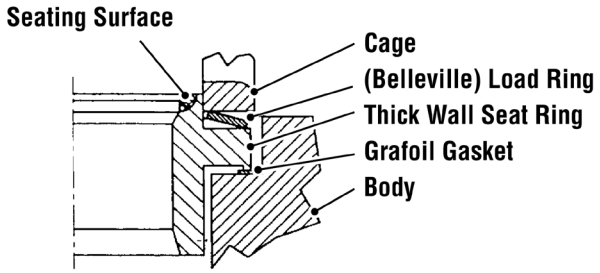


Figure 2 Piston Load Ring Diagram

2.4.2 - Class DBOS-3 and DBOY-3 (Cup-Seal Type)

1. With the seat ring seating surface facing upward, place the seat ring gasket over the lower end of the seat ring. Push the gasket up against the flange. Install the seat ring with the gasket in the main body. Position the load ring on top of the seat ring flange as shown in **Figure 15**.
2. Center the piston cup washer on the valve plug piston with the beveled edge of the washer facing downward. Install the piston disc and tighten the hex-head cap screws evenly. The disc bottoms in the piston recess.

2.5 - Piston Cup Washer and Piston Ring

2.5.1 - Preforming Piston Cup Washer

1. Using a compatible size ring compressor, slide the expanded ring compressor over the piston cup washer until the edge is flush with the main valve seat end.
2. Compress the piston cup washer using the ring compressor until it forms around the main valve.
3. Using a lead hammer, tap the main valve stem until the main valve protrudes below the ring compressor, almost until the point where the piston cup washer will come out.
4. Insert the main valve into the bore of the cage. Rest the ring compressor on the top of the cage, ensuring that the compressor and main valve are square with the bore.
5. Use one sharp blow of the lead hammer to drive the main valve into the cage, thus inserting the preformed piston cup washer.

Operation and Maintenance, cont.

2.5.2 - DBOS-3 and DDBOS-3 Piston Ring Fitted Type

1. Expand the piston ring gap just enough to slide the ring down over the piston, away from the stem end of the plug, and into the ring groove.
   NOTE: Over-expanding the ring may cause the ring to break. If a 2-piece ring is used, install the inner ring, then install the outer ring with a gap opposite (180°) inner ring gap.
2. Compress the piston ring into the ring groove and carefully guide the valve plug assembly down into cage until the valve plug rests on the seat ring.
3. Place a new bonnet gasket into the body recess and carefully lower the bonnet over the plug stem threads so as to not damage the threads. Align the bonnet so that the stuffing box studs are in line with the inlet and outlet of the body.
4. Tighten the bonnet stud nuts evenly and alternately until the bonnet and body are in metal to metal contact to provide proper gasket compression.

2.6 - Stem Packing

The stuffing box interior and valve plug stem must be clean, smooth, and free from imperfections that may cause new packing to leak.

Teflon Chevron type packing is standard on all valves with a “Y” in their classification, e.g. DBOY(S) and DDBOY(S).

Graphite II type packing is standard on steel DBOS-3 and DDBOS-3 type valves.

2.6.1 - Teflon Chevron Type Packing

1. Place one metal ring in the stuffing box, making sure the metal ring bottoms in the box. Place the spring over the metal ring, and then place a second metal ring over the spring. Install the bottom Teflon adapter, four Teflon packing chevrons, and top Teflon adapter in accordance with **Figure 16**.
2. Install the packing follower, packing flange, and two (2) nuts. Tighten the stuffing box nuts until the packing follower bottoms on the bonnet. Chevron packing is live-loaded and no adjustment is necessary.

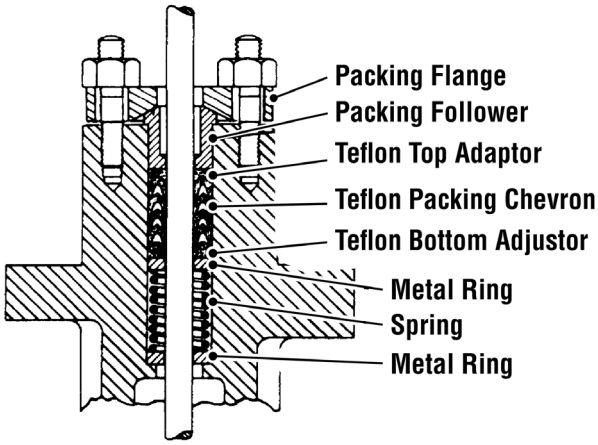


Figure 3 Teflon Chevron packing diagram

2.6.2 - Installing Graphite Type II Stem Packing

Installation

1. One at a time, place spacers and packing ring into the packing box in the order shown in **Figure 17**. Seat each ring firmly and ensure that the rings are not torn on the stem thread.
2. Adjust the packing gland nuts equally - finger tight plus 1/6 turn (one flat of a nut). If the nuts are adjusted evenly, the packing flange will be level.

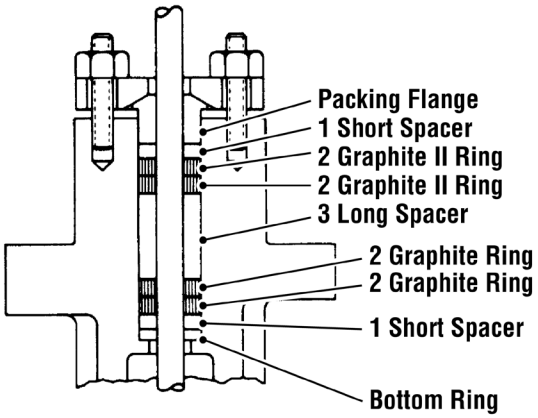


Figure 4 Graphite Type II packing diagram

Adjustment

NOTE: During start-up, some leakage may be observed. Do not readjust packing. Allow at least 15 minutes for pressure and temperature stabilization to occur. If leakage continues, proceed to Step 3.

3. If leakage continues, tighten both packing nuts a maximum of 1/6 of a turn at a time. If pressure is raised considerably, the packing may leak slightly. **Do not readjust** - leakage will stop when new pressure/temperature stabilization is reached.

2.6.3 - Stem Packing Break In and Retrofit

Break-In

It is recommended to fully stroke the valve approximately 20 times after packing installation and adjustment to break in the packing and reduce stem friction.

Retrofit

When installing this packing in a used valve, the stem finish is especially important. It should be reasonably close to its original micro-finish: smooth, clean, and free of scratches and scoring. The packing box bore should also be in good condition - smooth and clean. Both stem and packing box bore must be within dimensional tolerances.

If LUBRISOFT packing is used, repack per instructions on the reverse side of packing wrapper.

2.7 - Actuation

2.7.1 - Actuator Types Used

Direct Acting Actuator - Air pressure extends stem

- Note: Size 270 Actuator has air connections in the upper diaphragm case and spacer housing

Reverse Acting Actuator - Air pressure retracts stem

- Note: Size 270 Actuator has air connections in the lower diaphragm case and spacer housing

NOTE: The maximum allowable air pressure to diaphragm chamber(s) is 60 PSIG for **all size** actuators.

2.7.2 - Installing the Actuator

1. Replace the actuator on the bonnet. Insert and tighten the cap screws to secure the yoke to the bonnet.
2. Assemble the valve stem nut and travel indicator disc onto the valve plug stem, as shown in Fig. 3
3. Lift the valve plug ands crew plug stem threads into actuator stem threads about one stem diameter. Screw stem nut upward until it contacts travel indicator disc.

2.7.3 - Adjusting Valve Travel

Apply sufficient air pressure to the actuator diaphragm to fully stroke the valve. **NOTE: Do NOT turn the plug when the plug is on the valve seat**. **If the valve is a spring-closing type DDBOS or DDBOY, apply enough air to the diaphragm to lift the plug off of its seat before turning the plug.**

- If travel is LESS than that shown on travel indicator scale, screw the valve plug upward into the actuator stem.
- If travel is MORE than that shown on travel indicator scale, screw the valve plug stem downward out of the actuator.

Once correct valve travel has been obtained, turn the plug 1/2 turn out of the actuator stem towards the seat to assure a POSITIVE SEATING of the plug. Tighten the stem nut while holding stem with a wrench on the flats.

2.7.4 - Adjusting Actuator Springs Preload

For all actuators, compress the actuator adjusting spring(s) sufficiently to move the diaphragm(s) UP until the actuator upper case stops in DIRECT ACTING actuators, or DOWN until valve plug contacts the seat in REVERSE ACTING actuators.

Operation and Maintenance, cont.

DBOY(S) and DBOS-3 - Adjusting Direct Acting Actuators

With **NO** pressure in the valve body, adjust the actuator adjusting spring compression so that the valve plug JUST STARTS to move when 3 psig air is applied to the actuator diaphragm.

- SIZE 270 Actuator only: Valve plug should just start to move when 1-1/2 psig air is applied to actuator diaphragm.

DDBOY(S) and DDBOS-3 - Adjusting Reverse Acting Actuators

Follow the steps below to adjust springs in reverse acting actuator:

1. **Determine 'K' Value**
   Use **Table 1** to determine 'K' factor for your actuator.

Valve Size	K Factor				
	35R	55R / 55AR	85R / 85AR	135R	270R
2	70	115			
2-1/2		78	121		
3		56	88		
4		33	52	83	
6			25	39	78
8				23	45

2. **Determine 'Ps' Value**

   P_1 = Inlet Pressure (psia)

   P_2 = Outlet Pressure (psia)

   K = See **Table 1**

$$Ps = \frac{P_1 - P_2}{K}$$

Example: 3" DDBOY with Size 55R Actuator

P_1 = 600 psig

P_2 = 200 psig

K = 56 (from **Table X**)

Ps = 6.25 psig

3. **Adjust the Actuator**
   With **NO** pressure in the valve body, just the actuator spring(s) compression so that the valve plug JUST STARTS to move when the 'Ps' value in psig is applied to diaphragm(s) of valve actuator.

