

DLO (S) | DDLO (S) Series 2 Control Valve Installation and Operations Manual

Sizes: 1/2" to 4" | ANSI Class: 125# - 300#



DLO Control Valve

Please read and save these instructions.

IOM-576



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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 - Valve Position

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. Control valve may be placed in any position, but upright orientation is preferable for ease of maintenance.

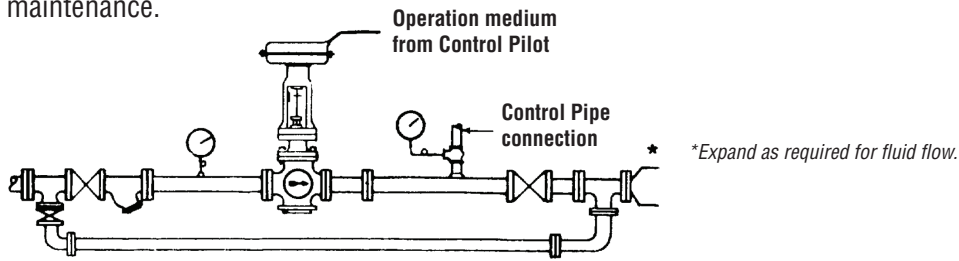


Figure 1 Typical Installation

1.2 - Problem Preventing Procedures

To prevent problems with the DLO Control Valve, adhere to the following procedures:

1. Provide removal space above, below, and around the control valve for easy removal of parts during maintenance. **Contact factory** for Drawing 10/9.4.1 or 10/9.4.3 for dimensions.
2. Blow or flush out pipe lines thoroughly before installing control valve.
3. Protect control valve and following equipment with a SELF-CLEANING STRAINER.
4. Install stop valves and gauges in inlet and outlet lines to provide a means for checking adjustment and operation of equipment.
5. Provide proper inlet and outlet drainage in steam service to prevent water hammer or possible erosion in equipment.
6. Adhere to good piping practice. Install a bypass around the control valve.

1.3 - Installing the DLO Control Valve

Connect the operating medium tubing from control pilot, instrument, or loading device to the diaphragm chamber connection of the control valve, or to the valve positioner if one is in use. The maximum allowable operating pressure for diaphragm actuators is 60 psig.

1.4 - Recommended Piping for Control of Compressible Fluids*

*For control of compressible fluids at values of 25% or less of inlet pressure

1. Expand outlet pipe to twice the control valve inlet pipe size. Use a tapered expander.
2. Connect the control pipe for the control pilot ahead of the outlet stop valve and at least 2 ft to 3 ft downstream from the end of the expander.
3. Make the control pipe connection at least 18 inches to 2 ft from the outlet stop valve, any elbow, or other fitting that changes flow direction.

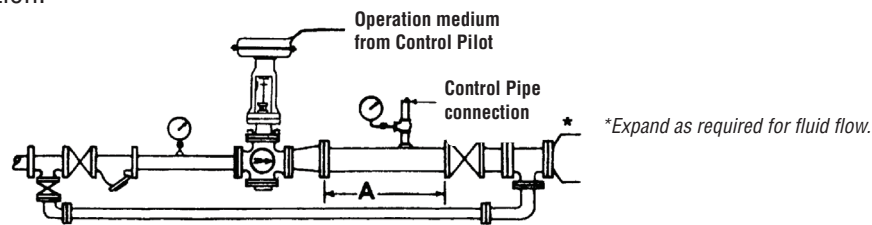
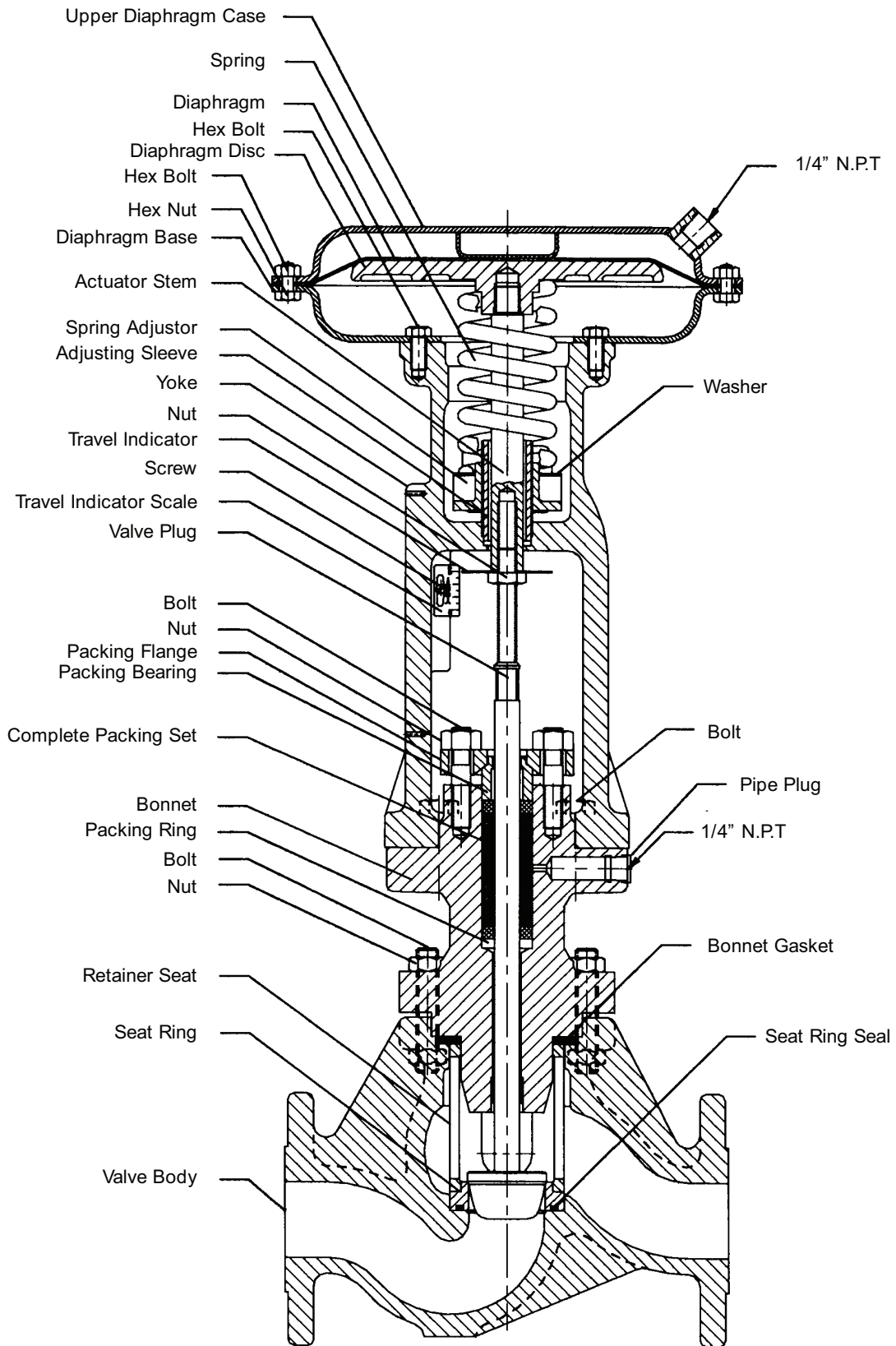


Figure 2 Typical Control Valve station for control of compressible fluids at 25% or less of inlet pressure.

NOTE: Where sensing impulse is taken 2 ft to 3 ft downstream from the control valve (expander), Dimension A in **Figure** between a minimum of 6 ft to 10 ft will provide the lowest noise and velocity factors, accurate pressure sensing, and reasonable bypass length.

2.0 - Operation and Maintenance



Operation and Maintenance, cont.

2.1 - Operating the DLO Control Valve

1. Close the inlet and outlet stop valves.
2. Check that the control valve responds properly though rated travel in relation to changes in operating pressure on diaphragm. Rated travel is shown by position of travel indicator on valve stem relative to travel indicator scale on yoke.
3. Manually operate control valves fitted with manual operating devices through rated travel to check freedom of movement. Return manual operating device to its standby position.
4. Place control valve in operation according to instructions supplied with control pilot or operating device.

2.2 - Renewing Valve Plug Stem Packing

NOTE: See **Figure 3**, **Figure 4**, and **Figure 5**.

Renew the valve plug stem packing if control valve has been in service beyond normal maintenance and packing shows signs of wear. Wear is indicated by leakage at the packing gland. Minor leakage of graphite packing can be corrected by tightening the packing flange.

CAUTION: Over-tightening the packing flange can cause the valve to operate erratically.

For valves with braided Teflon Graphite packing, additional packing rings can be installed to overcome minor leakage without dismantling the control valve or breaking the valve plug connection.

To renew the valve plug stem packing:

1. Shut down the inlet and outlet stop valves and check that the valve body is not under pressure. Remove nuts and lift packing flange and packing bearing a sufficient height to be able to apply a split packing ring around the diameter of the valve plug stem.
2. Lower the packing bearing over the new ring.
3. Lower the packing flange and tighten sufficiently with nuts to stop leakage.

To replace braided Teflon Graphite packing set or a complete Graphite 11 packing set, the control valve must be dismantled.

2.3 - Installing New Stem Packing

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

2.3.1 - Braided PTFE / Graphite Type Packing

1. Place metal ring in stuffing box making sure it bottoms in the box followed by a spring and second metal ring. Install the bottom Teflon adapter chevron, four Teflon packing chevrons, and top Teflon adapter chevron.
2. Install packing follower, packing flange, and nuts. Tighten stuffing box nuts until the follower bottoms on the bonnet.

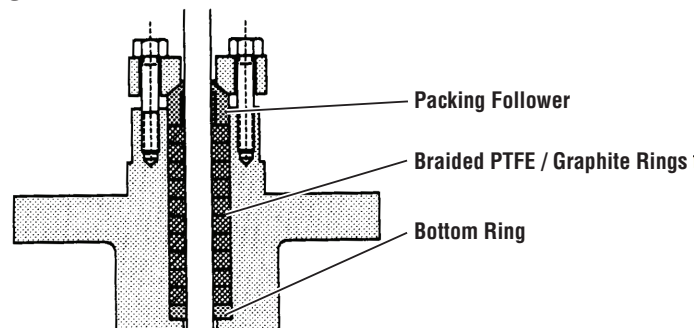


Figure 3 Installation sequence for Braided PTFE / Graphite Type packing

Operation and Maintenance, cont.

2.3.2 - PTFE Chevron Type Packing

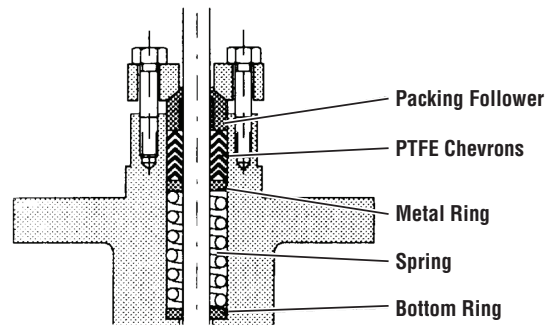


Figure 4 Installation sequence for PTFE Chevron Type packing

2.3.3 - Laminated Graphite Packing

Packing tools are available from the factory and should be used to ensure proper packing installation. Packing tool reference numbers are shown on Drawing 10/0.5.9 (which also shows how to make the tools). **Consult factory** for drawing.

1. Place spacers and packing ring over stem and into packing box in the order shown in **Figure 5**, one at a time, seating each firmly and using care not to tear rings on the stem threads. Adjust the packing gland nuts equally: finger tight plus 1/6 turn (one flat of nut).

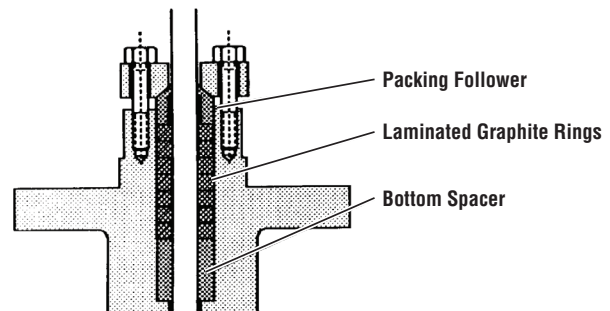


Figure 5 Installation sequence for Laminated Graphite Packing

2.4 - Disassembling DLO Control Valve for Service

1. Close inlet and outlet stop valves and relieve all pressure from piping involved. Remove all compression from adjusting springs.
- 2a. For **Direct-Acting Actuators - DLO-2 and DLOS-2 - Normally open valves**
Relieve air pressure from diaphragm of actuator. Remove the tubing from upper diaphragm case.
- 2b. For **Reverse-Acting Actuators - DDLO-2 and DDLOS-2 - Normally closed valves**
Supply sufficient air to the actuator diaphragm to keep the valve plug from touching the seat while disengaging the valve plug stem from the actuator stem.
3. Loosen the valve stem nut. Use the wrench on plug stem flats and turn the valve plug out of the actuator stem until stems separate. Remove the tubing from the lower diaphragm case.
4. Remove cap screws holding the actuator to the bonnet and lift off actuator.

2.5 - Disassembly of Valve Body Sub Assembly

1. Remove actuator from the valve body assembly as described in Section 2.4.
2. Remove bonnet nuts. On DLOS models, also remove bolts.
3. Lift bonnet assembly including the valve plug from the valve body.
4. Remove the valve plug packing bearing, and old packing set. Include spring for Teflon packing set.
5. Remove bonnet gasket, seat retainer, seat ring, and seal. If necessary, remove seat ring by forcing a wooden dowel into seat bore and lifting.