3.0 - (D)DBOY(S)-2CD Control Valve

3.1 - (D)DBOY(S) - 2CD Control Valve for Bi-Directional Shut-Off

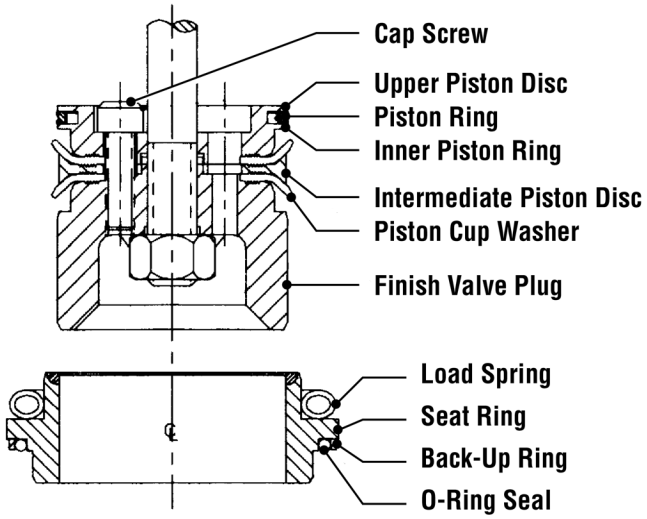
The (D)DBOY(S)-**2CD** is a variation of the standard piston-balanced (D)BOY(S) series that is designed to provide bi-directional shut-off capability. It is suitable for batch type processes (such as textile dying and finishing) where back pressure is applied against the valve during shut-off. (It is not designed for throttling against a reverse flow).

The significant differences between the (D)DBOY(S)-2CD and the standard design are:

- O-ring seal with back-up ring to provide a bi-directional seal between the body and seat ring
- Two piston cup washers, each sealing in a different direction and separated by an intermediate piston disc
- A special upper piston disc with piston ring, which acts as a wiper to keep the inner surface of the cage clean
- A lock nut on the packing flange studs (braided Teflon graphite packing is used for this design)

3.1.1 - Bi-Directional Control Valve Parts

Description	2”	2-1/2”	3”
Upper Piston Disc	LV-A70921	LV-A70922	LV-A70923
Intermediate Piston Disc	LV-A70450	LV-A70452	LV-A70463
Valve Plug	LV-A70931	LV-A69285	LV-A69286
Piston Ring	LV-A62591	LV-A62493	LV-A61390
Inner Piston Ring	LV-A70934	LV-A70935	LV-A70936
Piston Cup Washer	LV-A61764	LV-A61445	LV-A60999
Cap Screws	LV-A70473	LV-A70473	LV-A39654
Seat Ring	LV-A67714	LV-A67715	LV-A67716
Load Spring	LV-A67296	LV-A67297	LV-A67298
O-Ring Seal	LV-A70018	LV-A70020	LV-A70093
Back-Up Ring	LV-A70019	LV-A70021	LV-A70092
Packing Lock Nut	LV-A23194	LV-A23194	LV-A23194



The (D)DBOY(S)-2CD is available in sizes 2”, 2-1/2”, and 3” only. The trim code is CD and the packing code is 4. For example, a 2” threaded DDBOY-2CD and 35R actuator would be U831F1B4CD0.

In order to account for the additional friction of a second piston seal, and to provide for full stroking of the control valve with less than 15 psig of air, the following springs should be used:

Valve Size	Actuator	Span (psig)	Spring	Air to Fully Stroke (psig)
2”	35R	8	LV-A70947	14
2”	55R	8	LV-A24297	13
		9	LV-A43078	14
2-1/2”	55R	9	LV-A24297	14
		10	LV-A43078	15
3”	55R	7	LV-A24298	13
3”	85R	7	LV-A24300	13
		10	LV-A24299	15

The pressure spring selections are good for shut-off against pressure drops up to 125 psig. For springs suitable for pressure drops higher than 125 psig, **consult factory**.

4.0 - Dimensions

4.1 - Diaphragm Control Valve Dimensions

DIRECT ACTING

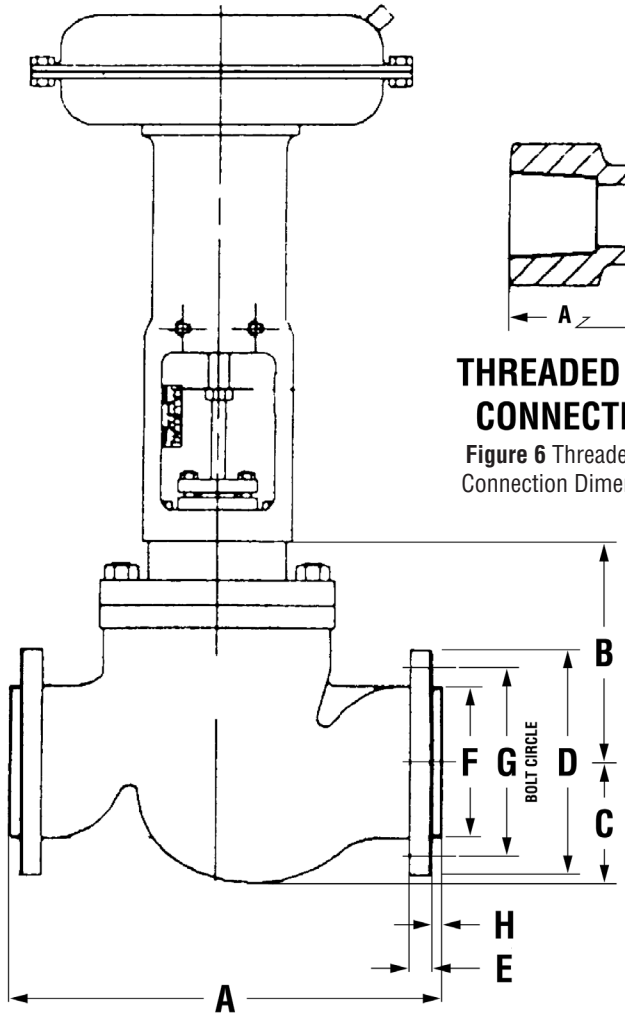
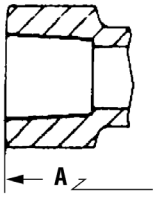
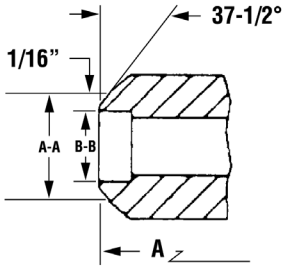


Figure 5 Control Valve Dimensions



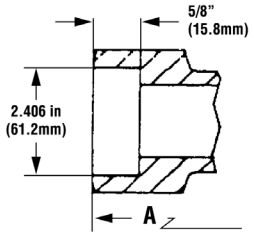
THREADED END CONNECTION

Figure 6 Threaded End Connection Dimensions



BUTTWELD END
(PIPE SCHEDULE MUST BE SPECIFIED)

Figure 7 Buttweld End Connection Dimensions



SOCKET WELD END CONNECTION

Figure 8 Socket weld End Connection Dimensions

Buttweld End Dimensions

Size		Sch. 80 B-B	Sch. 40 B-B	A-A	A
2-1/2"	inches	2.323		2-15/16	11-1/2
	mm	59.0		74.6	292.1
3"	inches	2.900		3-9/16	12-1/2
	mm	73.6		90.4	317.5
4"	inches	3-826		4-5/8	14-1/2
	mm	91.2		117.4	368.3
6"	inches	5-761	6.065	6-25/32	18-5/8
	mm	146.3	154.1	172.2	473.0
8"	inches	7.625	7.981	8-25/32	22-3/8
	mm	193.7	202.7	223.0	568.3

Valve Size	Valve Travel	Valve Flow Coefficient (Cv)				Standard Actuator Size	Alternate Acutator Size
		Std. Trim	Red. Trim	LES-Sonic	LES-Cav		
2"	3/4"	65	26	48	32	35(R)	55(R)
2-1/2"	7/8"	90	36	70	40	55A(R)	85(R)
3"	1"	125	50	97	63	55A(R)	85(R)
4"	1-1/4"	205	82	156	103	55A(R)	85(R)
6"	2"	435	174	349	217	85A(R)	135(R)
8"	2-3/4"	760	304	579	304	135(R)	270(R)

Dimensions, cont.

4.1.1 - Diaphragm Control Valve Dimensions with Threaded End Connections

Carbon Steel Body - Threaded End Connections

Valve Size	Unit	Dimensions			Net Weight
		A	B	C	
2”	inches	9-1/4	7-1/8	3	45 lb
50 mm	mm	234.9	181.0	76.2	20.4 kg

Cast Iron Body - Threaded End Connections

Valve Size	Unit	Dimensions			Net Weight
		A	B	C	
2”	inches	9-1/4	7-1/4	3-3/4	80 lb.
50 mm	mm	235.0	184.2	98.3	36.3 kg.

4.1.2 - Diaphragm Control Valve Dimensions with SWE End Connections

SWE End Connections

Valve Size	Unit	Dimensions			Net Weight
		A	B	C	
2”	inches	9-1/4	7-1/8	3	45 lb
50 mm	mm	234.9	181.0	76.2	20.4 kg

4.1.3 - Diaphragm Control Valve Dimensions with Flanged Class #125 End Connections

Cast Iron Body - Flanged Class #125 ANSI Standard B16.1 End Connections

Valve Size	Unit	Dimensions						Number of Holes	Size of Holes	Net Weight
		A	B	C	D	E	G			
2"	inches	10	7-1/4	3-3/4	6	5/8	4-3/4	4	3/4" 19.1mm	85 lb
50mm	mm	254.0	184.2	95.3	152.4	15.9	120.7			38.6 kg
2-1/2"	inches	10-7/8	6-5/8	4-3/8	7	11/16	5-1/2			125 lb
65mm	mm	276.2	168.3	111.1	177.8	17.5	139.7			56.7 kg
3"	inches	11-3/4	6-7/8	4-1/2	7-1/2	3/4	6			145 lb
80mm	mm	298.5	174.6	114.3	190.5	19.1	152.4			65.8 kg
4"	inches	13-7/8	8-1/8	5-1/2	9	15/16	7-1/2	8	3/4"	190 lb
100mm	mm	352.4	206.4	139.7	228.6	23.8	190.5		19.1mm	86.2 kg
6"	inches	17-3/4	9-3/4	5-7/8	11	1	9-1/2	8	7/8" 22.2mm	460 lb
160mm	mm	450.9	247.7	149.2	279.4	25.4	241.3			208.7 kg
8"	inches	21-3/8	12-1/4	7-5/8	13-1/2	1-1/8	11-3/4			625 lb
200mm	mm	542.9	311.2	193.7	342.9	28.6	298.5			283.5 kg

4.1.4 - Diaphragm Control Valve Dimensions with Flanged Class #150 End Connections

Carbon Steel Body - Flanged Class #150 ANSI Standard B126.5 End Connections

Valve Size	Unit	Dimensions								Number of Holes	Size of Holes	Net Weight
		A	B	C	D	E	F	G	H			
2"	inches	10	7-1/8	3	6	9/16	3-5/8	4-3/4	1/16	4	3/4" 19.1mm	85 lb
50mm	mm	254.0	181.0	76.2	152.4	14.3	92.1	120.7	1.6			38.6 kg
2-1/2"	inches	10-7/8	6-5/8	3-1/2	7	5/8	4-1/8	5-1/2	1/16			125 lb
65mm	mm	276.2	168.3	88.9	177.8	15.9	104.8	139.7	1.6			56.7 kg
3"	inches	11-3/4	6-7/8	3-3/4	7-1/2	11/16	5	6	1/16			145 lb
80mm	mm	298.5	174.6	95.3	190.5	17.5	127.0	152.4	1.6			65.8 kg
4"	inches	13-7/8	8-5/8	4-1/2	9	7/8	6-3/16	7-1/2	1/16	8	3/4"	190 lb
100mm	mm	352.4	219.1	114.3	228.6	22.2	157.2	190.5	1.6		19.1mm	86.2 kg
6"	inches	17-3/4	9-3/4	5-1/2	11	15/16	8-1/2	9-1/2	1/16	8	7/8" 22.2mm	450 lb
160mm	mm	450.9	247.7	139.7	279.4	23.8	215.9	241.3	1.6			204.1 kg
8"	inches	21-3/8	12-1/4	6-3/4	13-1/2	1-1/16	10-5/8	11-3/4	1/16			600 lb
200mm	mm	542.9	311.2	171.5	342.9	27.0	270.0	298.5	1.6			272.2 kg

Dimensions, cont.

4.1.5 - Diaphragm Control Valve Dimensions with Flanged Class #250 End Connections

Cast Iron Body - Flanged Class #250 ANSI Standard B126.5 End Connections

Valve Size	Units	Dimensions								Number of Holes	Size of Holes	Net Weight
		A	B	C	D	E	F	G	H			
2"	**inches**	10-1/2	7-1/4	3-3/4	6-1/2	13/16	4-3/16	5"	1/16	**8**	**3/4"**	88 lb
50mm	**mm**	266.7	184.2	95.3	165.1	20.6	106.4	127.0	1.6		**19.1mm**	39.9 kg
2-1/2"	**inches**	11-1/2	6-5/8	4-3/8	7-1/2	15/16	4-15/16	5-7/8	1/16	**8**	**7/8" 22.2mm**	130 lb
65mm	**mm**	292.1	168.3	111.1	190.5	23.8	125.4	149.2	1.6			59.0 kg
3"	**inches**	12-1/2	6-7/8	4-1/2	8-1/4	1-1/16	5-11/16	6-5/8	1/16			152 lb
80mm	**mm**	317.5	174.6	114.3	209.6	27.0	144.5	168.3	1.6			68.9 kg
4"	**inches**	14-1/2	8-1/8	5-1/2	10	1-3/16	6-15/16	7-7/8	1/16			198 lb
100mm	**mm**	368.3	206.4	139.7	254.0	30.2	176.2	200.0	1.6			89.8 kg
6"	**inches**	18-5/8	9-3/4	5-7/8	12-1/2	1-3/8	9-11/16	10-5/8	1/16	**12**	**7/8"**	480 lb
160mm	**mm**	473.1	247.7	149.2	317.5	34.9	246.0	269.9	1.6		**22.2mm**	217.7 kg
8"	**inches**	22-3/8	12-1/4	7-5/8	15	1-9/16	11-15/16	13	1/16	**12**	**1"**	640 lb
200mm	**mm**	568.3	311.2	193.7	381.0	39.7	303.2	330.2	1.6		**25.4mm**	290.3 kg

4.1.6 - Diaphragm Control Valve Dimensions with Flanged Class #300 End Connections

Flanged Class #300 ANSI Standard B126.5 End Connections

Valve Size	Units	Dimensions								Number of Holes	Size of Holes	Net Weight
		A	B	C	D	E	F	G	H			
2"	**inches**	10-1/2	7-1/8	3-1/4	6-1/2	13/16	3-5/8	5"	1/16	**8**	**7/8" 22.2mm**	88 lb
50mm	**mm**	266.7	181.0	82.6	165.1	20.6	92.1	127.0	1.6			39.9 kg
2-1/2"	**inches**	11-1/2	6-5/8	3-3/4	7-1/2	15/16	4-1/8	5-7/8	1/16			130 lb
65mm	**mm**	292.1	168.3	95.3	191.0	23.8	104.8	149.2	1.6			59.0 kg
3"	**inches**	12-1/2	6-7/8	4-1/8	8-1/4	1-1/16	5	6-5/8	1/16			152 lb
80mm	**mm**	317.5	174.6	104.7	209.6	27.0	127.0	168.2	1.6			68.9 kg
4"	**inches**	14-1/2	8-5/8	5	10	1-3/16	6-3/16	7-7/8	1/16			198 lb
100mm	**mm**	368.3	219.1	127.0	254.0	30.2	157.2	200.0	1.6			89.8 kg
6"	**inches**	18-5/8	9-3/4	6-1/4	12-1/2	1-3/8	8-1/2	10-5/8	1/16	**12**	**7/8"**	470 lb
160mm	**mm**	473.1	247.7	158.8	318.0	34.9	216.0	269.8	1.6		**22.2mm**	213.2 kg
8"	**inches**	22-3/8	12-1/4	7-1/2	15	1-9/16	10-5/8	13	1/16	**12**	**1"**	635 lb
200mm	**mm**	568.3	311.2	191.0	381.0	39.7	270.0	330.2	1.6		**25.4mm**	288.0 kg

4.1.7 - Diaphragm Control Valve Dimensions with Flanged Class #600 End Connections

Flanged Class #600 ANSI Standard B126.5 End Connections

Valve Size	Units	Dimensions								Number of Holes	Size of Holes	Net Weight
		A	B	C	D	E	F	G	H			
2"	**inches**	11-1/4	7-1/8	3-1/4	6-1/2	1	3-5/8	5	1/4"	**8**	**7/8" 22.2mm**	90 lb
50mm	**mm**	285.8	181.0	82.6	165.1	25.4	92.1	127.0	6.4			40.8 kg
2-1/2"	**inches**	12-1/4	6-5/8	3-3/4	7-1/2	1-1/8	4-1/8	5-7/8	1/4"			135 lb
65mm	**mm**	311.2	168.3	95.3	190.5	28.6	104.8	149.2	6.4			61.2 kg
3"	**inches**	13-1/4	6-7/8	4-1/8	8-1/4	1-1/4	5	6-5/8	1/4"			158 lb
80mm	**mm**	336.6	174.6	104.8	209.6	31.8	127.0	168.3	6.4			71.7 kg
4"	**inches**	15-1/2	8-5/8	5-3/8	10-3/4	1-1/2	6-3/16	8-1/2	1/4"	**8**	**1"**	205 lb
100mm	**mm**	393.7	219.1	136.5	273.1	38.1	157.2	215.9	6.4		**25.4mm**	93.0 kg
6"	**inches**	20	9-3/4	7	14	1-7/8	8-1/2	11-1/2	1/4	**12**	**1-1/8"**	485 lb
160mm	**mm**	508.0	247.7	177.8	355.6	47.6	215.9	292.1	6.4		**28.6mm**	220.0 kg
8"	**inches**	24	12-1/4	8-1/4	16-1/2	2-3/16	10-5/8	13-3/4	1/4	**12**	**1-1/4"**	660 lb
200mm	**mm**	609.6	311.2	209.6	419.1	55.6	269.9	349.3	6.4		**31.8mm**	299.4 kg

Dimensions, cont.