Operation and Maintenance, cont.

2.6 - Cleaning

1. Clean all parts thoroughly. Polish valve plug stem with crocus cloth. Valve plug stem should be smooth and free of scratches in packing area. Use approved, non-residue forming solvent for cleaning. Wipe dry with a clean cloth.
2. Inspect all parts and replace any excessively worn or damaged parts.
3. Install a new packing set of braided Teflon Graphite or Teflon Chevron rings as shown in **Section 2.3** of this IOM. See also **Section 2.2** in this IOM for information on renewing the valve plug stem packing.
4. The packaging bearings have a long-wearing life material which under normal usage should not require replacement, however, if damaged or worn, the packing bearing and/or the bonnet must be replaced. (Lower bearing in bonnet is not supplied separately).
5. The gasket and seal should be replaced each time the valve body sub assembly is disassembled for cleaning.

All Armstrong control valves are made of the finest material obtainable, time-tested, and backed by over seventy-five years of know-how. Machining is done by expert craftsmen and each valve is inspected and service-tested before shipment to you.

2.7 - Reassembling Valve Body Subassembly

2.7.1 - Lapping Valve Plug and Seat

1. Insert raised face of seat ring into seat retainer cage and place those into the bore of the valve body bridge.
2. Place the new bonnet gasket into the body recess.
3. With light pressure and turning motion, assemble the valve plug to the bonnet, being careful not to damage the bearings or the packing set.
4. Apply a very thin film of superfine lapping compound to the valve plug seating surface.
5. Assemble the bonnet complete with the valve plug to valve body applying nuts only finger tight to studs or bolts. The bonnet acts as a guide when grinding the valve plug.
6. Use a wrench on the flats of a valve plug stem to turn the valve plug. Do not bear down on the valve plug stem when lapping. Weight of the parts is sufficient to cause lapping action.
7. As lapping progresses, lift the valve plug off the seat occasionally and rotate 45° to keep the compound evenly distributed. Excessive lapping should be avoided.
8. Remove bonnet nuts, bonnet assembly, and all body assembly parts. Then remove all traces of lapping compound from both the valve plug and seat ring. Check that a fine continuous ring of contact has been made on both seats. The contact ring should be visible but without depth.
9. Apply silicone grease to the seat ring seal and insert the seal into the groove of the seat ring.
10. Insert the raised face of the seat ring into the seat retainer cage and place these into the bore of the valve body bridge. Seat ring sealing face must be firmly seated in place.
11. Place the bonnet gasket in the body recess and add the bonnet assembly. Apply nuts to bolts or studs and tighten evenly for metal to metal joint.
12. Place the actuator back on bonnet. **CAUTION: For reverse-acting actuators only, air pressure must be supplied to diaphragm chamber sufficient to cause actuator stem to lift its full travel so valve plug threads may later be engaged.**
13. Place the packing flange with the concaved side of the hole facing down through the window of the actuator over the valve plug stem and bolts to the top of the packing bearing. Secure with two nuts, finger tightened.
14. Secure actuator flange to bonnet flange with cap screws.
15. With a wrench on the flats of the valve stem, lift the valve plug and use counter-clockwise motion to engage threads in the upper stem of the actuator until the valve plug cannot be turned anymore.

Operation and Maintenance, cont.

2.7.2 - Setting Valve Travel

Classes: DLO-2 and DL0S Direct-Acting Actuators

1. Connect the controlled air line to the diaphragm case connector.
2. Supply 3 psig air pressure to the actuator diaphragm.
3. Compress the actuator spring by turning the spring adjuster until the travel indicator just starts to move when air pressure is raised above 3 psig.

NOTE: Alternately add compression and check starting pressure slightly above 3 psig until correct adjustment is attained. After each check, return air pressure to 3 psig.

4. Actuator spring preload adjustment can be made either with or without pressure in the valve body. Once correct compression is made, no further adjustment is necessary.
5. With valve plug and coupling threads engaged, supply 20 psig operating pressure to actuator diaphragm. Valve will move to closed position. Observe travel obtained as shown by travel indicator and indicator scale. Read - just as follows:
 - a. **Overtravel** If travel is too great, loosen the stem lock nut and turn the valve plug stem out of the coupling the amount necessary to obtain correct travel.
 - b. **Undertavel** Travel that is too short is not possible if Step 15 in **Section 2.7.1** of this IOM was completed and correct parts were used.
6. When correct travel has been obtained, reduce operating pressure sufficiently to move the valve plug away from the seat ring. Then turn the valve stem one full turn out of the upper stem threads. Secure the lock nut.
7. The one full turn toward the seat ring, made after obtaining travel, provides the positive closing force required to obtain tight valve closure. In all cases, be sure to make this final adjustment.
8. Tighten the lock nut. Reconnect the operating medium tubing from the sensing element or manual loading device to the diaphragm case.

Classes: DDLO and DDLOS Reverse-Acting Actuators

1. Connect the controlled air line to the diaphragm case connection.
2. Supply 3 psig air pressure to the actuator diaphragm.
3. Compress the actuator spring until travel indicator begins to move when air pressure is raised above 3 psig.

NOTE: Alternately add compression and check starting pressure slightly above 3 psig until correct adjustment is attained. After each check, return air pressure to 3 psig.

4. The valve plug is closed against upward fluid thrust by actuator spring force. Total compression placed on the actuator spring must be sufficient to provide the 3 psig preload plug force required to close the valve.
5. If the preload adjustment is made with no pressure in the valve body, then when the control valve is placed in operation, additional compression must be placed on the actuator spring to provide valve closure force. With proper adjustment, valve will close tightly and will not begin to open until the 3 psig operation pressure is exceeded.

NOTE 1: A control valve which has been adjusted to provide 3 psig starting pressure plus valve closure force (with pressure in the body) will have a considerably higher start pressure than 3 psig, when tested at zero body pressure.

NOTE 2: Air pressures quoted are relative. Actual pressures required in operation may vary with pressure drop conditions existing and/or actuator springs used.

6. Loosen lock nut. Apply air to diaphragm. Turn valve plug stem into upper stem threads until the valve plug is out of contact with the seat ring, when air is removed from the diaphragm. Then turn the valve plug stem out of the coupling threads until the valve plug just contacts the seat ring again.

Operation and Maintenance, cont.

7. Supply sufficient operating pressure to actuator diaphragm to move the valve plug away from the seat ring. Then turn the valve plug stem one full turn out of the actuator upper stem threads. Diaphragm disc determines travel. With proper diaphragm disc, correct travel will result from adjustment.
8. **Overtravel** If travel is too great, loosen and turn the valve plug stem one full turn out of actuator upper stem and the amount necessary to obtain correct travel.
9. **Undertravel** If travel is too short, loosen the lock nut and turn the valve plug stem further into the upper stem the amount necessary to obtain correct travel.
10. When correct travel has been obtained, increase operating pressure sufficiently to move the valve plug away from the seat ring. Then turn the valve plug stem one full turn out of the upper stem threads.
11. The one full turn toward the seat ring, made after obtaining travel, provides the positive closing force required to obtain tight valve closure in single ported valves. In all cases, be sure to make this final adjustment.
12. Tighten lock nut. Reconnect operating medium tubing from the sensing element or manual loading device to the diaphragm case.

2.8 - Disassembly

2.8.1 - Replacing Diaphragms, Stem Seals, etc.

1. Shut inlet and outlet stop valves for fluid supply lines and air supply to actuator connection.
2. Disconnect tubing at diaphragm case connection.
3. Remove compression on spring by turning spring adjustor until spring is free. See label on yoke for proper directions of rotation.

2.8.2 - Replacing Diaphragm - Direct Acting Actuators ONLY

1. Perform Steps 1-3 in **Section 2.8.1** of this IOM.
2. Remove diaphragm case nuts and bolts, upper diaphragm case, and diaphragm.
3. Replace diaphragm with a new one and reposition the upper diaphragm case, bolts, and nuts. Tighten all nuts.

2.8.3 - Replacing Diaphragm and/or Stem Seals - Reverse Acting Actuator

1. Insert a lock rod through the hole in the yoke and into the hole in the actuator stem. (If the stem has no hole, secure the stem with a wrench).
2. Dismantle the upper diaphragm case and Hand Operating Device (if so fitted) from the actuator as described in Instructions.
3. Remove the lock nut (16), diaphragm disc, diaphragm, and collar.
4. Follow procedures based on actuator size:
5. **35R Actuators** Remove 8 cap screws from the lower diaphragm case, lift of the case, and remove the stem seal.
6. **55R and 85R Actuators** Take out the screws from the seal ring. Remove the seal ring, stem seal, and stem collar.
7. Examine the gasket. Replace the seal if necessary to obtain an airtight seal.
8. Clean all metal parts. Remove any rust, dirt, or sharp edges that might damage the stem seal.
9. Lubricate spring washer(s), spring adjustor, and actuator stem threads with anti-seize compound.

Operation and Maintenance, cont.

2.9 - Reassembly

1. For **55R and 85R Actuators** Place the new stem seal in position and install the seal ring with the lip upward. Tighten screws. Press the stem seal down until flush with the spacer, install the lower diaphragm case, and tighten nuts.
2. When reassembling, place a block under the actuator stem to hold the stem high enough so that clearance between the stem seal bead and the groove is not greater than 1/8 inch. Line up the actuator stem in the center of the opening in the lower diaphragm case so that the stem seal bead will enter the groove in the stem collar when the lock nut is tightened.
3. Place the stem collar over the actuator stem with the groove upward followed by the diaphragm and diaphragm disc. Be sure that the center hole in the diaphragm fits properly over the raised lip of the collar.
4. Install the lock nut and tighten. REMOVE THE LOCK ROD.
5. Install the upper diaphragm case and Hand Operating Device (if fitted) to actuator and tighten the nuts and bolts.

For all actuator sizes, reset the valve for proper travel and spring preload as previously described by compressing the actuator adjusting spring(s) sufficiently to move diaphragm(s) up against actuator stop. Align travel indicator plate and tighten screws. Plate scale indicates rated valve travel.

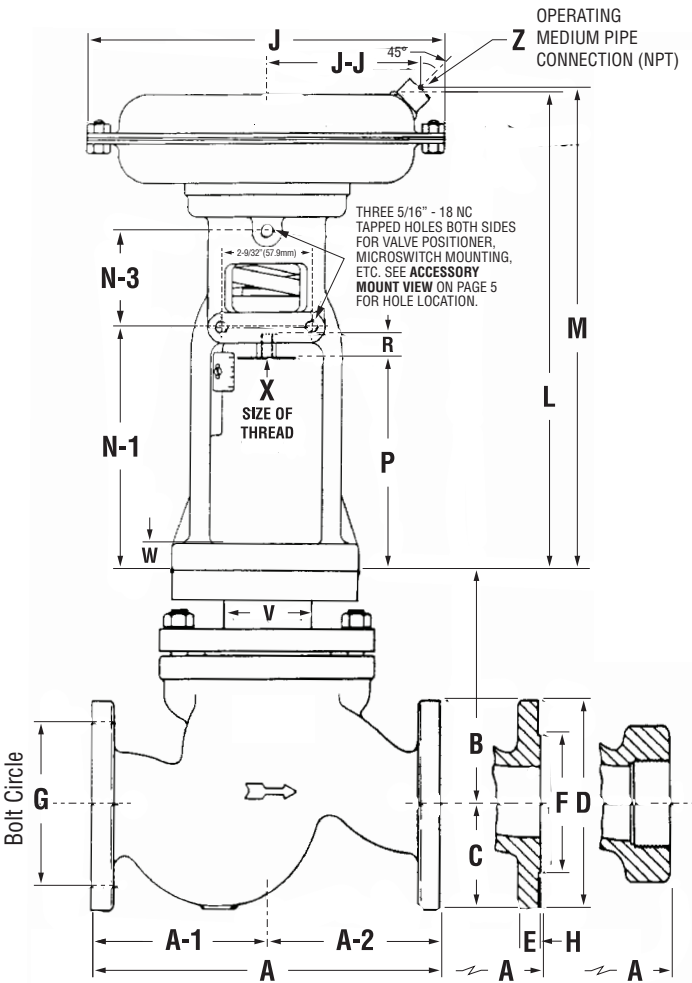
3.0 - Dimensions

3.1 - Direct-Acting Diaphragm Actuator Dimensions and Weights

NOTE: MAXIMUM ALLOWABLE PRESSURE FOR ALL ACTUATORS IS 60 PSIG.