4.2 - Valve Dimensions

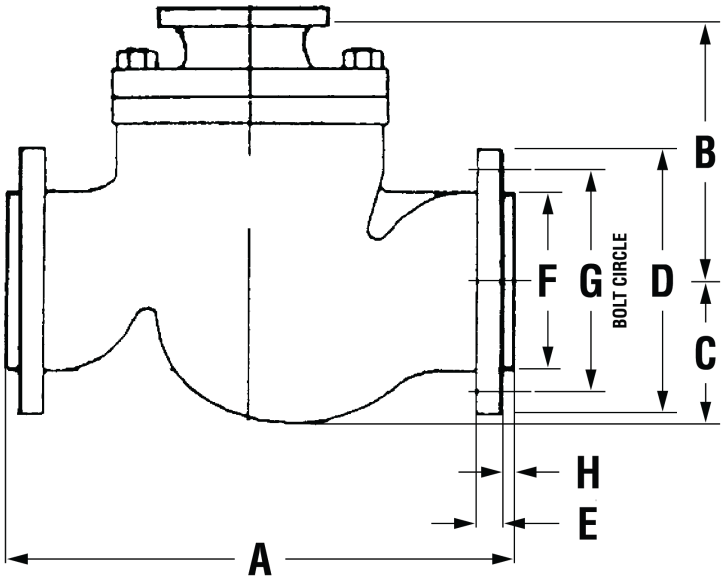


Figure 5 Valve Body Dimensions

4.2.1 - Valve Dimensons in Millimeters

Valve Size	Dimensions in Millimeters								Number of Holes	Size of Holes	Net Weight (kg)
	A	B	C	D	E	F	G	H			
DIN 2532 FLANGE STANDARD (CAST IRON) ND-10											
50mm	262.7	181.0	92.9	165.0	17.0	102.0	125.0	3.0	**4**	**18**	38.6
65mm	281.0	168.3	111.1	185.0	17.0	122.0	145.0	3.0			56.7
80mm	304.8	174.6	114.3	200.0	19.0	138.0	160.0	3.0	**8**	**18**	65.8
100mm	353.2	206.4	139.7	220.0	21.0	158.0	180.0	3.0			86.2
150mm	452.4	247.7	149.0	285.0	23.0	212.0	240.0	3.0	**8**	**23**	208.7
200mm	538.2	349.3	192.0	340.0	23.0	268.0	295.0	3.0			283.5
DIN 2533 FLANGE STANDARD (CAST IRON) ND-16											
50mm	262.7	181.0	92.9	165.0	17.0	102.0	125.0	3.0	**4**	**18**	38.6
65mm	281.0	168.3	111.1	185.0	17.0	122.0	145.0	3.0			56.7
80mm	304.8	174.6	114.3	200.0	19.0	138.0	160.0	3.0	**8**	**18**	65.8
100mm	353.2	206.4	139.7	220.0	21.0	158.0	180.0	3.0			86.2
150mm	452.4	247.7	149.0	285.0	23.0	212.0	240.0	3.0	**8**	**23**	208.7
200mm	546.1	349.3	192.0	340.0	27.0	268.0	295.0	3.0	**12**	**23**	283.5
DIN 2534 FLANGE STANDARD (CAST IRON) ND-25											
50mm	263.0	181.0	93.0	165.0	19.0	102.0	125.0	3.0	**4**	**26**	40.8
65mm	281.0	168.0	111.0	185.0	21.0	122.0	145.0	3.0	**8**	**26**	61.2
80mm	305.0	175.0	114.0	200.0	23.0	138.0	160.0	3.0			71.7
100mm	353.0	206.0	140.0	235.0	25.0	162.0	190.0	3.0	**8**	**30**	93.0
150mm	452.0	248.0	149.0	300.0	31.0	218.0	250.0	3.0	**12**	**33**	220.0
200mm	546.0	349.3	192.0	360.0	31.0	278.0	310.0	3.0	**12**	**36**	299.4

* Approximate net weight of valve complete with standard actuator (not including Hand-Operating Device or Bi-Directional Hand Jack)

Dimensions, cont.

4.3 - Diaphragm Actuator Dimensions

4.3.1 - Diaphragm Actuator Dimensions - Hand Operating Device

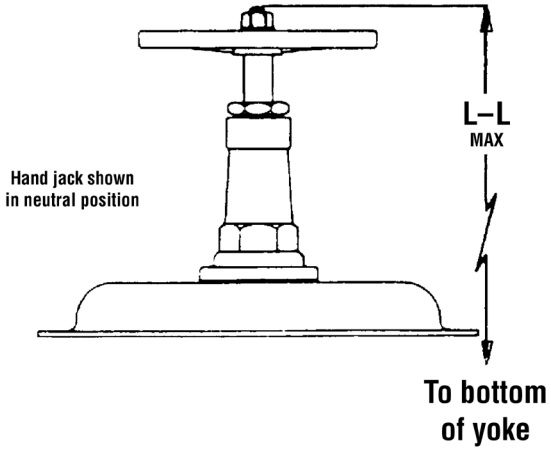


Figure 9 External view of hand operating device (for dimensional use only)

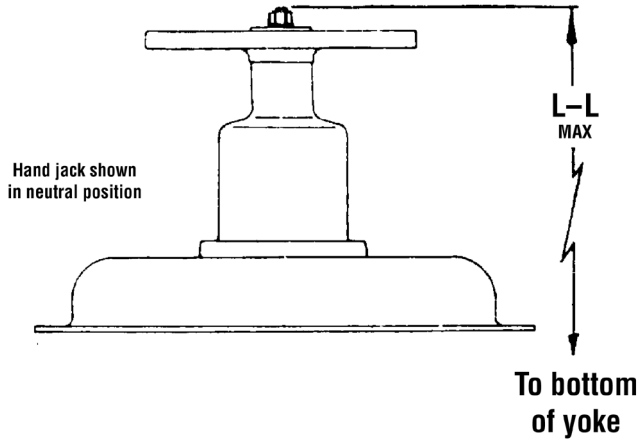


Figure 10 External view of hand operating device (for dimensional use only)

Direct Acting Actuator - Hand Operating Device

Size	Units	Dimensions	Approximate Net Weight	
		L-L Max	Alum	Cast Iron
35	inches	17-7/8	23 lb	38 lb
	mm	454	10.4 kg	17.2 kg
55	inches	24-7/8	28 lb	55 lb
	mm	631.8	12.7 kg	24.9 kg
55A	inches	24-7/8	28 lb	55 lb
	mm	631.8	12.7 kg	24.9 kg
85	inches	29-1/4	48 lb	101 lb
	mm	743	21.8 kg	45.8 kg
85A	inches	31-7/8	53 lb	121 lb
	mm	809.6	24.0 kg	54.9 kg
85*	inches	29-7/8	50 lb	118 lb
	mm	758.8	22.7 kg	53.5 kg
135	inches	39-3/4	114 lb	197 lb
	mm	1009.7	51.7 kg	89.4 kg
270	inches	48-1/8	225 lb	-
	mm	1222.4	102.1 kg	-

Reverse Acting Actuator - Hand Operating Device

Size	Units	Dimensions	Approximate Net Weight	
		L-L Max	Alum	Cast Iron
35R	inches	16-3/4	20 lb	38 lb
	mm	425.5	9.1 kg	17.2 kg
55R	inches	26-3/8	35 lb	65 lb
	mm	669.9	15.9 kg	29.5 kg
55 AR	inches	26-3/8	35 lb	65 lb
	mm	669.9	15.9 kg	29.5 kg
85R	inches	31-5/8	54 lb	122 lb
	mm	803.3	24.5 kg	55.3 kg
85R*	inches	32-1/4	56 lb	125 lb
	mm	819.2	25.4 kg	56.7 kg
85AR	inches	34-1/4	59 lb	128 lb
	mm	870.0	26.8 kg	58.1 kg
135R	inches	43-5/8	165 lb	207 lb
	mm	1108.1	74.8 kg	93.9 kg
270R	inches	59-3/4	300 lb	-
	mm	1517.7	136.1 kg	-

***** Mounting flange dimensions are the same as 135(R) yoke.

Dimensions, cont.

4.3.2 - Diaphragm Actuator Dimensions - Bi-Directional Hand Jack

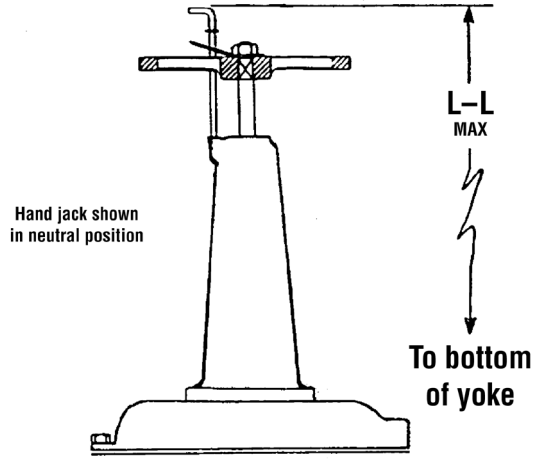


Figure 11 Size 35(R), 55(R), and 85(R) bi-directional hand jack

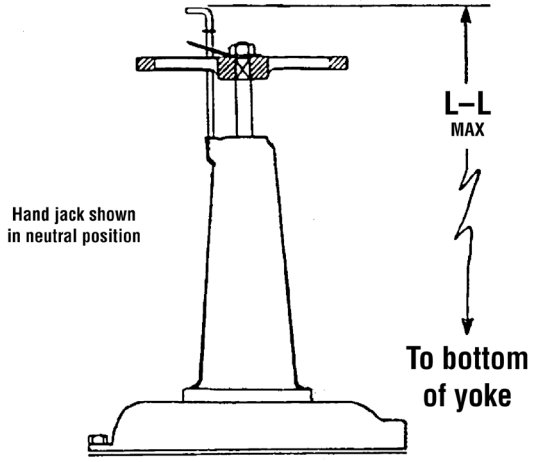


Figure 12 Size 135(R) bi-directional hand jack

Direct Acting Actuator - Bi-Directional Hand Jack

Size	Units	Dimensions	Approximate Net Weight	
		L-L Max	Alum	Cast Iron
35	inches	22	27 lb	45 lb
	mm	558.8	12.2 kg	20.4 kg
55	inches	37	40 lb	70 lb
	mm	939.8	18.1 kg	31.7 kg
55A	inches	37	40 lb	70 lb
	mm	939.8	18.1 kg	31.7 kg
85	inches	42	66 lb	136 lb
	mm	1066.8	29.9 kg	61.7 kg
85A	inches	42-5/8	68 lb	142 lb
	mm	1082.7	30.8 kg	64.4 kg
85*	inches	44-5/8	71 lb	145 lb
	mm	1133.5	32.2 kg	65.8 kg
135	inches	59	178 lb	230 lb
	mm	1498.6	80.7 kg	104.3 kg
270	inches	-	-	-
	mm	-	-	-

***** Mounting flange dimensions are the same as 135(R) yoke.

Reverse Acting Actuator - Bi-Directional Hand Jack

Size	Units	Dimensions	Approximate Net Weight	
		L-L Max	Alum	Cast Iron
35R	inches	23	30 lb	45 lb
	mm	584.2	13.6 kg	20.4 kg
55R	inches	35-5/8	38 lb	65 lb
	mm	904.9	17.2 kg	29.5 kg
55 AR	inches	35-5/8	38 lb	65 lb
	mm	904.9	17.2 kg	29.5 kg
85R	inches	40	60 lb	115 lb
	mm	1016	27.2 kg	52.2 kg
85R*	inches	42-5/8	65 lb	138 lb
	mm	1082.7	29.5 kg	62.6 kg
85AR	inches	40-5/8	62 lb	135 lb
	mm	1031.9	28.1 kg	61.2 kg
135R	inches	54	137 lb	220 lb
	mm	1371.6	62.1 kg	99.8 kg
270R	inches	-	-	-
	mm	-	-	-

Dimensions, cont.

4.3.3 - Diaphragm Actuator Weights and Dimensions - Overall

WARNING: Labels indicate maximum pressures and disassembly precautions. Please follow instructions carefully.

Direct Acting Actuator - Air pressure extends stem

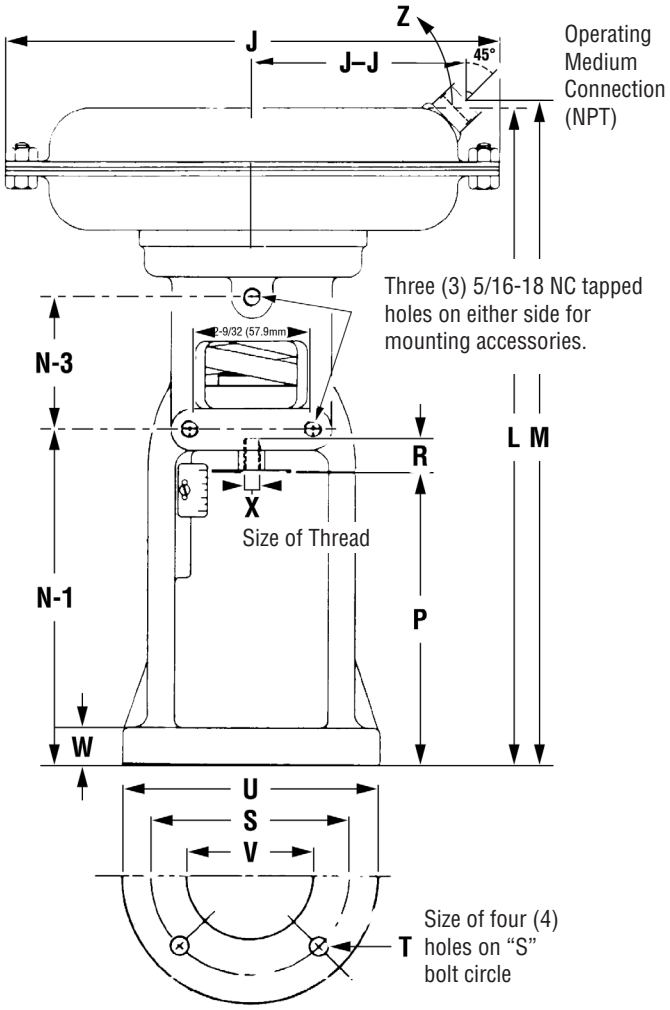


Figure 13 Direct Acting Actuator Dimensions

Reverse Acting Actuator - Air pressure retracts stem

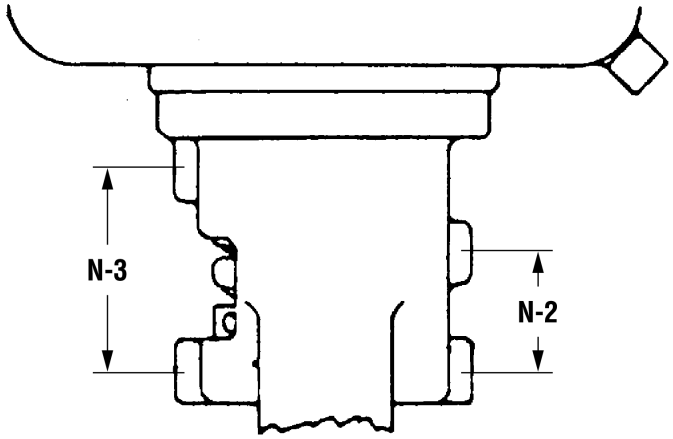


Figure 14 Reverse Acting Actuator Dimensions showing tapped hole location for valve positioner, micro-switch, mounting, etc.

Direct Acting Actuator - Net Weight

Net Weight	35		55		55A		85		85A		85*		135		135(1-1/4 Dia. Stem)		270	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
Aluminum	20	9.1	23	10.4	23	10.4	43	19.5	48	21.8	45	20.4	104	47.2	104	47.2	30	15.9
Cast Iron	35	15.9	50	22.7	50	22.7	96	43.5	116	52.6	113	51.3	187	84.8	187	84.8	20	9.1

Reverse Acting Actuator - Net Weight

Net Weight	35		55		55A		85		85A		85*		135		135(1-1/4 Dia. Stem)		270	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
Aluminum	30	15.9	60	27.2	60	27.2	117	53.1	120	54.4	123	55.8	197	89.4	197	89.4	288	130.6
Cast Iron	20	9.1	30	13.6	30	13.6	54	24.5	56	25.4	59	26.8	155	70.3	155	70.3	300	136.1

Dimensions, cont.

Direct Acting Actuator Dimensions - Overall

Size	Units	Max Travel	J	J-J	L	M	N-1	N-2	N-3	P	R	S	T	U	V	W	X	Z
35	inches	3/4	9-1/4	3-15/16	12-3/8	12-3/8	6-1/4	2-1/2	2-1/2	5-1/2	1-3/8	3-13/16	9/16	4-13/16	2.687	11/16	3/8-24	1/4 NPT
	mm	19	235.0	100.0	314.3	314.3	158.8	63.5	63.5	139.7	34.9	96.8	14.3	122.2	68.2	17.5		
55	inches	1-1/2	12	5-1/16	15-1/4	15-1/4	7	2-1/2	3	5-1/2	1-3/8	3-13/16	9/16	4-13/16	2.687	1	3/8-24	1/4 NPT
	mm	38.1	304.8	128.6	387.4	387.4	177.8	63.5	76.2	139.7	34.9	96.8	14.3	122.2	68.2	25.4		
55A	inches	1-1/2	12	5-1/16	15-1/4	15-1/4	7	2-1/2	3	5-1/2	1-3/8	3-13/16	9/16	4-13/16	2.687	1	1/2-20	1/4 NPT
	mm	38.1	304.8	128.6	387.4	387.4	177.8	63.5	76.2	139.7	34.9	96.8	14.3	122.2	68.2	25.4		
85	inches	2-1/8	14-3/4	6-1/4	19-5/8	19-5/8	8-1/2	2-1/2	4-1/8	6-7/16	1-3/4	3-13/16	9/16	6	2.687	1-1/4	1/2-20	1/4 NPT
	mm	54	374.7	158.8	498.5	498.5	215.9	63.5	104.8	163.5	44.5	96.8	14.3	122.2	68.2	31.8		
85A	inches	2-1/8	14-3/4	6-1/4	22-1/4	22-1/4	11-1/8	2-1/2	4-1/8	8-9/16	2-1/2	4-3/4	11/16	6	3.500	1-5/16	3/4-16	1/4 NPT
	mm	54	374.7	158.8	565.2	565.2	282.6	63.5	104.8	217.5	63.5	120.7	17.5	152.4	88.9	33.3		
85*	inches	2-1/8	14-3/4	6-1/4	20-1/4	20-1/4	9-1/8	2-1/2	4-1/8	7-1/16	1-3/4	4-3/4	11/16	6	3.500	1-5/16	1/2-20	1/4 NPT
	mm	54	374.7	158.8	514.4	514.4	231.8	63.5	104.8	179.4	44.5	120.7	17.5	152.4	88.9	33.3		
135	inches	3	18	9	27-3/8	24-5/8	11-1/8	2-1/2	5-5/8	8-9/16	2-1/2	4-3/4	11/16	6	3.500	1-15/16	3/4-16	3/8 NPT
	mm	76.2	457.2	228.6	695.3	625.5	282.6	63.5	142.9	217.5	63.5	120.7	17.5	152.4	88.9	33.3		
135 (1- 1/4 Stem)	inches	3	18	9	27-3/8	24-5/8	11-1/8	2-1/2	5-5/8	8-9/16	2-1/2	5-3/4	11/16	7	4.500	1-5/16	3/4-16	3/8 NPT
	mm	76.2	457.2	228.6	695.3	625.5	282.6	63.5	142.9	217.5	63.5	146.1	17.5	177.8	114.3	33.3		
270	inches	3	-	-	-	-	11-1/16	2-1/2	5-5/8	8-9/16	2-1/2	4-3/4	11/16	6	3.5	1-5/16	3/4-16 NPT	-
	mm	76.2					281.0	63.5	142.9	217.5	63.5	120.7	17.5	152.4	88.9	33.3		