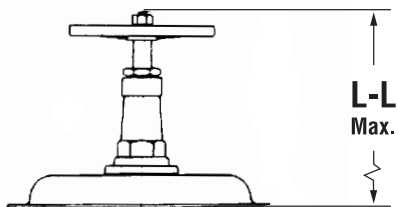
Direct Acting Actuator

Class DL0S-2 Cast Steel, Iron, and Stainless Steel
with Diaphragm Actuators



**EXTERNAL VIEW OF ACTUATOR
DIRECT ACTING**

(for dimensional purposes only)

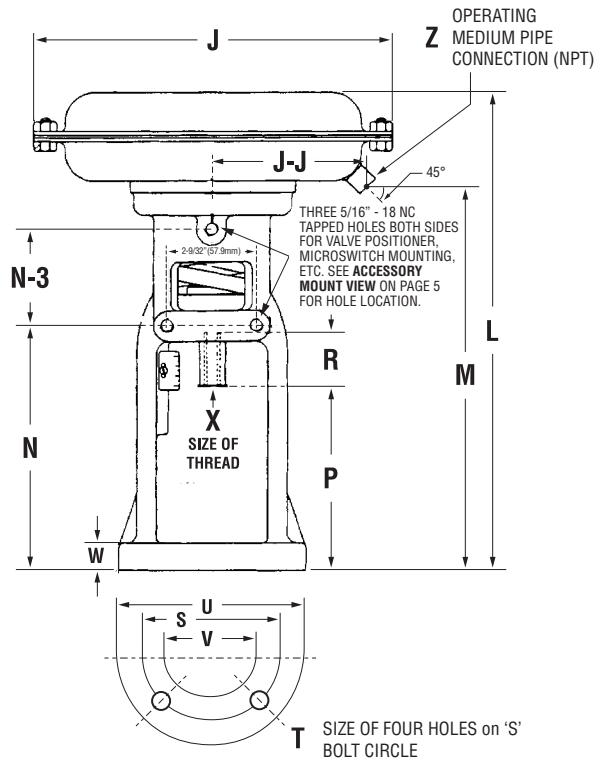


**EXTERNAL VIEW OF HAND OPERATING DEVICE
DIRECT ACTING**

Figure 6 Direct Acting Actuator and
Hand Operating Device dimensions

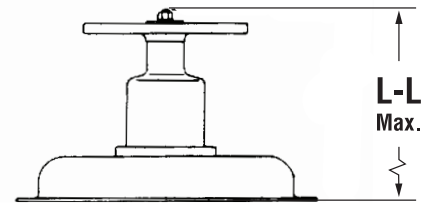
Reverse Acting Actuator

Class DDLOS-2 Cast Steel, Iron, and Stainless Steel
with Diaphragm Actuators



**EXTERNAL VIEW OF ACTUATOR
REVERSE ACTING**

(for dimensional purposes only)



**EXTERNAL VIEW OF HAND OPERATING DEVICE
REVERSE ACTING**

Figure 7 Reverse Acting Actuator and
Hand Operating Device dimensions

Dimensions, cont.

3.1.1 - Direct-Acting Diaphragm Actuator Overall Dimensions

Direct Acting Actuator and Hand Operating Device Dimensions

Size	Units	J	J-J	L	M	N-1	P	R	S	T	U	V	W	X	Z	L-L MAX
35	inches	9-1/4	3-15/16	12-3/8	12-3/8	6-1/4	5-1/2	1-3/8	3-13/16	9/16	4-13/16	2.687	11/16	3-8/24	1/4 NPT	17-7/8
	mm	235	100	314.3	314.3	158.8	139.7	34.9	96.8	14.3	122.2	68.2	17.5			454
55	inches	12	5-1/16	15-1/4	15-1/4	7	5-1/2	1-3/8	3-13/16	9/16	4-13/16	2.687	1	3/8-24	1/4 NPT	24-7/8
	mm	304.8	128.6	387.4	387.4	177.8	139.7	34.9	96.8	14.3	122.2	68.2	25.4			631.8
55A	inches	12	5-1/16	15-1/4	15-1/4	7	5-1/2	1-3/8	3-13/16	9/16	4-13/16	2.687	1	1/2-20	1/4 NPT	24-7/8
	mm	304.8	128.6	387.4	387.4	177.8	139.7	34.9	96.8	14.3	122.2	68.2	25.4			631.8
85	inches	14-3/4	6-1/4	19-5/8	19-5/8	8-1/2	6-7/16	1-3/4	3-13/16	9/16	4-13/16	2.687	1-1/4	1/2-20	1/4 NPT	29-1/4
	mm	374.7	158.8	498.5	498.5	215.9	163.5	44.5	96.8	14.3	122.2	68.2	31.8			743

Reverse Acting Actuator and Hand Operating Device Dimensions

Size	Units	J	J-J	L	M	N-1	P	R	S	T	U	V	W	X	Z	L-L MAX
35R	inches	9-1/4	12-3/8	9-7/8	3-15/16	6-1/4	4	1-3/4	3-3/16	9-16	4-13/16	2.687	11/16	3/8-24	1/4 NPT	16-3/4
	mm	235	314.3	250.8	100	158.8	101.6	44.5	96.8	14.3	122.2	68.2	17.5			425.5
55R	inches	12	18	14-1/4	5-1/16	6-7/8	4	1-3/4	3-13/16	9/16	4-13/16	2.687	1	3/8-24	1/4 NPT	26-3/8
	mm	304.8	457.2	362	128.6	174.6	101.6	44.5	96.8	14.3	122.2	68.2	25.4			669.9
55AR	inches	12	18	14-1/4	5-1/16	6-7/8	4	1-3/4	3-13/16	9/16	4-13/16	2.687	1	1/2-20	1/4 NPT	26-3/8
	mm	304.8	457.2	362	128.6	174.6	101.6	44.5	96.8	14.3	122.2	68.2	25.4			669.9
85R	inches	14-3/4	23-1/4	18-3/4	6-1/4	8-9/16	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	31-5/8
	mm	374.7	590.6	476.3	158.8	217.5	109.5	57.2	96.8	14.3	122.2	68.2	31.8			803.3

3.1.2 - Direct and Reverse Acting Diaphragm Actuator Overall Weights

Direct Acting Actuator

Size	Net Weight without Hand Operating Device		Net Weight with Hand Operating Device	
	Aluminum	Cast Iron	Aluminum	Cast Iron
35	20 lb	35 lb	23 lb	38 lb
	9.1 kg	15.9 kg	10.4 kg	17.2 kg
55	23 lb	50 lb	28 lb	55 lb
	10.4 kg	22.7 kg	12.7 kg	24.9 kg
55A	23 lb	50 lb	28 lb	55 lb
	10.4 kg	22.7 kg	12.7 kg	24.9 kg
85	43 lb	96 lb	48 lb	101 lb
	19.5 kg	43.5 kg	21.8 kg	45.8 kg

Reverse Acting Actuator

Size	Net Weight without Hand Operating Device		Net Weight with Hand Operating Device	
	Aluminum	Cast Iron	Aluminum	Cast Iron
35R	20 lb	35 lb	23 lb	38 lb
	9.1 kg	15.9 kg	10.4 kg	17.2 kg
55R	30 lb	60 lb	35 lb	65 lb
	13.6 kg	27.2 kg	15.9 kg	29.5 kg
55AR	30 lb	60 lb	35 lb	65 lb
	13.6 kg	27.2 kg	15.9 kg	29.5 kg
85R	54 lb	117 lb	59 lb	122 lb
	24.5 kg	53.1 kg	26.8 kg	55.3 kg

3.1.3 - Diaphragm Actuator Maximum Travel and Accessory Mount Dimensions

Maximum Travel

Size	Units	Max. Travel
35(R)	inches	3/4"
	mm	19.0
55(R)	inches	1-1/2"
	mm	38.1
85(R)	inches	2-1/8"
	mm	54.0

Accessory Mount View

Size	Units	N-2	N-3
35(R)	inches	2-1/2"	3/4"
	mm	63.5	63.5
55(R)	inches	2-1/2"	3"
	mm	63.5	76.2
85(R)	inches	2-1/2"	4-1/8"
	mm	63.5	104.8

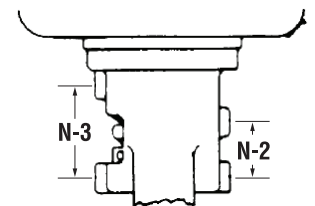


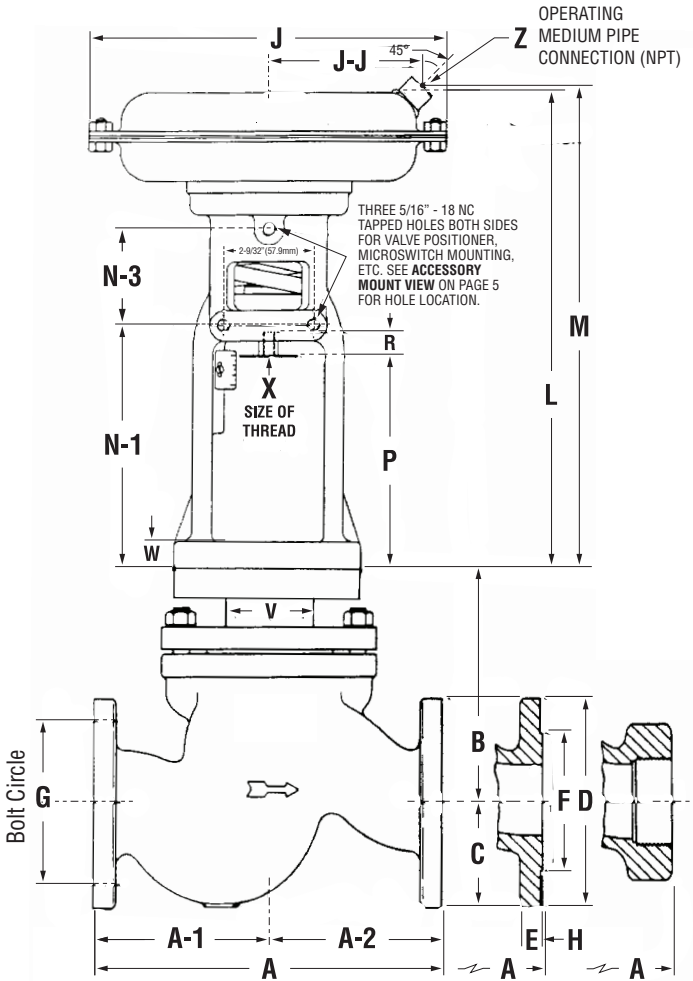
Figure 8 Accessory mount view

Dimensions, cont.

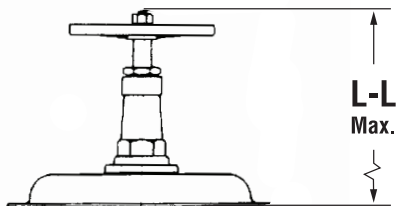
3.2 - Cast Steel / Stainless Steel Diaphragm Control Valve Dimensions

Direct Acting Actuator

Class DLOS-2 Cast Steel, Iron, and Stainless Steel
with Diaphragm Actuators



**EXTERNAL VIEW OF ACTUATOR
DIRECT ACTING**
(for dimensional purposes only)

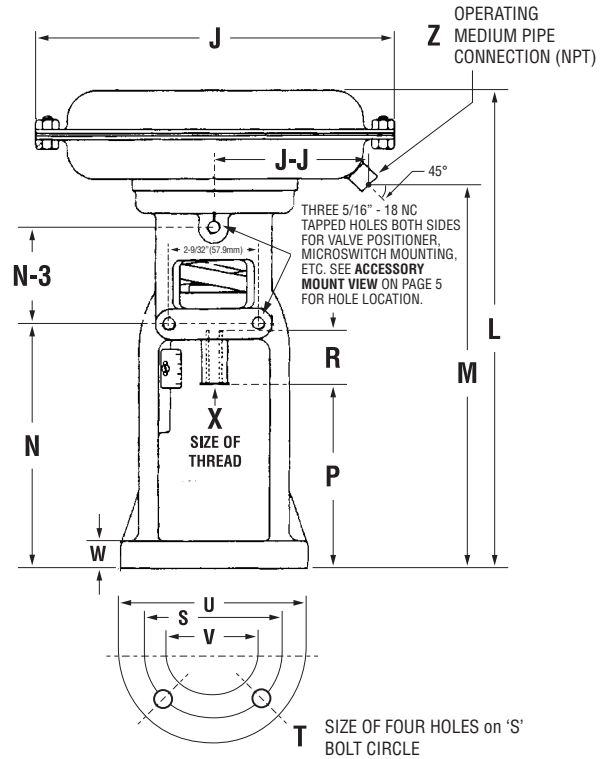


**EXTERNAL VIEW OF HAND OPERATING DEVICE
DIRECT ACTING**

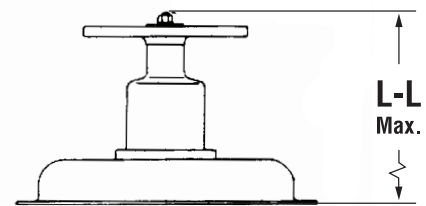
Figure 6 Direct Acting Actuator and
Hand Operating Device dimensions

Reverse Acting Actuator

Class DDLOS-2 Cast Steel, Iron, and Stainless Steel
with Diaphragm Actuators



**EXTERNAL VIEW OF ACTUATOR
REVERSE ACTING**
(for dimensional purposes only)



**EXTERNAL VIEW OF HAND OPERATING DEVICE
REVERSE ACTING**

Figure 7 Reverse Acting Actuator and
Hand Operating Device dimensions

Dimensions, cont.