Reverse Acting Actuator Dimensions - Overall

Size	Units	Max Travel	J	J-J	L	M	N-1	N-2	N-3	P	R	S	T	U	V	W	X	Z
35R	inches	3/4	9-1/4	3-15/16	12-3/8	9-7/8	6-1/4	2-1/2	2-1/2	4	1-3/4	3-13/16	9/16	4-13/16	2.687	11/16	3/8-24	1/4 NPT
	mm	19	235	100	314.3	250.8	158.8	63.5	63.5	101.6	44.5	96.8	14.3	122.2	68.2	17.5		
55R	inches	1-1/2	12	5-1/16	18	14-1/4	6-7/8	2-1/2	3	4	1-3/4	3-13/16	9/16	4-13/16	2.687	1	3/8-24	1/4 NPT
	mm	38.1	304.8	128.6	457.2	362	174.6	63.5	76.2	101.6	44.5	96.8	14.3	122.2	68.2	25.4		
55AR	inches	1-1/2	12	5-1/16	18	14-1/4	6-7/8	2-1/2	3	4	1-3/4	3-13/16	9/16	4-13/16	2.687	1	1/2-20	1/4 NPT
	mm	38.1	304.8	128.6	457.2	362	174.6	63.5	76.2	101.6	44.5	96.8	14.3	122.2	68.2	25.4		
85R	inches	2-1/8	14-3/4	6-1/4	23-1/4	18-3/4	8-9/16	2-1/2	4-1/8	4-5/16	2-1/4	3-13/16	9/16	4-13/16	2.687	1-1/4	1/2-20	1/4 NPT
	mm	54	374.7	158.8	590.6	476.3	217.5	63.5	104.8	109.5	57.2	96.8	14.3	122.2	68.2	31.8		
85R*	inches	2-1/8	14-3/4	6-1/4	23-7/8	19-3/8	9-3/16	2-1/2	4-1/8	4-15/16	2-1/4	4-3/4	11/16	6	3.500	1-5/16	1-2/20	1/4 NPT
	mm	54	374.7	158.8	606.4	492.1	233.4	63.5	104.8	125.4	57.2	120.7	17.5	152.4	88.9	33.3		
85AR	inches	2-1/8	14-3/4	6-1/4	25-7/8	21-3/8	11-1/8	2-1/2	4-1/8	5-9/16	3-1/8	4-3/4	11/16	6	3.500	1-5/16	3/4-16	1/4 NPT
	mm	54	374.7	158.8	657.2	542.9	282.6	63.5	104.8	141.3	79.4	120.7	17.5	152.4	88.9	33.3		
135R	inches	3	18	9	32-1/4	28-3/8	11-1/8	2-1/2	5-5/8	5-9/16	3-1/8	4-3/4	11/16	6	3.500	1-5/16	3/4-16	3/8 NPT
	mm	76.2	457.2	228.6	819.2	720.7	282.6	63.5	142.9	141.3	79.4	120.7	17.5	153.4	88.9	33.3		
135 (1- 1/4 Stem)	inches	3	18	9	32-1/4	28-3/8	11-1/8	2-1/2	5-5/8	5-9/16	3-1/8	5-3/4	11/16	7	4.500	1-5/16	3/4-16	3/8 NPT
	mm	76.2	457.2	228.6	819.2	720.7	282.6	63.5	142.9	141.3	79.4	146.1	17.5	177.8	114.3	33.3		
270R	inches	3	-	-	-	-	11-1/8	2-1/2	5-5/8	5-9/16	3-1/8	4-3/4	11/16	6	3.5	1-5/16	3/4-16 NPT	-
	mm	76.2					282.6	63.5	142.9	141.3	79.4	120.7	17.5	152.4	88.9	33.3		

5.0 - Parts Diagram

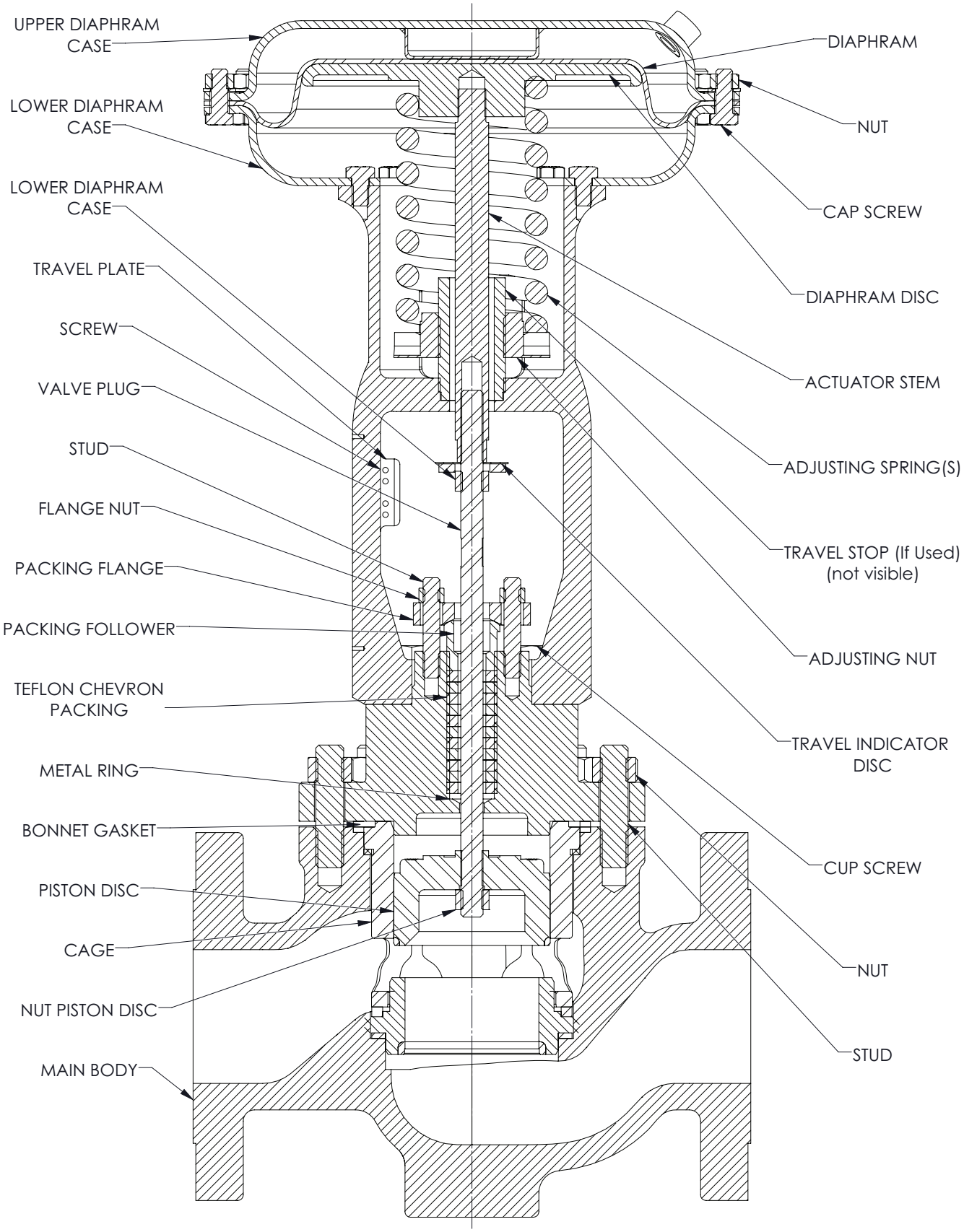


Figure 15 Class DBOY(S)-3 with Standard Teflon Chevron Packing

Parts Diagram, cont.

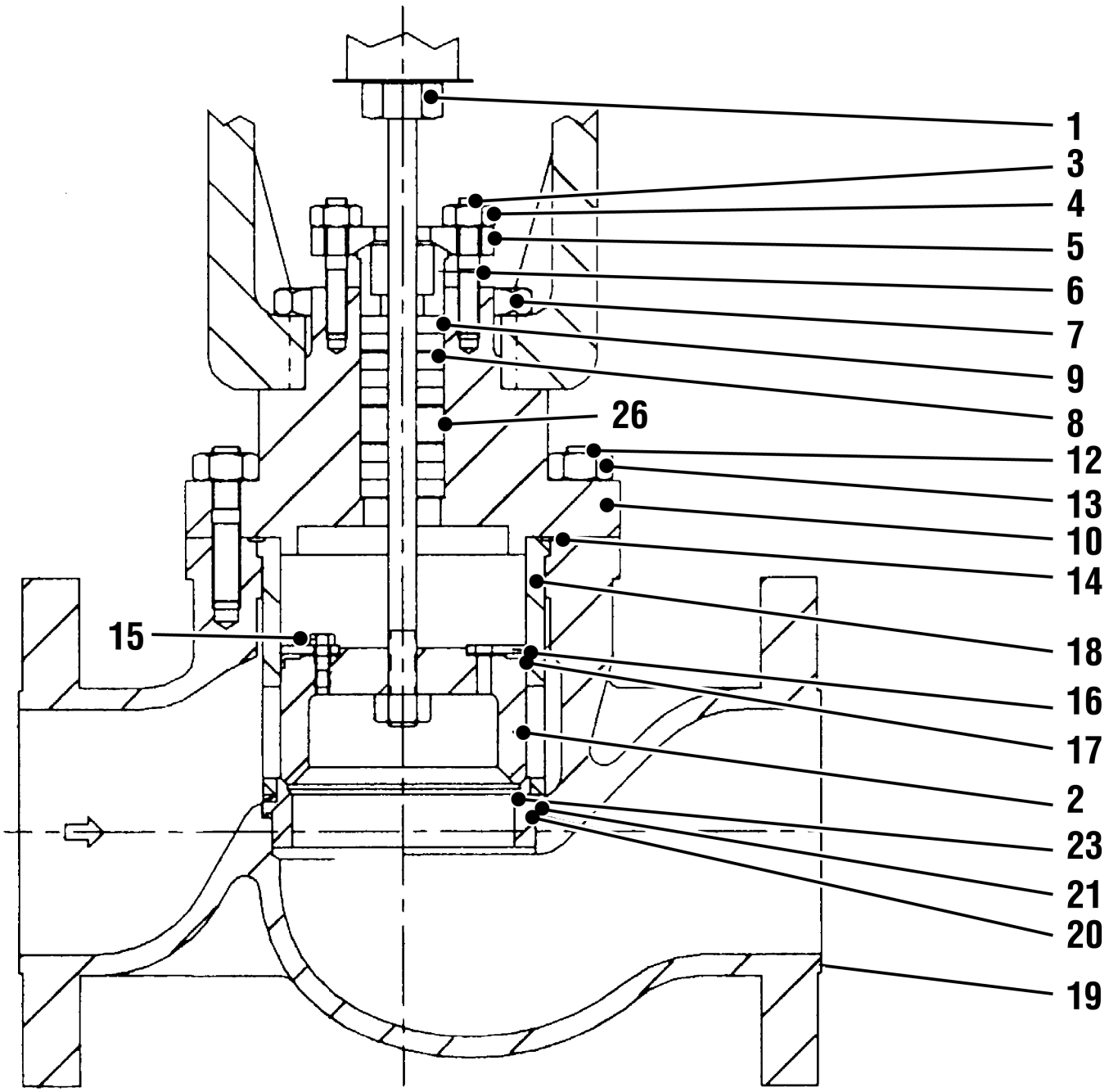


Figure 16a Valve with Braided Teflon Graphite Packing - Parts Diagram

Note 1: Quantity is two (2) for Teflon Chevron Packing, and one (1) for both graphite packings.

Note 2: Quantities are eight (8) for 2”-6” sizes, and ten (10) for 8” size.

Note 3: Quantities are eight (8) for 2”-6” sizes, and twelve (12) for 8” size.

Note 4: Quantities are three (3) for 2”-3” sizes, four (4) for 4”-6” sizes, and eight (8) for 8” size.

Note 5: Material is Cast Steel ASTM A-216 GR WCB for 2-1/2”-3” sizes, and Cast Iron for 4”-8” sizes.

Note 6: (D)DBOS-3 only.

Note 7: Stem material is AISI Type 316; plug material is AISI Type 410.

Note 8: (D)DBOYS-3 only.

Note 9: Valve plug is used with all types of cages.

Parts Diagram, cont.

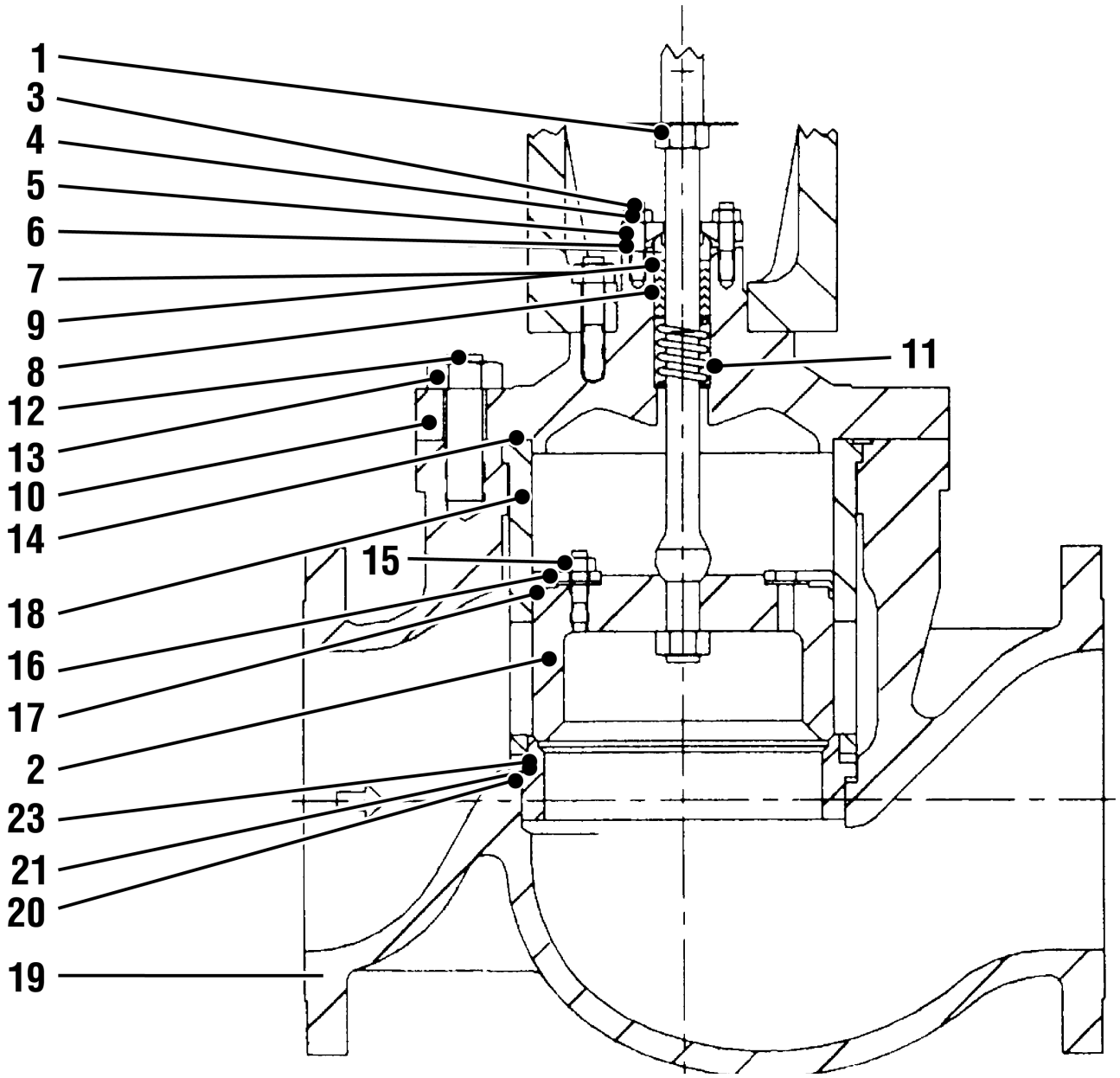


Figure 16b Valve with Teflon Chevron Packing - Parts Diagram

Note 1: Quantity is two (2) for Teflon Chevron Packing, and one (1) for both graphite packings.

Note 2: Quantities are eight (8) for 2”-6” sizes, and ten (10) for 8” size.

Note 3: Quantities are eight (8) for 2”-6” sizes, and twelve (12) for 8” size.

Note 4: Quantities are three (3) for 2”-3” sizes, four (4) for 4”-6” sizes, and eight (8) for 8” size.

Note 5: Material is Cast Steel ASTM A-216 GR WCB for 2-1/2”-3” sizes, and Cast Iron for 4”-8” sizes.

Note 6: (D)DBOS-3 only.

Note 7: Stem material is AISI Type 316; plug material is AISI Type 410.

Note 8: (D)DBOYS-3 only.

Note 9: Valve plug is used with all types of cages.

6.0 - Parts List

6.1 - Size 2”, 2-1/2” and 3” Valves

Parts highlighted in gray MUST be on hand when overhauling equipment and are recommended to have on-hand as spare parts.

	Part Name	Material	Material Specification	QTY	Part Numbers		
					2”	2-1/2”	3”
1	Nut	Stainless Steel	AISI 300 Series	1	LV-A70365	LV-A70366	LV-A70366
2	Valve Plug - Stellited (*Notes 8 and 9)*	Stainless Steel	Note 7	1	LV-A69290	LV-A69291	LV-A69292
	Valve Plug - Unstellited (*Notes 8 and 9)*	Stainless Steel	Note 7	1	LV-A69284	LV-A69285	LV-A69286
	Valve Plug, Stellited (*Notes 6 and 9)*	Note 8	Note 7	1	LV-A62608	LV-A62024	LV-A61361
3	Stud	Stainless Steel	AISI 300 Series	2	LV-A71104	LV-A71104	LV-A71104
4	Nut	Stainless Steel	AISI Type 304	2	LV-A23194	LV-A23194	LV-A23194
5	Packing Flange	Stainless Steel	AISI Type 303	1	LV-A59982	LV-A59982	LV-A59982
6	Packing Follower- Graphite Packing	Stainless Steel	AISI Type 303	1	LV-A22949	LV-A22949	LV-A22949
	Packing Follower -Teflon Packing	Stainless Steel	AISI Type 303	1	LV-A22949	LV-A22949	LV-A22949
	Packing Follower - Braided Teflon Graphite	Stainless Steel	AISI Type 303	1	LV-A22949	LV-A22949	LV-A22949
7	Cap Screw	Steel	Commercial	4	LV-A47346	LV-A47346	LV-A47346
8	Packing Rings (incl. 4 rings) - Graphite Packing	Graphite Type II	Commercial	1	LV-A70380	LV-A70380	LV-A70380
	Packing Set - Teflon Chevron Graphite	Teflon	Commercial	1	LV-A28015	LV-A28015	LV-A28015
	Packing Set - Braided Teflon Graphite	Teflon/Graphite	Commercial	1	LV-A69423	LV-A69423	LV-A69423
9	Packing Ring (for all sets)	Stainless Steel	AISI Type 304	Note 1	LV-A23192	LV-A23192	LV-A23192
10	Bonnet	Note 5	Note 5	1	LV-A6834703	LV-A6834803	LV-A6829103
	Bonnet	Cast Steel	ASTM A-216-GRWCB	1	LV-A6834703	LV-A6834803	LV-A6829103
11	Packing Spring - Teflon Packing	Spring Steel	COMMERCIAL	1	LV-A28011	LV-A28011	LV-A28011
12	Stud	Steel	ASTM A-193GR B7	Note 2	LV-A64428	LV-A64428	LV-A64428
	Stud	Steel	ASTM A-193GRB7	Note 3	LV-A64428	LV-A64428	LV-A64428
13	Nut	Steel	ASTM A-194GR 2H	Note 2	LV-A03677	LV-A03677	LV-A03677
	Nut	Steel	ASTM A-194GR2H	Note 3	LV-A03677	LV-A03677	LV-A03677
14	Bonnet Gasket	Flexible Metallic	COMMERCIAL	1	LV-A6177890	LV-A6143590	LV-A6096190
15	Cap Screw	Stainless Steel	AISI Type 302	Note 4	LV-A39637	LV-A39637	LV-A39655
	Cap Screw (*Note 8)*	Stainless Steel	AISI Type 302	Note 4	LV-A39637	LV-A39637	LV-A39655
16	Piston Disc	Stainless Steel	AISI Type 316	1	LV-A62606	LV-A61442	LV-A60931
	Piston Disc (*Note 8)*	Stainless Steel	AISI Type 316	1	LV-A62606	LV-A61442	LV-A60931
17	Piston Cup Washer	Teflon with Graphite	Commercial	1	LV-A61764	LV-A61445	LV-A60999
	Piston Cup Washer (*Note 8)*	Teflon with Graphite	Commercial	1	LV-A61764	LV-A61446	LV-A61389
18	Cage - Full Trim	Cast Stainless Steel	ASTM A-743 GRCA40	1	LV-A62587	LV-A61437	LV-A61248
	Cage - 40% Reduced Trim	Cast Stainless Steel	ASTM A-743 GRCA40	1	LV-A62984	LV-A62985	LV-A61337
	Cage - Les-Sonic II Trim	Cast Stainless Steel	ASTM A-743 GRCA40	1	LV-A68467	LV-A68468	LV-A68469
	Cage - Les-Cav Trim	Cast Stainless Steel	ASTM A-743 GRCA40	1	LV-A68270	LV-A67596	LV-A68410
19	Body - Threaded	Cast Iron	ASTM A-126 GRB	1	LV-A67098	-	-
	Body - Threaded	Cast Steel	ASTM A-216 GRWCB	1	LV-A6709703	-	-
	Body - 125 lb. Flanged	Cast Iron	ASTM A-126 GRB	1	LV-A67022	LV-A67023	LV-A67026
	Body - 150 lb. Flanged	Cast Steel	ASTM A-216 GRWCB	1	LV-A6676603	LV-A6677903	LV-A6677203
	Body - 250 lb. Flanged	Cast Iron	ASTM A-126 GRB	1	LV-A67021	LV-A67024	LV-A67025
	Body - 300 lb. Flanged	Cast Steel	ASTM A-216 GRWCB	1	LV-A6676703	LV-A6677003	LV-A6677303
	Body - 600 lb. Flanged	Cast Steel	ASTM A-216 GRWCB	1	LV-A6677103	LV-A6677103	LV-A6677403
	Body, DIN 2532/2533 - ND 10/16	Cast Iron	ASTM A-126 CL.B	1	LV-A67708	LV-A67709	LV-A67710
	Body, DIN 2532 - ND10	Cast Iron	ASTM A-126 CL.B	1	-	-	-
	Body, DIN 2533 - ND-16	Cast Iron	ASTM A-126 CL.B	1	-	-	-
19	Body, DIN 2543 - ND-16	Cast Steel	ASTM A-216 GRWCB	1	-	-	LV-A6481503
	Body, DIN 2545 - ND-40	Cast Steel	ASTM A-216 GRWCB	1	LV-A6460403	-	
	Body, DIN 2547 - ND-100	Cast Steel	ASTM A-216 GRWCB	1		LV-A6633303	
20	Seat Ring Gasket	Commercial	Commercial	1	LV-A61744	LV-A61729	LV-A61679
21	Seat Ring - Stellited Trim	Stainless Steel	AISI Type 400 (Stell.)	1	LV-A70511	LV-A70512	LV-A70513
	Seat Ring - Unstellited Trim	Stainless Steel	AISI Type 400	1	LV-A70454	LV-A70455	LV-A70456
22	Pipe Plug	Stainless Steel	AISI Type 316	1	LV-A66183	LV-A66183	LV-A66183
23	Load Ring	Stainless Steel P.H.	ASTM A-564 GR630	1	LV-A61777	LV-A61434	LV-A62469
24	Lantern Ring -Braided Teflon Packing	Stainless Steel	AISI 300 Series	1	LV-A66176	LV-A66176	LV-A66176
25	Piston Ring (*Note 6)*	N--Resist & SST	Commercial	1	LV-A62591	LV-A62493	LV-A61390
26	Spacer	Stainless Steel	AISI 300 Series	1	LV-A70375	LV-A70375	LV-A70375