3.2.1 - Cast Steel / Stainless Steel Diaphragm Control Valve Dimensions in Inches

Threaded Connections													
Size	A	A-1	A-2	B	C	D	E	F	G	H	No. of Holes	Hole Size	Approx. Net Wt. lb.
1	7-3/4	4-1/8	3-5/8	5-3/16	2-1/4	-	-	-	-	-	-	-	16 lb
1-1/2	9-1/4	4-5/8	4-5/8	7-1/2	2-3/8	-	-	-	-	-	-	-	27 lb
2	10-1/2	5-1/4	5-1/4	7-3/4	3-1/32	-	-	-	-	-	-	-	34 lb
150 lb. ANSI Flange Standard Connections													
Size	A	A-1	A-2	B	C	D	E	F	G	H	No. of Holes	Hole Size	Approx. Net Wt. lb.
1/2	-	-	-	5-3/16	-	-	-	-	-	-	-	-	-
3/4	-	-	-	7-1/2	-	-	-	-	-	-	-	-	-
1	7-1/4	3-7/8	3-3/8	7-3/4	2-1/4	4-1/4	3/8	2	3-1/8	1/16	4	3/4	19 lb
1-1/2	8-3/4	4-3/8	4-5/8	8-3/16	2-1/2	5	5/8	2-7/8	3-7/8	1/16			35 lb
2	10	5	5	8-1/2	3-1/2	6	9/16	3-5/8	4-3/4	1/16			41 lb
2-1/2	10-7/8	5-13/16	5-1/16	10-5/16	3-17/32	7	5/8	4-1/8	5-1/2	1/16			57 lb
3	11-3/4	5-7/8	5-7/8	10-5/16	3-3/4	7-1/2	1-1/16	5	6	1/16			77 lb
4	13-7/8	6-15/16	6-15/16	10-5/16	4-27/32	9	7/8	6-3/16	7-1/2	1/16	8	3/4	121 lb
300 lb. ANSI Flange Standard Connections													
Size	A	A-1	A-2	B	C	D	E	F	G	H	No. of Holes	Hole Size	Approx. Net Wt. lb.
1/2	-	-	-	-	-	-	-	-	-	-	-	-	-
3/4	-	-	-	-	-	-	-	-	-	-	-	-	-
1	7-3/4	4-1/8	3-5/8	5-3/16	2-1/4	4-7/8	5/8	2	3-1/2	1/16	4	3/4	21 lb
1-1/2	9-1/4	4-5/8	4-5/8	7-1/2	3-1/16	6-1/8	3/4	2-7/8	4-1/2	1/16	4	7/8	37 lb
2	10-1/2	5	5	7-3/4	3-1/32	6-1/2	13/16	3-5/8	5	1/16	8	3/4	45 lb
2-1/2	11-1/2	6-1/8	5-3/8	8-3/16	3-17/32	7-1/2	15/16	4-1/8	5-7/8	1/16	8	7/8	66 lb
3	12-1/2	6-1/4	6-1/4	8-1/2	4-1/8	8-1/4	1-1/16	5	6-5/8	1/16			88 lb
4	14-1/2	7-1/4	7-1/4	10-5/16	4-27/32	10	1-3/16	6-3/16	7-7/8	1/16			140 lb

Dimensions, cont.

3.2.2 - Cast Steel / Stainless Steel Diaphragm Control Valve Dimensions in Millimeters

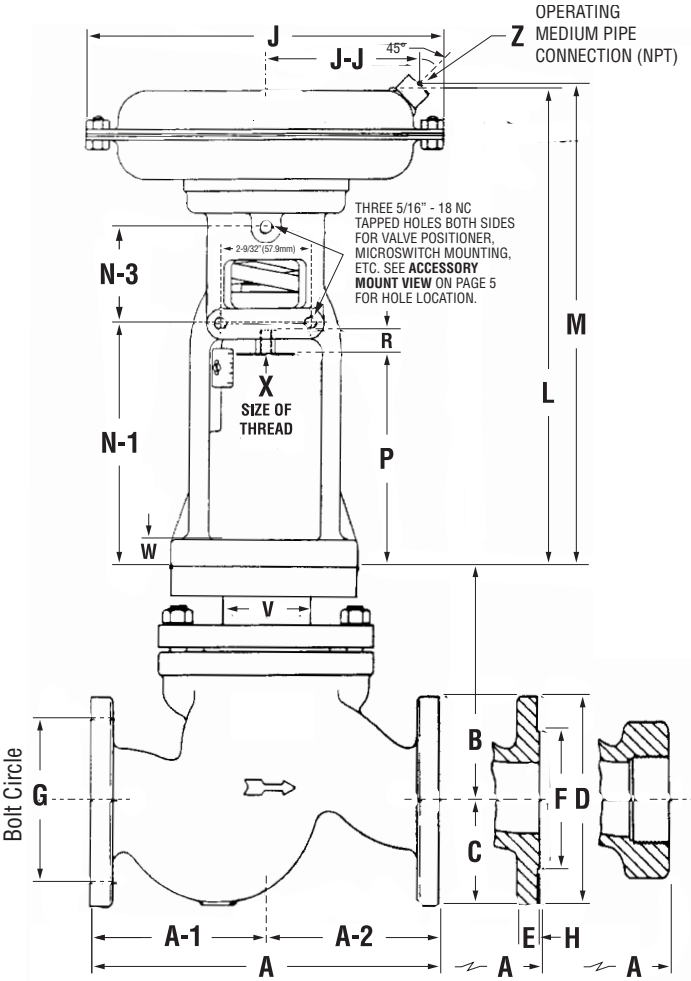
Threaded Connections													
Size	A	A-1	A-2	B	C	D	E	F	G	H	No. of Holes	Hole Size	Approx. Net Wt. kg.
25	196.9	104.8	92.1	142.4	57.2	-	-	-	-	-	-	-	7.9 kg
40	235	117.5	117.5	190.5	60.3	-	-	-	-	-	-	-	12.3 kg
50	266.7	133.4	133.4	196.9	77	-	-	-	-	-	-	-	15.5 kg
DIN 2543 Flange Standard ND-16													
Size	A	A-1	A-2	B	C	D	E	F	G	H	No. of Holes	Hole Size	Approx. Net Wt. kg.
15	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-
25	197.6	105	92.4	142.4	57.2	115	16	68	85	2	4	14	8.6 kg
40	230	115	115	190.5	63.5	150	15	88	110	3	4	18	15.9 kg
50	263	131	131	196.9	77.8	165	17	102	125	3			18.6 kg
65	290	154.8	135.2	200.6	89.7	185	15	122	145	3			25.9 kg
80	310	155	155	215.9	95.3	200	17	138	160	3	8	18	35 kg
100	350	175	175	261.9	123	220	17	158	180	3			55 kg
DIN 2545 Flange Standard ND-40													
Size	A	A-1	A-2	B	C	D	E	F	G	H	No. of Holes	Hole Size	Approx. Net Wt. kg.
15	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-
25	197.6	105	92.4	142.4	57.2	115	16	68	85	2	4	14	9.5 kg
40	230	115	115	190.5	77.8	150	15	88	110	3	4	18	16.8 kg
50	262.7	131	131	196.9	77	165	17	102	125	3			20.5 kg
65	290	154.8	135.2	200.6	89.7	185	19	122	145	3	8	18	30 kg
80	310	155	155	215.9	104.8	200	21	138	160	3			40 kg
100	350	175	175	261.9	123	235	21	162	190	3			8

Dimensions, cont.

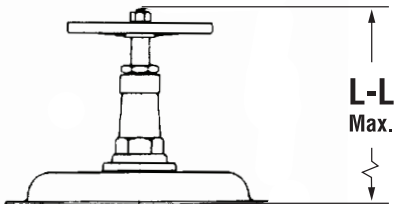
3.3 - Cast Iron Diaphragm Control Valve Dimensions

Direct Acting Actuator

Class DLOS-2 Cast Steel, Iron, and Stainless Steel
with Diaphragm Actuators



EXTERNAL VIEW OF ACTUATOR DIRECT ACTING
(for dimensional purposes only)

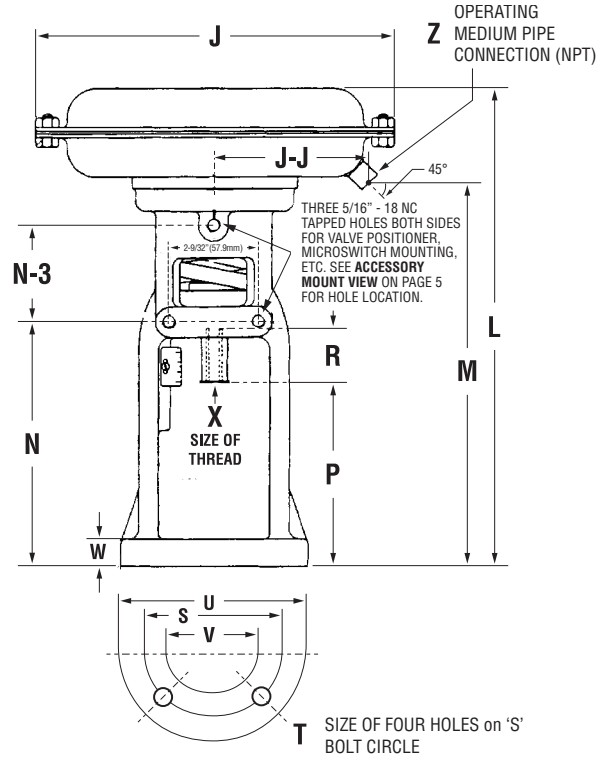


EXTERNAL VIEW OF HAND OPERATING DEVICE DIRECT ACTING

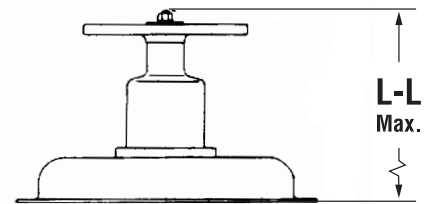
Figure 6 Direct Acting Actuator and Hand Operating Device dimensions

Reverse Acting Actuator

Class DDLOS-2 Cast Steel, Iron, and Stainless Steel
with Diaphragm Actuators



EXTERNAL VIEW OF ACTUATOR REVERSE ACTING
(for dimensional purposes only)



EXTERNAL VIEW OF HAND OPERATING DEVICE REVERSE ACTING

Figure 7 Reverse Acting Actuator and Hand Operating Device dimensions

Dimensions, cont.

3.3.1 - Cast Iron Diaphragm Control Valve Dimensions in Inches

Threaded Connections													
Size	A	A-1	A-2	B	C	D	E	F	G	H	No. of Holes	Hole Size	Approx. Net Wt. lb.
1	7-3/4	4-1/8	3-5/8	5-3/16	2-3/8	-	-	-	-	-	-	-	17 lb
3/4	7-3/4	4-1/8	3-5/8	5-3/16	2-3/8	-	-	-	-	-	-	-	17 lb
1	7-3/4	4-1/8	3-5/8	5-3/16	2-3/8	-	-	-	-	-	-	-	17 lb
1-1/2	9-1/4	4-5/8	4-5/8	7-1/2	2-3/8	-	-	-	-	-	-	-	28 lb
2	10-1/2	5-1/4	5-1/4	7-3/4	3	-	-	-	-	-	-	-	35 lb
125 lb. ANSI Flange Standard Connections													
Size	A	A-1	A-2	B	C	D	E	F	G	H	No. of Holes	Hole Size	Approx. Net Wt. lb.
1	7-1/4	3-7/8	3-3/8	5-3/16	2-1/8	4-1/4	7/16	-	3-1/8	-	4	5/8	19 lb
1-1/2	8-3/4	4-3/8	4-3/8	7-1/2	2-1/2	5	9/16	-	3-7/8	-			35 lb
2	10-1/2	5	5	7-3/4	3	6	5/8	-	4-3/4	-	4	3/4	41 lb
2-1/2	10-7/8	5-13/16	5-1/16	8-3/16	3-1/2	7	11/16	-	5-1/2	-			58 lb
3	11-3/4	5-7/8	5-7/8	8-1/2	3-3/4	7-1/2	3/4	-	6	-			80 lb
4	13-7/8	6-15/16	6-15/16	10-5/16	4-1/2	9	15/16	-	7-1/2	-	8	3/4	135 lb
250 lb. ANSI Flange Standard Connections													
Size	A	A-1	A-2	B	C	D	E	F	G	H	No. of Holes	Hole Size	Approx. Net Wt. lb.
1	7-3/4	4-1/8	3-5/8	5-3/16	2-1/8	4-7/8	5/8	2-11/16	3-1/2	1/16	4	3/4	21 lb
1-1/2	9-1/4	4-5/8	4-5/8	7-1/2	3-1/16	6-1/8	3/4	3-9/16	4-1/2	1/16	4	7/8	37 lb
2	10-1/2	5-1/4	5-1/4	7-3/4	3-1/4	6-1/2	13/16	4-3/16	5	1/16	8	3/4	45 lb
2-1/2	11-1/2	6-1/8	5-3/8	8-3/16	3-3/4	7-1/2	15/16	4-15/16	5-7/8	1/16	8	7/8	64 lb
3	12-1/2	6-1/4	6-1/4	8-1/2	4-1/8	8-1/4	1-1/16	5-11/16	6-5/8	1/16			91 lb
4	14-1/2	7-1/4	7-1/4	10-5/16	5	10	1-3/16	6-15/16	7-7/8	1/16			152 lb

Dimensions, cont.

3.3.2 - Cast Iron Diaphragm Control Valve Dimensions in Millimeters

Threaded Connections													
Size	A	A-1	A-2	B	C	D	E	F	G	H	No. of Holes	Hole Size	Approx. Net Wt. kg.
15	196.9	104.8	92.1	142.4	60.3	-	-	-	-	-	-	-	7.7 kg
20	196.9	104.8	92.1	142.4	60.3	-	-	-	-	-	-	-	7.7 kg
25	196.9	104.8	92.1	142.4	60.3	-	-	-	-	-	-	-	7.7 kg
40	235	117.5	117.5	190.5	60.3	-	-	-	-	-	-	-	12.7 kg
50	266.7	133.4	133.4	196.9	76.2	-	-	-	-	-	-	-	15.9 kg
DIN 2532 / DIN 2533 Flange Standard ND-10 / ND-16													
Size	A	A-1	A-2	B	C	D	E	F	G	H	No. of Holes	Hole Size	Approx. Net Wt. kg.
15	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-
25	194.5	103.6	90.9	142.4	54	115	14	68	85	2	4	14	12.7 kg
40	230.2	115.1	—	190.5	63.5	150	15	88	110	3	4	18	15.9 kg
50	263	131	131	196.9	76.2	165	17	102	125	3			18.6 kg
65	290	154.8	135.2	200.6	88.9	185	17	122	145	3	4	18	26.4 kg
80	310	155	155	215.9	95.3	200	19	138	160	3	8	18	36.3 kg
100	385	175	175	261.9	114.3	220	21	158	180	3			61.3 kg
DIN 2534 / DIN 2534 Flange Standard ND-25 / ND-40													
Size	A	A-1	A-2	B	C	D	E	F	G	H	No. of Holes	Hole Size	Approx. Net Wt. kg.
15	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-
25	197.6	105.2	92.5	142.4	54	115	16	68	85	2	4	14	9.5 kg
40	234.2	117.1	-	190.5	77.8	150	17	88	110	3	4	18	16.8 kg
50	266.7	133	133	196.9	82.6	165	19	102	125	3			20.5 kg
65	290	154.8	135.2	200.6	95.3	185	21	122	145	3	8	18	29 kg
80	310	155	155	215.9	104.8	200	23	138	160	3			41.4 kg
100	393	175	175	261.9	127	235	25	162	190	3	8	22	69 kg

4.0 - Parts Diagram

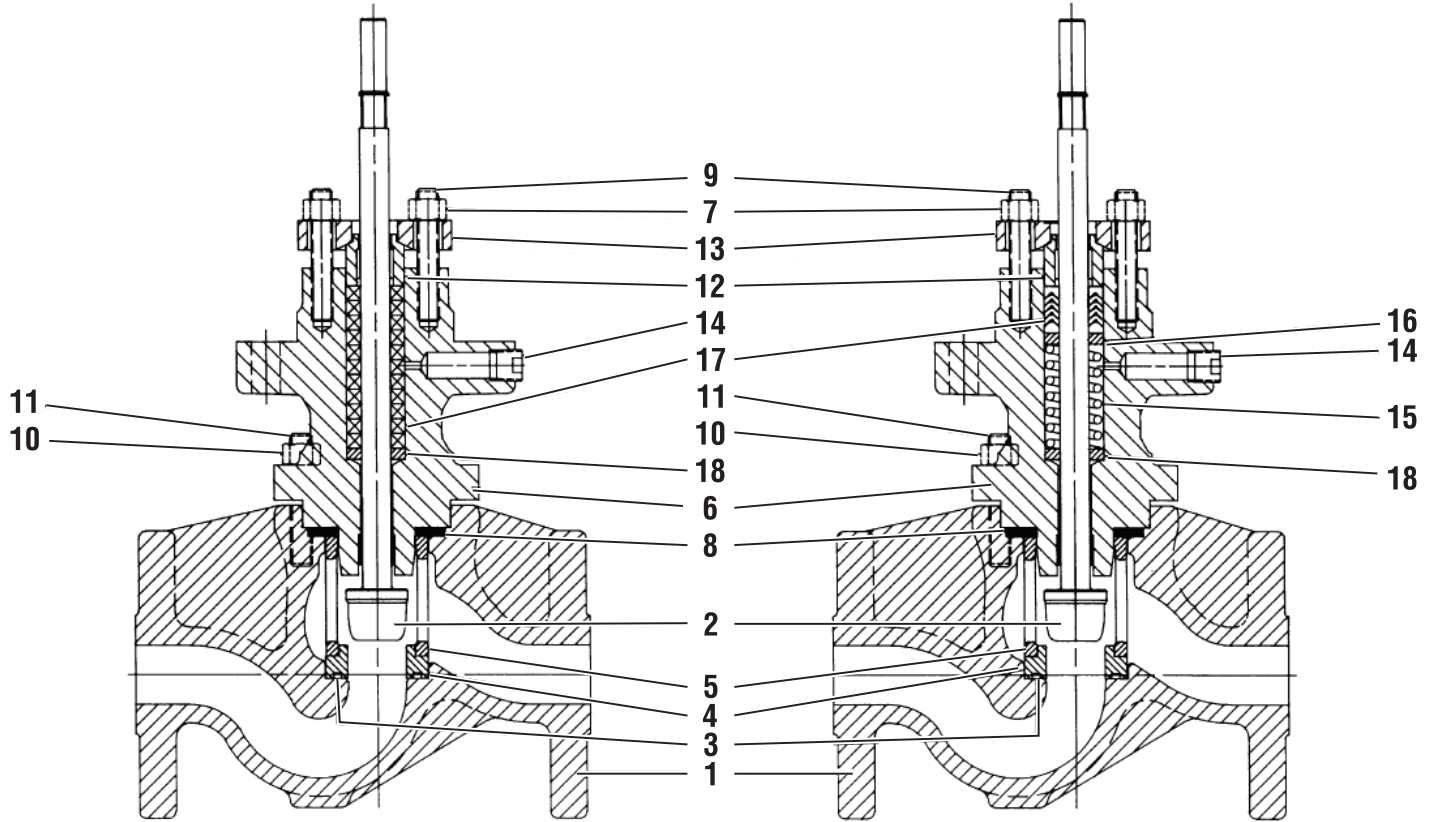


Figure 9 DLO Control Valve Body Diagram

5.0 - Parts List

5.1 - Valve Body Spare Parts

5.1.1 - Size 1/2", 3/4", 1" and 1-1/2" Valve Spare Parts

Parts marked with “•” are recommended to have on hand as spare parts and when overhauling equipment.

	Part Name	Material	Material Specification	Qty	Part Numbers			
					1/2"	3/4"	1"	1-1/2"
1 •	Valve Body, Threaded	Cast Steel	ASTM A-216 GRWCB	1	LV-A6541703	LV-A6541803	LV-A6518603	LV-A6529603
	Valve Body, 150# Flanged	Cast Steel	ASTM A-216 GRWCB	1	-	-	LV-A6518703	LV-A6529403
	Valve Body, 300# Flanged	Cast Steel	ASTM A-216 GRWCB	1	-	-	LV-A6518803	LV-A6529503
	Valve Body, DIN 2543 ND 16	Cast Steel	ASTM A-216 GRWCB	1	-	-	LV-A6580403	LV-A6580503
	Valve Body, DIN 2545 ND40	Cast Steel	ASTM A-216 GRWCB	1	-	-	LV-A6580403	LV-A6580503
	Valve Body, Threaded	Stainless Steel	ASTM A-296 GRW316	1	LV-A6541705	LV-A6541805	LV-A6518605	LV-A6529605
	Valve Body, 150# Flanged	Stainless Steel	ASTM A-296 GR 316	1	-	-	LV-A6518705	LV-A6529405
	Valve Body, 300# Flanged	Stainless Steel	ASTM A-296 GR 316	1	-	-	LV-A6518805	LV-A6529505
	Valve Body, DIN 2543 ND16	Stainless Steel	ASTM A-296 GR 316	1	-	-	LV-A6580405	LV-A6580505
	Valve Body, DIN 2545 ND 40	Stainless Steel	ASTM A-296 GR 316	1	-	-	LV-A6580405	LV-A6580505
	Valve Body, Threaded	Cast Iron	ASTM A-126 CLB	1	LV-A65429	LV-A65430	LV-A65268	LV-A65293
	Valve Body, 125# Flanged	Cast Iron	ASTM A-126 CLB	1	-	-	LV-A65269	LV-A65291
	Valve Body, 250# Flanged	Cast Iron	ASTM A-126 CLB	1	-	-	LV-A65270	LV-A65292
	Valve Body, DIN 2533 ND 16	Cast Iron	ASTM A-126 CLB	1	-	-	LV-A65903	LV-A65905
Valve Body, DIN 2535 ND40	Cast Iron	ASTM A-126 CLB	1	-	-	LV-A65904	LV-A65906	
2 •	Valve Plug, Linear, Full Trim	Stainless Steel	AISI TYPE 316	1	LV-A69327	LV-A69339	LV-A69345	LV-A69367
	Valve Plug, Linear, Res. Trim	Stainless Steel	AISI TYPE 316	1	LV-A69331	LV-A69344	LV-A69353	LV-A69371
	Valve Plug, Linear, 1/4" Trim	Stainless Steel	AISI TYPE 316	1	LV-A69323	LV-A69323	LV-A69323	-
	Valve Plug, Linear, 1/2" Trim	Stainless Steel	AISI TYPE 316	1	-	LV-A69327	LV-A69327	-
	Valve Plug, Linear, 3/4" Trim	Stainless Steel	AISI TYPE 316	1	-	-	LV-A69339	LV-A69341
	Valve Plug, Linear, 1" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Valve Plug, Linear, 1-1/2" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Valve Plug, Linear, 2" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Valve Plug, Microtaper 1/4" (NOTE 1)	Stainless Steel	AISI TYPE 316	1	LV-A69322	LV-A69322	LV-A69322	-
	Valve Plug, EQ% Full Trim	Stainless Steel	AISI TYPE 316	1	LV-A69329	LV-A69333	LV-A69349	LV-A69369
	Valve Plug, Resilient Trim	Stainless Steel	AISI TYPE 316	1	LV-A69332	LV-A69343	LV-A69354	LV-A69372
	Valve Plug, EQ% 1/4" Trim	Stainless Steel	AISI TYPE 316	1	LV-A69325	LV-A69325	LV-A69325	-
	Valve Plug, EQ% 1/2" Trim	Stainless Steel	AISI TYPE 316	1	-	LV-A69329	LV-A69329	-
	Valve Plug, EQ% 3/4" Trim	Stainless Steel	AISI TYPE 316	1	-	-	LV-A69333	LV-A69336
	Valve Plug, EQ% 1" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Valve Plug, EQ% 1-1/2" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Valve Plug, EQ% 2" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Valve Plug, Linear, Full Trim	St. Steel Stell.	AISI TYPE 316	1	LV-A69328	LV-A69338	LV-A69346	LV-A69368
	Valve Plug, Linear, 1/4" Trim	St. Steel Stell.	AISI TYPE 316	1	LV-A69324	LV-A69324	LV-A69324	-
	Valve Plug, Linear, 1/2" Trim	St. Steel Stell.	AISI TYPE 316	1	-	LV-A69328	LV-A69328	-
	Valve Plug, Linear, 3/4" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	LV-A69338	LV-A69342
	Valve Plug, Linear 1" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-
	Valve Plug, Linear 1-1/2" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-
	Valve Plug, Linear, 2" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-
	Valve Plug, EQ% Full Trim	St. Steel Stell.	AISI TYPE 316	1	LV-A69330	LV-A69334	LV-A69350	LV-A69370
	Valve Plug, EQ% 1/4" Trim	St. Steel Stell.	AISI TYPE 316	1	LV-A69326	LV-A69326	LV-A69326	-
Valve Plug, EQ% 1/2" Trim	St. Steel Stell.	AISI TYPE 316	1	-	LV-A69330	LV-A69330	-	
Valve Plug, EQ% 3/4" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	LV-A69334	LV-A69337	
Valve Plug, EQ% 1" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-	
Valve Plug, EQ% 1-1/2" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-	
Valve Plug, EQ% 2" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-	
3 •	Seat Ring Gasket (below 450°F)	RTFE	COMMERCIAL	1	LV-A79477	LV-A79477	LV-A79477	LV-A79478
	Seat Ring Gasket (above 450°F)	Inconel 600/Grap.	COMMERCIAL	1	LV-A72654	LV-A72654	LV-A72654	LV-A72655
	Seat Ring Gasket for Resilient Trim only (not used with Iron body)	Fluorocarbon	COMMERCIAL	1	LV-A65361	LV-A65361	LV-A65361	LV-A65362

Parts List, cont.

Parts marked with “•” are recommended to have on hand as spare parts and when overhauling equipment.