Parts List, cont.

6.2 - Size 4”, 6” and 8” Valves

Parts highlighted in gray MUST be on hand when overhauling equipment and are recommended to have on-hand as spare parts.

	Part Name	Material	Material Specification	QTY	Part Numbers		
					4”	6”	8”
1	Nut	Stainless Steel	AISI 300 Series	1	LV-A70366	LV-A70367	LV-A70367
2	Valve Plug - Stellited (*Notes 8 and 9)*	Stainless Steel	Note 7	1	LV-A69293	LV-A69294	LV-A69297
	Valve Plug - Unstellited (*Notes 8 and 9)*	Stainless Steel	Note 7	1	LV-A69287	LV-A69288	LV-A69289
	Valve Plug, Stellited (*Notes 6 and 9)*	Note 8	Note 7	1	LV-A69145	LV-A62041	LV-A62624
3	Stud	Stainless Steel	AISI 300 Series	2	LV-A71104	LV-A71074	LV-A71074
4	Nut	Stainless Steel	AISI Type 304	2	LV-A23194	LV-A42843	LV-A42843
5	Packing Flange	Stainless Steel	AISI Type 303	1	LV-A59982	LV-A59978	LV-A59978
6	Packing Follower- Graphite Packing	Stainless Steel	AISI Type 303	1	LV-A22949	LV-A62561	LV-A62561
	Packing Follower -Teflon Packing	Stainless Steel	AISI Type 303	1	LV-A22949	LV-A62559	LV-A62559
	Packing Follower - Braided Teflon Graphite	Stainless Steel	AISI Type 303	1	LV-A22949	LV-A62559	LV-A62559
7	Cap Screw	Steel	Commercial	4	LV-A47346	LV-A36150	LV-A36150
8	Packing Rings (incl. 4 rings) - Graphite Packing	Graphite Type II	Commercial	1	LV-A70380	LV-A70481	LV-A70481
	Packing Set - Teflon Chevron Graphite	Teflon	Commercial	1	LV-A28015	LV-A62053	LV-A62053
	Packing Set - Braided Teflon Graphite	Teflon/Graphite	Commercial	1	LV-A69423	LV-A69425	LV-A69425
9	Packing Ring (for all sets)	Stainless Steel	AISI Type 304	Note 1	LV-A23192	LV-A30702	LV-A30702
10	Bonnet	Note 5	Note 5	1	LV-A68707	LV-A68706	LV-A67041
	Bonnet	Cast Steel	ASTM A-216-GRWCB	1	LV-A6913303	LV-A6696203	LV-A6704303
11	Packing Spring - Teflon Packing	Spring Steel	COMMERCIAL	1	LV-A28011	LV-A62052	LV-A62052
12	Stud	Steel	ASTM A-193GR B7	Note 2	LV-A11108	LV-A63419	LV-A67052
	Stud	Steel	ASTM A-193GRB7	Note 3	LV-A11108	LV-A45375	LV-A67943
13	Nut	Steel	ASTM A-194GR 2H	Note 2	LV-A03679	LV-A03678	LV-A03679
	Nut	Steel	ASTM A-194GR2H	Note 3	LV-A03679	LV-A03680	LV-A19180
14	Bonnet Gasket	Flexible Metallic	COMMERCIAL	1	LV-A6173490	LV-A6178090	LV-A6178290
15	Cap Screw	Stainless Steel	AISI Type 302	Note 4	LV-A39655	LV-A62059	LV-A62059
	Cap Screw (*Note 8)*	Stainless Steel	AISI Type 302	Note 4	LV-A39655	LV-A62059	LV-A62059
16	Piston Disc	Stainless Steel	AISI Type 316	1	LV-A61717	LV-A62038	LV-A62626
	Piston Disc (*Note 8)*	Stainless Steel	AISI Type 316	1	LV-A61717	LV-A62038	LV-A62626
17	Piston Cup Washer	Teflon with Graphite	Commercial	1	LV-A61712	LV-A61766	LV-A61768
	Piston Cup Washer (*Note 8)*	Teflon with Graphite	Commercial	1	LV-A61772	LV-A61774	LV-A61776
18	Cage - Full Trim	Cast Stainless Steel	ASTM A-743 GRCA40	1	LV-A61718	LV-A62036	LV-A62627
	Cage - 40% Reduced Trim	Cast Stainless Steel	ASTM A-743 GRCA40	1	LV-A63003	LV-A63001	LV-A63002
	Cage - Les-Sonic II Trim	Cast Stainless Steel	ASTM A-743 GRCA40	1	LV-A68470	LV-A68471	LV-A68472
	Cage - Les-Cav Trim	Cast Stainless Steel	ASTM A-743 GRCA40	1	LV-A68417	LV-A67424	LV-A68005
19	Body - Threaded	Cast Iron	ASTM A-126 GRB	1	-	-	-
	Body - Threaded	Cast Steel	ASTM A-216 GRWCB	1	-	-	-
	Body - 125 lb. Flanged	Cast Iron	ASTM A-126 GRB	1	LV-A67027	LV-A67029	LV-A67032
	Body - 150 lb. Flanged	Cast Steel	ASTM A-216 GRWCB	1	LV-A6677503	LV-A6677803	LV-A6703403
	Body - 250 lb. Flanged	Cast Iron	ASTM A-126 GRB	1	LV-A67028	LV-A67030	LV-A67033
	Body - 300 lb. Flanged	Cast Steel	ASTM A-216 GRWCB	1	LV-A6677603	LV-A6677903	LV-A6703503
	Body - 600 lb. Flanged	Cast Steel	ASTM A-216 GRWCB	1	LV-A6677703	LV-A6678003	LV-A6703603
	Body, DIN 2532/2533 - ND 10/16	Cast Iron	ASTM A-126 CL.B	1	LV-A67711	LV-A67031	-
	Body, DIN 2532 - ND10	Cast Iron	ASTM A-126 CL.B	1	-	-	LV-A69661
	Body, DIN 2533 - ND-16	Cast Iron	ASTM A-126 CL.B	1	-	-	LV-A67712
19	Body, DIN 2543 - ND-16	Cast Steel	ASTM A-216 GRWCB	1	-	LV-A6656003	LV-A6774903
	Body, DIN 2545 - ND-40	Cast Steel	ASTM A-216 GRWCB	1	-	LV-A6322203	
	Body, DIN 2547 - ND-100	Cast Steel	ASTM A-216 GRWCB	1	-		
20	Seat Ring Gasket	Commercial	Commercial	1	-	LV-A61746	LV-A61747
21	Seat Ring - Stellited Trim	Stainless Steel	AISI Type 400 (Stell.)	1	LV-A70514	LV-A70594	LV-A70595
	Seat Ring - Unstellited Trim	Stainless Steel	AISI Type 400	1	LV-A70457	LV-A71072	LV-A71073
22	Pipe Plug	Stainless Steel	AISI Type 316	1	LV-A66183	LV-A66183	LV-A66183
23	Load Ring	Stainless Steel P.H.	ASTM A-564 GR630	1	LV-A61733	LV-A61779	LV-A61781
24	Lantern Ring -Braided Teflon Packing	Stainless Steel	AISI 300 Series	1	LV-A66176	LV-A58689	LV-A58689
25	Piston Ring (*Note 6)*	N--Resist & SST	Commercial	1	LV-A62028	LV-A62029	LV-A62565
26	Spacer	Stainless Steel	AISI 300 Series	1	LV-A70375	LV-A71122	LV-A71122

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Notes

Notes

DBOY (S) | DDBOY (S) | DBOS | DDBOS
Series 3 Control Valve
Installation and Operations Manual

Sizes: 2” to 8” | ANSI Class: 150# - 600#

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