	Part Name	Material	Material Specification	Qty	Part Numbers			
					1/2”	3/4”	1”	1-1/2”
4 •	Seat Ring, Full Trim	Stainless Steel	AISI TYPE 316	1	LV-A72565	LV-A72569	LV-A72566	LV-A72573
	Seat Ring, 1/4” Trim	Stainless Steel	AISI TYPE 316	1	LV-A72567	LV-A72567	LV-A72567	-
	Seat Ring, 1/2” Trim	Stainless Steel	AISI TYPE 316	1	-	LV-A72565	LV-A72565	-
	Seat Ring, 3/4 Trim	Stainless Steel	AISI TYPE 316	1	-	-	LV-A72569	LV-A72572
	Seat Ring, 1” Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Seat Ring, 1-1/2” Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Seat Ring, 2” Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Seat Ring, Full Trim	St. Steel Stell.	AISI TYPE 316	1	LV-A72571	LV-A72564	LV-A72570	LV-A72574
	Seat Ring, 1/4” Trim	St. Steel Stell.	AISI TYPE 316	1	LV-A72568	LV-A72568	LV-A72568	-
	Seat Ring, 1/2” Trim	St. Steel Stell.	AISI TYPE 316	1	-	LV-A72571	LV-A72571	-
	Seat Ring, 3/4” Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	LV-A72564	LV-A72575
	Seat Ring, 1” Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-
	Seat Ring, 1-1/2” Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-
	Seat Ring, 2” Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-
Seat Ring, Resilient Trim	Stainless Steel	AISI TYPE 316	1	LV-A65717	LV-A65718	LV-A65719	LV-A65720	
5 •	Seat Retainer	Stainless Steel	ASTM A351 GRFC8M	1	LV-A6526405	LV-A6526405	LV-A6526405	LV-A6529905
6	Cage Bonnet	Cast Steel	ASTM A216 GRWCB	1	LV-A72597	LV-A72597	LV-A72597	LV-A72594
	Bonnet (for Cast Iron body)	Note 2		1	LV-A72597	LV-A72597	LV-A72597	LV-A72594
	Bonnet (for Stainless Steel body)	316 SS	ASTM A351CF8M	1	LV-A6911605	LV-A6911605	LV-A6911605	LV-A6911805
7	Packing Nut	Stainless Steel	AISI TYPE 304	2	LV-A23194	LV-A23194	LV-A23194	LV-A23194
8 •	Bonnet Gasket	Inconel 600/Grap.	COMMERCIAL	1	LV-A72659	LV-A72659	LV-A72659	LV-A72660
9	Packing Stud	Steel	AISI A-193GRB7	2	LV-A57572	LV-A57572	LV-A57572	LV-A57572
10	Nut	Steel Stell.	ASTM A194GR2H	8	LV-A13243	LV-A13243	LV-A13243	LV-A03676
11	Stud	Steel Stell.	ASTM A-193 GRB7	4	LV-A44867	LV-A44867	LV-A44867	LV-A23209
	Stud Bolt	Steel	ASTM A-193 GRB7	4	LV-A69471	LV-A69471	LV-A69471	LV-A69472
12	Packing Bearing	Stainless Steel	AISI TYPE 316	1	LV-A65370	LV-A65370	LV-A65370	LV-A65370
13	Packing Flange	Steel	AISI 1144	1	LV-A69405	LV-A69405	LV-A69405	LV-A69405
14	Pipe Plug	Steel	COMMERCIAL	1	LV-A66166	LV-A66166	LV-A66166	LV-A66166
15 •	Packing Spring, Teflon Packing	Monel 400	COMMERCIAL	1	LV-A65353	LV-A65363	LV-A65353	LV-A65353
16	Washer, Teflon Packing	Monel 400	COMMERCIAL	1	LV-A63926	LV-A63926	LV-A63926	LV-A63926
17 •	Packing Set, Teflon Chevron	Teflon	COMMERCIAL	1	LV-A28015	LV-A28015	LV-A28015	LV-A28015
	Packing Set, Braided Teflon Graphite	Teflon/Graphite	COMMERCIAL	1	LV-A69423	LV-A69423	LV-A69423	LV-A69423
	Packing Set, Hi-Temp	Graphite Type II	COMMERCIAL	1	LV-A72363	LV-A72363	LV-A72363	LV-A72363
	Packing Set, Hi-Temp*	Graphite Type II	COMMERCIAL	1	LV-A70380	LV-A70380	LV-A70380	LV-A70380
18	Packing Ring, Teflon*	Stainless Steel	AISI TYPE 302	1	LV-A23192	LV-A23192	LV-A23192	LV-A23192
	Packing Spacer, Graphite Packing	Stainless Steel	AISI TYPE 302	1	LV-A72626	LV-A72626	LV-A72626	LV-A72626
	Packing Spacer	Stainless Steel	AISI TYPE 302	1	LV-A72646	LV-A72646	LV-A72646	LV-A72646

* For use with Bleedport option only

NOTE 1: Microtaper valve plug finished only as valve plug and seat set. Not available separately.

NOTE 2: Bonnet material is cast steel ASTM A215WCB for 1/2” - 3” valves. Material is C.I. A126CLB for 4” valves.

Parts List, cont.

5.1.2 - Size 2", 2-1/2", 3" and 4" Valve Spare Parts

Parts marked with “•” are recommended to have on hand as spare parts and when overhauling equipment.

	Part Name	Material	Material Specification	Qty	Part Numbers			
					2"	2-1/2"	3"	4"
1 •	Valve Body, Threaded	Cast Steel	ASTM A-216 GRWCB	1	LV-A6533203	-	-	-
	Valve Body, 150# Flanged	Cast Steel	ASTM A-216 GRWCB	1	LV-A6533303	LV-A6540403	LV-A6543603	LV-A6548503
	Valve Body, 300# Flanged	Cast Steel	ASTM A-216 GRWCB	1	LV-A6533403	LV-A6540503	LV-A6543703	LV-A6548603
	Valve Body, DIN 2543 ND 16	Cast Steel	ASTM A-216 GRWCB	1	LV-A6580603	LV-A6580703	LV-A6580903	LV-A6581103
	Valve Body, DIN 2545 ND40	Cast Steel	ASTM A-216 GRWCB	1	LV-A6580603	LV-A6580803	LV-A6581003	LV-A6581203
	Valve Body, Threaded	Stainless Steel	ASTM A-296 GRW316	1	LV-A6533205	-	-	-
	Valve Body, 150# Flanged	Stainless Steel	ASTM A-296 GR 316	1	LV-A6533305	LV-A6540405	LV-A6543605	LV-A6548505
	Valve Body, 300# Flanged	Stainless Steel	ASTM A-296 GR 316	1	LV-A6533405	LV-A6540505	LV-A6543705	LV-A6548605
	Valve Body, DIN 2543 ND16	Stainless Steel	ASTM A-296 GR 316	1	LV-A6580605	LV-A6580705	LV-A6580905	LV-A6581105
	Valve Body, DIN 2545 ND 40	Stainless Steel	ASTM A-296 GR 316	1	LV-A6580605	LV-A6580805	LV-A6581005	LV-A6581205
	Valve Body, Threaded	Cast Iron	ASTM A-126 CLB	1	LV-A65337	-	-	-
	Valve Body, 125# Flanged	Cast Iron	ASTM A-126 CLB	1	LV-A65335	LV-A65402	LV-A65438	LV-A65487
	Valve Body, 250# Flanged	Cast Iron	ASTM A-126 CLB	1	LV-A65336	LV-A65403	LV-A65439	LV-A65448
	Valve Body, DIN 2533 ND 16	Cast Iron	ASTM A-126 CLB	1	LV-A65907	LV-A65909	LV-A65911	LV-A65929
Valve Body, DIN 2535 ND40	Cast Iron	ASTM A-126 CLB	1	LV-A65908	LV-A65910	LV-A65912	LV-A65930	
2 •	Valve Plug, Linear, Full Trim	Stainless Steel	AISI TYPE 316	1	LV-A69373	LV-A69379	LV-A69389	LV-A69395
	Valve Plug, Linear, Res. Trim	Stainless Steel	AISI TYPE 316	1	LV-A69377	LV-A69383	LV-A69393	LV-A69399
	Valve Plug, Linear, 1/4" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Valve Plug, Linear, 1/2" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Valve Plug, Linear, 3/4" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Valve Plug, Linear, 1" Trim	Stainless Steel	AISI TYPE 316	1	LV-A69348	-	-	-
	Valve Plug, Linear, 1-1/2" Trim	Stainless Steel	AISI TYPE 316	1	-	LV-A69385	LV-A69385	-
	Valve Plug, Linear, 2" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	LV-A69401
	Valve Plug, Microtaper 1/4" (NOTE 1)	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Valve Plug, EQ% Full Trim	Stainless Steel	AISI TYPE 316	1	LV-A69375	LV-A69381	LV-A69391	LV-A69397
	Valve Plug, Resilient Trim	Stainless Steel	AISI TYPE 316	1	LV-A69378	LV-A69384	LV-A69394	LV-A69400
	Valve Plug, EQ% 1/4" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Valve Plug, EQ% 1/2" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Valve Plug, EQ% 3/4" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Valve Plug, EQ% 1" Trim	Stainless Steel	AISI TYPE 316	1	LV-A69351	-	-	-
	Valve Plug, EQ% 1-1/2" Trim	Stainless Steel	AISI TYPE 316	1	-	LV-A69387	LV-A69387	-
	Valve Plug, EQ% 2" Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	LV-A69403
	Valve Plug, Linear, Full Trim	St. Steel Stell.	AISI TYPE 316	1	LV-A69374	LV-A69380	LV-A69390	LV-A69396
	Valve Plug, Linear, 1/4" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-
	Valve Plug, Linear, 1/2" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-
	Valve Plug, Linear, 3/4" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-
	Valve Plug, Linear 1" Trim	St. Steel Stell.	AISI TYPE 316	1	LV-A69347	-	-	-
	Valve Plug, Linear 1-1/2" Trim	St. Steel Stell.	AISI TYPE 316	1	-	LV-A69386	LV-A69386	-
	Valve Plug, Linear, 2" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	LV-A69402
Valve Plug, EQ% Full Trim	St. Steel Stell.	AISI TYPE 316	1	LV-A69376	LV-A69382	LV-A69392	LV-A69398	
Valve Plug, EQ% 1/4" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-	
Valve Plug, EQ% 1/2" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-	
Valve Plug, EQ% 3/4" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-	
Valve Plug, EQ% 1" Trim	St. Steel Stell.	AISI TYPE 316	1	LV-A69352	-	-	-	
Valve Plug, EQ% 1-1/2" Trim	St. Steel Stell.	AISI TYPE 316	1	-	LV-A69388	LV-A69388	-	
Valve Plug, EQ% 2" Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	LV-A69404	
3 •	Seat Ring Gasket (below 450°F)	RTFE	COMMERCIAL	1	LV-A79479	LV-A79480	LV-A79481	LV-A79482
	Seat Ring Gasket (above 450°F)	Inconel 600/Grap.	COMMERCIAL	1	LV-A72516	LV-A72656	LV-A72657	LV-A72658
	Seat Ring Gasket for Resilient Trim only (not used with Iron body)	Fluorocarbon	COMMERCIAL	1	LV-A65363	LV-A66218	LV-A65479	LV-A65480

Parts List, cont.

Parts marked with “•” are recommended to have on hand as spare parts and when overhauling equipment.

	Part Name	Material	Material Specification	Qty	Part Numbers			
					2”	2-1/2”	3”	4”
4 •	Seat Ring, Full Trim	Stainless Steel	AISI TYPE 316	1	LV-A72493	LV-A72563	LV-A72554	LV-A72558
	Seat Ring, 1/4” Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Seat Ring, 1/2” Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Seat Ring, 3/4” Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	-
	Seat Ring, 1” Trim	Stainless Steel	AISI TYPE 316	1	LV-A72494	-	-	-
	Seat Ring, 1-1/2” Trim	Stainless Steel	AISI TYPE 316	1	-	LV-A72560	LV-A72555	-
	Seat Ring, 2” Trim	Stainless Steel	AISI TYPE 316	1	-	-	-	LV-A74410
	Seat Ring, Full Trim	St. Steel Stell.	AISI TYPE 316	1	LV-A72495	LV-A72561	LV-A72557	LV-A72559
	Seat Ring, 1/4” Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-
	Seat Ring, 1/2” Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-
	Seat Ring, 3/4” Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	-
	Seat Ring, 1” Trim	St. Steel Stell.	AISI TYPE 316	1	LV-A72492	-	-	-
	Seat Ring, 1-1/2” Trim	St. Steel Stell.	AISI TYPE 316	1	-	LV-A72562	LV-A72556	-
	Seat Ring, 2” Trim	St. Steel Stell.	AISI TYPE 316	1	-	-	-	LV-A74409
Seat Ring, Resilient Trim	Stainless Steel	AISI TYPE 316	1	LV-A65721	LV-A65722	LV-A65723	LV-A65724	
5 •	Seat Retainer	Stainless Steel	ASTM A351 GRFC8M	1	LV-A6530305	LV-A6541205	LV-A6537405	LV-A6537505
6	Cage Bonnet	Cast Steel	ASTM A216 GRWCB	1	LV-A72514	LV-A72599	LV-A72601	LV-A72603
	Bonnet (for Cast Iron body)	Note 2		1	LV-A72514	LV-A72599	LV-A72601	LV-A72603
	Bonnet (for Stainless Steel body)	316 SS	ASTM A351CF8M	1	LV-A75879	LV-A6912205	LV-A72430	LV-A72925
7	Packing Nut	Stainless Steel	AISI TYPE 304	2	LV-A23194	LV-A23194	LV-A23194	LV-A23194
8 •	Bonnet Gasket	Inconel 600/Grap.	COMMERCIAL	1	LV-A72661	LV-A72662	LV-A72663	LV-A72664
9	Packing Stud	Steel	AISI A-193GRB7	2	LV-A57572	LV-A57572	LV-A57572	LV-A57572
10	Nut	Steel Stell.	ASTM A194GR2H	8	LV-A03676	LV-A03677	LV-A03677	LV-A03678
11	Stud	Steel Stell.	ASTM A-193 GRB7	4	LV-A23207	LV-A11083	LV-A09393	LV-A42747
	Stud Bolt	Steel	ASTM A-193 GRB7	4	LV-A69472	LV-A69473	LV-A69474	LV-A69475
12	Packing Bearing	Stainless Steel	AISI TYPE 316	1	LV-A65371	LV-A65371	LV-A65371	LV-A65371
13	Packing Flange	Steel	AISI 1144	1	LV-A69405	LV-A69405	LV-A69405	LV-A69405
14	Pipe Plug	Steel	COMMERCIAL	1	LV-A66166	LV-A66166	LV-A66166	LV-A66166
15 •	Packing Spring, Teflon Packing	Monel 400	COMMERCIAL	1	LV-A65355	LV-A65355	LV-A65355	LV-A65355
16	Washer, Teflon Packing	Monel 400	COMMERCIAL	1	LV-A65368	LV-A65368	LV-A65368	LV-A65368
17 •	Packing Set, Teflon Chevron	Teflon	COMMERCIAL	1	LV-A69460	LV-A69460	LV-A69460	LV-A69460
	Packing Set, Braided Teflon Graphite	Teflon/Graphite	COMMERCIAL	1	LV-A69424	LV-A69424	LV-A69424	LV-A69424
	Packing Set, Hi-Temp	Graphite Type II	COMMERCIAL	1	LV-A72647	LV-A72647	LV-A72647	LV-A72647
	Packing Set, Hi-Temp*	Graphite Type II	COMMERCIAL	1	LV-A72653	LV-A72653	LV-A72653	LV-A72653
18	Packing Ring, Teflon*	Stainless Steel	AISI TYPE 302	1	LV-A66909	LV-A66909	LV-A66909	LV-A66909
	Packing Spacer, Graphite Packing	Stainless Steel	AISI TYPE 302	1	LV-A72627	LV-A72627	LV-A72627	LV-A72627
	Packing Spacer	Stainless Steel	AISI TYPE 302	1	LV-A66909	LV-A66909	LV-A66909	LV-A66909

* For use with Bleedport option only

NOTE 1: Microtaper valve plug finished only as valve plug and seat set. Not available separately.

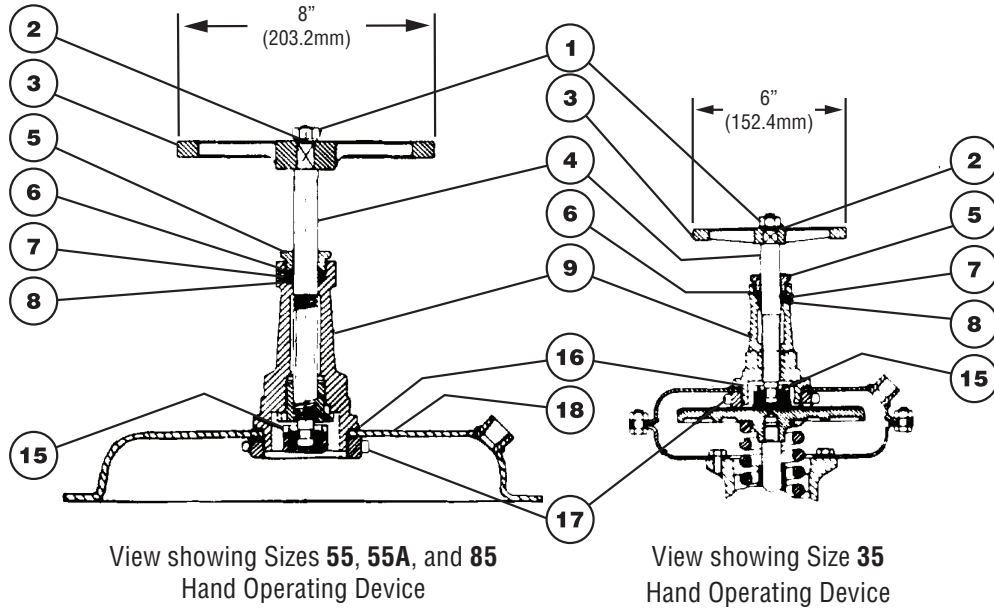
NOTE 2: Bonnet material is cast steel ASTM A215WCB for 1/2” - 3” valves. Material is C.I. A126CLB for 4” valves.

Parts List, cont.

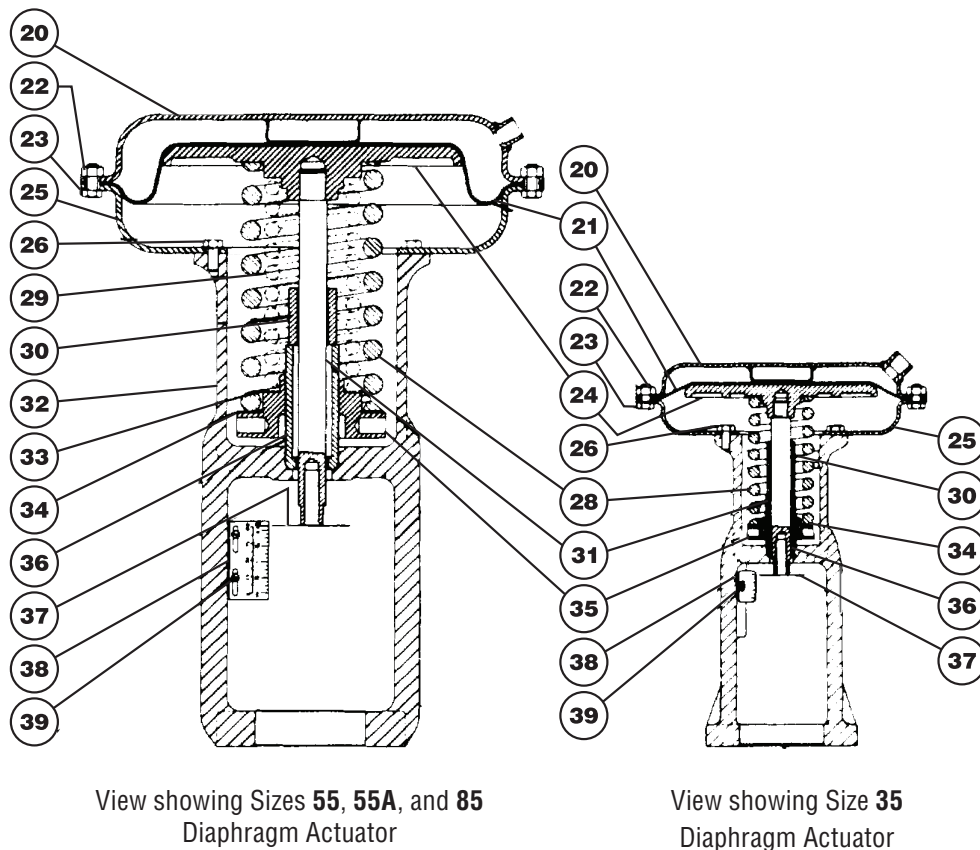
5.2 - Actuator Spare Parts

5.2.1 - Direct-Acting Actuator Spare Parts

Direct Acting Actuator - Hand Operating Device



Direct Acting Actuator - Diaphragm Actuator



Parts List, cont.

Parts marked with “•” are recommended to have on hand as spare parts and when overhauling equipment.

Ref. No.	Part Name	Material	Qty	Part Numbers		
				35	55 and 55A	85
1	Nut	Steel	1	LV-A13243	LV-A13243	LV-A13243
2	Lock Washer	Steel	1	LV-A10392	LV-A10392	LV-A10392
3	Handwheel	Cast Aluminum	1	LV-A43064	LV-A23649	LV-A23649
4	Handscrew	Stainless Steel	1	LV-A43016	LV-A49228	LV-A49228
5	Packing Gland	(NOTE 1)	1	LV-A38644	LV-A34859	LV-A34859
6•	Packing Ring	Molded Rings	1	LV-A69609	LV-A33551	LV-A33551
7	Washer	(NOTE 1)	1	LV-A38658	LV-A35760	LV-A35760
8•	O-Ring	Synthetic Rubber	1	LV-A38664-94	LV-A27293-94	LV-A27293-94
9	Bonnet, Complete., Iron Actuator	(NOTE 2)	1	LV-A38635	LV-A42228	LV-A42228
9	Bonnet, Complete., Alum. Actuator	(NOTE 3)	1	LV-A39069	LV-A42228	LV-A42228
15	Handscrew Disc, Complete (NOTE 6)	Stainless Steel	1	LV-A43008	LV-A42077	LV-A42077
16•	Gasket	Sheet Packing	1	LV-A38657-95	LV-A37845-95	LV-A37845-95
17	Lock Nut, Iron Actuator	(NOTE 2)	1	LV-A38655	LV-A37710	LV-A37710
17	Lock Nut, Aluminum Actuator	(NOTE 3)	1	LV-A39070	LV-A37710	LV-A37710
18	Diaphragm Case, Upper	Pressed Steel	1	LV-A38661	LV-A37764	LV-A37770

Ref. No.	Part Name	Material	Qty	Part Numbers			
				35	55	55A	85
20*	Diaphragm Case, Upper	Pressed Steel	1	LV-A38369	LV-A37795	LV-A37795	LV-A37791
21*	Diaphragm	Synthetic Rubber	1	LV-A38399-94	LV-A37810-94	LV-A37810-94	LV-A37819-94
22	Nut	Steel	(NOTE 7)	LV-A13901	LV-A26585	LV-A26585	LV-A26585
23	Bolt	Steel	(NOTE 7)	LV-A38420	LV-A37797	LV-A37797	LV-A37797
24	Diaphragm Disc (NOTE 4)	Cast Iron	1	LV-A38393	LV-A37838	LV-A37838	LV-A37843
24	Diaphragm Disc (NOTE 5)	Cast Aluminum	1	LV-A38877	LV-A37839	LV-A37839	LV-A37844
25	Diaphragm Case, Lower	Pressed Steel	1	LV-A38345	LV-A37672	LV-A37672	LV-A37678
26	Cap Screw	Steel	(NOTE 8)	LV-A38420	LV-A37796	LV-A37796	LV-A23400
28	Adjusting Spring	Steel, Plated	1	(SEE TABLE)			
29	Inner Adjusting Spring	Steel, Plated	1	-	-	(SEE TABLE)	
30	Limit Stop	Steel	1	(SEE TABLE)			
31	Upper Stem	Stainless Steel	1	LV-A38398	LV-A23263	LV-A61386	LV-A24273
32	Yoke (NOTE 10, NOTE 4)	Cast Iron	1	LV-A38335	LV-A37693	LV-A37693	LV-A37995
32	Yoke (NOTE 10, NOTE 5)	Cast Aluminum	1	LV-A38876	LV-A37692	LV-A37692	LV-A37994
33	Washer, Inner Spring (NOTE 9)	Stainless Steel	1	-	-	-	-
34	Washer	Stainless Steel	1	LV-A38401	LV-A23260	LV-A23260	LV-A24271
35	Adjusting Nut (NOTE 4)	Cast Iron	1	LV-A38394	LV-A23262	LV-A23262	LV-A24274
35	Adjusting Nut (NOTE 5)	Cast Bronze	1	LV-A58349	LV-A27978	LV-A27978	LV-A30081
36	Adjusting Sleeve	Stainless Steel	1	LV-A38397	LV-A37694	LV-A37694	LV-A37766
37	Travel Indicator	Stainless Steel	1	LV-A38405	LV-A38920	LV-A15672	LV-A38921
38	Travel Indicator Scale	Aluminum	1	LV-A38404	(SEE TABLE)		
39	Screw	Steel, Cad. Plated	(NOTE 11)	LV-A34728	LV-A34728	LV-A34728	LV-A34728

NOTE 1 - Material is Brass for size 35 Actuator and Aluminum for 55, 55A and 85 Actuators.

NOTE 2 - Material is Cast Iron for 35 Actuator and Cast Aluminum for 55, 55A and 85 Actuators.

NOTE 3 - Material is Cast Bronze for 35 Actuator and Cast Aluminum for 55, 55A and 85 Actuators.

NOTE 4 - Used on Cast Iron Actuators only.

NOTE 5 - Used on Cast Aluminum Actuators only.

NOTE 6 - Includes one each, Handscrew Disc, Retainer Insert, and two each Split Ring.

NOTE 7 - Quantities are: Twelve (12) for the 35 size, Fourteen (14) for the 55 & 55A sizes, Sixteen (16) for the 85 sizes.

NOTE 8 - Quantities are: Eight (8) for the 35, 55, & 55A sizes and Six (6) for the 85 size Actuators.

NOTE 9 - Used only when Inner Adjusting Spring, Part No. 29 is used.

NOTE 10 - Yoke, Part No. 32, is furnished complete with Adjusting Sleeve, Part No. 36.

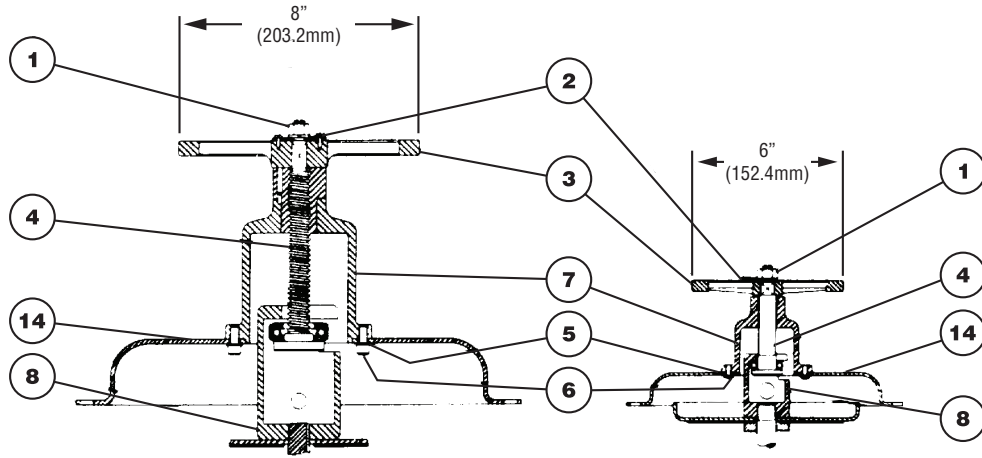
NOTE 11 - Quantities are: One (1) for 35 Actuator and Two (2) for all other sizes.

NOTE: Part Numbers 10, 11, 12, 13, 14, 19 and 27 have been deleted For Part Numbers 28, 29, 30 and 38 see Page 29 in this IOM.

Parts List, cont.

5.2.2 - Reverse-Acting Actuator Spare Parts

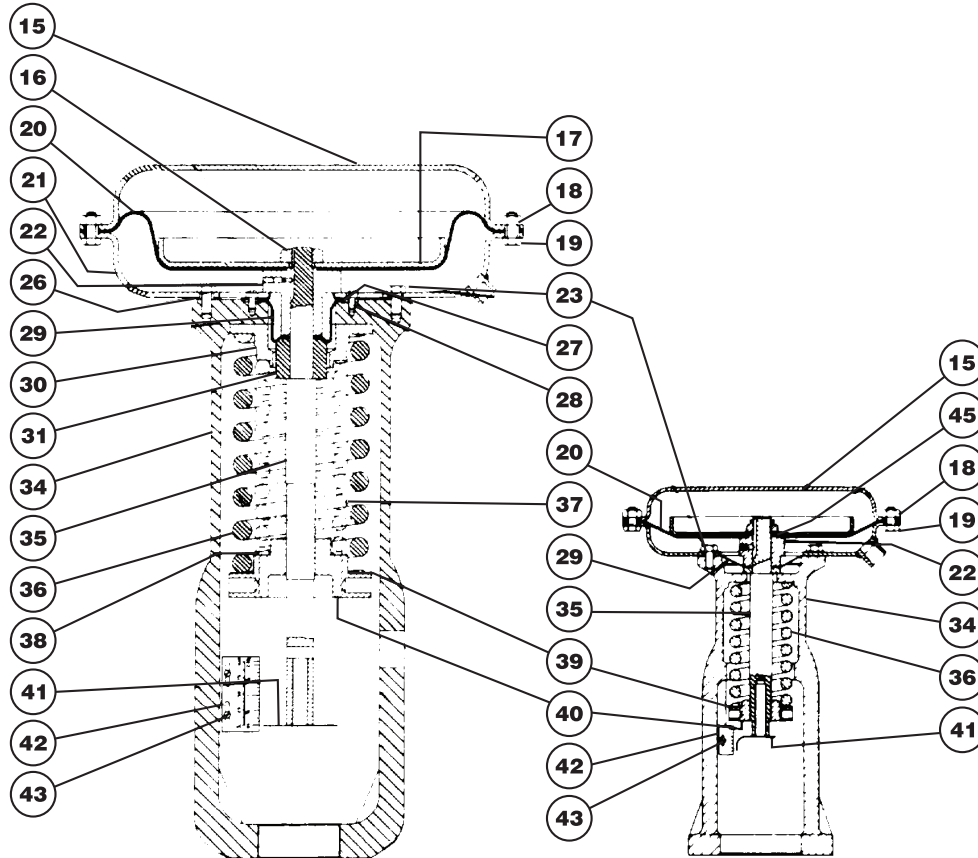
Reverse Acting Actuator - Hand Operating Device



View showing Sizes **55R**, **55AR**, and **85R**
Hand Operating Device

View showing Size **35R**
Hand Operating Device

Reverse Acting Actuator - Diaphragm Actuator



View showing Sizes **55R**, **55AR**, and **85R**
Diaphragm Actuator

View showing Size **35R**
Diaphragm Actuator

Parts List, cont.

Parts marked with “•” are recommended to have on hand as spare parts and when overhauling equipment.

Ref. No.	Part Name	Material	Qty	Part Numbers		
				35	55 and 55A	85
1	Nut	Steel	1	LV-A13243	LV-A13243	LV-A13243
2	Lockwasher	Steel	1	LV-A10392	LV-A10392	LV-A10392
3	Handwheel, Complete	Cast Aluminum	1	LV-A43064	LV-A42226	LV-A42226
4	Handscrew Bearing Assembly	Stainless Steel	1	LV-A43043	LV-A51456	LV-A51456
5	Lockwasher	Steel	(NOTE 3)	LV-A11467	LV-A13077	LV-A13077
6	Screw	Stainless Steel	(NOTE 3)	LV-A17186	LV-A41933	LV-A41933
7	Bonnet, Complete (NOTE 4)	(NOTE 1)	1	LV-A38720	LV-A42224	LV-A42224
7	Bonnet, Complete (NOTE 5)	(NOTE 2)	1	LV-A39077	LV-A42224	LV-A42224
8	Diaphragm Nut	Steel	1	LV-A38696	LV-A42220	LV-A41793
14	Diaphragm Case, Upper	Pressed Steel	1	LV-A38748	LV-A41788	LV-A41787

Ref. No.	Part Name	Material	Qty	Part Numbers			
				35	55	55A	85
15	Diaphragm Case, Upper	Pressed Steel	1	LV-A38392	LV-A37832	LV-A37832	LV-A37833
16	Nut	Steel	1	LV-A24005	LV-A36229	LV-A36229	LV-A36229
17	Diaphragm Disc	(NOTE 6)	1	(SEE TABLE)			
18	Nut	Steel	(NOTE 7)	LV-A13901	LV-A26585	LV-A26585	LV-A26585
19	Bolt	Steel	(NOTE 7)	LV-A38420	LV-A37797	LV-A37797	LV-A37797
20*	Diaphragm	Synthetic Rubber	1	LV-A38400-94	LV-A37809-94	LV-A37809-94	LV-A37818-94
21	Diaphragm Case, Lower	Pressed Steel	1	LV-A38391	LV-A37774	LV-A37774	LV-A38081
22	Collar, Comp. (NOTE 4)	(NOTE 11)	1	LV-A38412	LV-A37760	LV-A37760	LV-A38113
22	Collar, Comp. (NOTE 5)	(NOTE 11)	1	LV-A38412	LV-A37760	LV-A37760	LV-A38113
23	Cap Screw	Steel	(NOTE 8)	LV-A38420	LV-A37796	LV-A37796	LV-A23400
26*	Diaphragm Base Gasket	Synthetic Rubber	1	-	LV-A37761-95	LV-A37761-95	LV-A38107-95
27	Stem Seal Ring	Steel	1	-	LV-A37731	LV-A37731	LV-A37731
28	Screw	Stainless Steel	6	-	LV-A30501	LV-A30501	LV-A30501
29*	Stem Seal	Synthetic Rubber	1	LV-A38417-94	LV-A37740-95	LV-A37740-95	LV-A37740-95
30	Top Spring Seat	(NOTE 9)	1	-	LV-A(NOTE 9)	LV-A(NOTE 9)	(NOTE 9)
31	Stem Seal Collar	Cold Rolled Steel	1	LV-A38416	LV-A28177	LV-A28177	LV-A28177
34	Yoke (NOTE 4)	Cast Iron	1	LV-A38343	LV-A37728	LV-A37728	LV-A37973
34	Yoke (NOTE 5)	Cast Aluminum	1	LV-A38940	LV-A37727	LV-A37727	LV-A37972
35	Upper Stem	Stainless Steel	1	LV-A38408	LV-A37758	LV-A37758	LV-A38085
36	Adjusting Spring	Steel, Bk. Japanned	1	(SEE TABLE)			
37	Inner Adjusting Spring	Steel, Bk. Japanned	1	(SEE TABLE)			
38	Washer, Inner Adjusting Spring (NOTE 10)	Stainless Steel	1	-	-	-	LV-A25393
39	Washer	Stainless Steel	1	LV-A38401	LV-A23260	LV-A23260	LV-A24271
40	Adjusting Nut (NOTE 4)	Cast Iron	1	LV-A38395	LV-A31641	LV-A31641	LV-A28174
40	Adjusting Nut (NOTE 5)	Cast Bronze	1	LV-A58350	LV-A30623	LV-A30623	LV-A31592
41	Indicator Disc	Stainless Steel	1	LV-A38406	LV-A38920	LV-A38920	LV-A38921
42	Indicator Scale	Aluminum	1	LV-A38404	(SEE TABLE)		
43	Screw	Steel, Plated	(NOTE 12)	LV-A34728	LV-A34728	LV-A34728	LV-A34728
45	Washer	Steel	1	LV-A39784	-	-	-

NOTE 1 - Material is Cast Iron for size 35R Actuator and Cast Aluminum for 55R, 55AR and 85R Iron Actuators.

NOTE 2 - Material is Cast Bronze for 35R Actuator and Cast Aluminum for 55R, 55AR and 85R Actuators.

NOTE 3 - Quantities are: Four (4) for 35R Actuator and Six (6) for 55R, 55AR, and 85R Actuator.

NOTE 4 - Used on Cast Iron Actuators only.

NOTE 5 - Used on Cast Aluminum Actuators only.

NOTE 6 - Material is Steel for the 35R, 55R, and 85R Iron Actuator.

NOTE 7 - Quantities are: Twelve (12) for the 35R size, Fourteen (14) for the 55R & 55AR sizes, Sixteen (16) for the 85R sizes.

NOTE 8 - Quantities are: Eight (8) for the 35R, 55R, & 55AR sizes and Six (6) for the 85R size Actuators.

NOTE 9 - Material is Steel for the 55R & 55AR, Ref. No. 37802; Cast Iron for the 85R Iron Actuator, Ref. Vol 38116 and Cast Aluminum for the 85R Aluminum Actuator, Ref. No. 38117.

NOTE 10 - Used only when Inner Adjusting Spring, Part No. 37, is used.

NOTE 11 - Material is Steel for 35R Iron Actuators, Aluminum Alloy for 55R, 55AR and 85R Aluminum and Iron Actuators.

NOTE 12 - Quantity is One (1) for 35R size and Two (2) for all other size Actuators.

PART QTY. PER REFERENCE NUMBER - EACH SIZE

NOTE: Part Numbers 24, 32 and 33 have been deleted For Part Numbers 17, 36, 37 and 42 see Page 29 in this IOM.

Parts List, cont.

5.2.3 - Part Numbers for Reference Part No. 17, 28, 29, 30, 37, 38, and 42

Direct Acting Actuators

Part No. 30 Limit Stop

Valve Travel		ACTUATOR SIZE		
		35	55 & 55A	85
5/8 in	15.9 mm	LV-A38403	LV-A44077	LV-A24482
3/4 in	19.1 mm	-	LV-A23393	LV-A46890
7/8 in	22.2 mm	-	LV-A23393	LV-A24482
1 in	25.4 mm	-	LV-A23394	LV-A24483
1-1/8 in	28.6 mm	-	LV-A23395	LV-A23366
1-1/4 in	31.8 mm	-	LV-A23395	LV-A23366
1-1/2 in	38.1 mm	-	LV-A23997	LV-A23367
2 in	50.8 mm	-	-	LV-A23368

Reverse Acting Actuators

Part No. 17 Diaphragm Disc

Valve Travel		ACTUATOR SIZE		
		35R	55R & 55AR	85R
5/8 in		LV-A38351	LV-A37683	LV-A37686
3/4 in		LV-A38351	LV-A37683	LV-A37686
7/8 in		-	LV-A37683	LV-A37686
1 in		-	LV-A37683	LV-A37686
1-1/4 in		-	LV-A49950	LV-A38699
1-1/2 in		-	LV-A37684	LV-A38699
2 in		-	-	LV-A37685
2 in		-	-	LV-A23368

All Actuator Types

Part No. 28, Part No. 36 Adjusting Spring**

Valve Travel		ACTUATOR SIZE		
		35(R)	55(R) & 55A(R)	85(R)
5/8 in	15.9 mm	LV-A38422	LV-A41969	LV-A35014
3/4 in	19.1 mm	LV-A38422	LV-A41969	LV-A37719
7/8 in	22.2 mm	-	LV-A23239	LV-A24299
1 in	25.4 mm	-	LV-A24296	LV-A35014
1-1/8 in	28.6 mm	-	LV-A43078	LV-A41970
1-1/4 in	31.8 mm	-	LV-A24297	LV-A24299
1-1/2 in	38.1 mm	-	LV-A24298	LV-A24300
2 in	50.8 mm	-	-	LV-A24301

Valve Travel		ACTUATOR SIZE
		85(R)
5/8 in	15.9 mm	LV-A37718
7/8 in	22.2 mm	LV-A24481
1 in	25.4 mm	-
1-1/4 in	31.8 mm	-
1-1/2 in	38.1 mm	-

Part No. 38, Part No 42 Travel Indicator Scale

Valve Travel		Part No.
1/4 in	6.4 mm	LV-A48224
3/8 in	9.5 mm	LV-A48048
1/2 in	12.7 mm	LV-A48047
5/8 in	15.9 mm	LV-A38904
3/4 in	19.1 mm	LV-A38905
7/8 in	22.2 mm	LV-A38906
1 in	25.4 mm	LV-A38907
1-1/8 in	28.6 mm	LV-A38908
1-1/4 in	31.8 mm	LV-A38909
1-1/2 in	38.1 mm	LV-A38910
1-3/4 in	44.5 mm	LV-A49641
2 in	50.8 mm	LV-A38911

Indicator scales subject to actuator max. travel limit

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