

# CLA-VAL

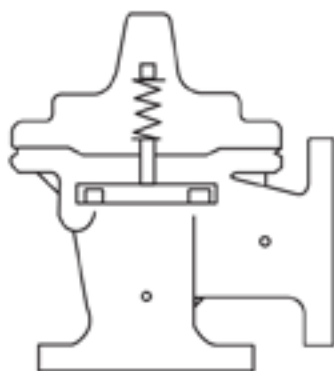
**AUTOMATIC CONTROL VALVES**

790-68

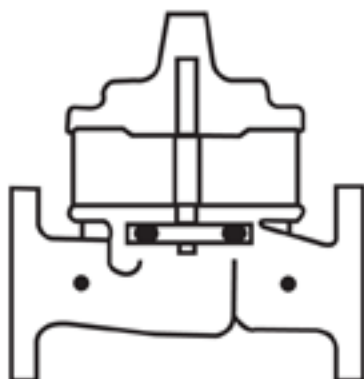
Place this manual with personal responsible  
for maintenance of this valve



## *INSTALLATION*




## *OPERATION*

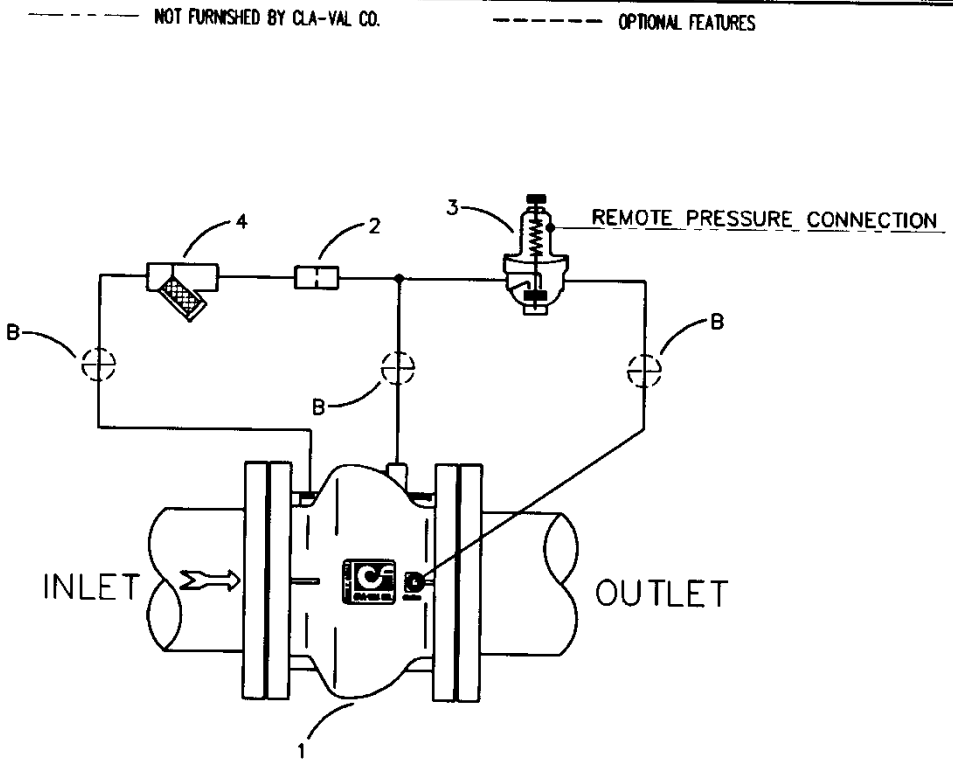


## *MAINTENANCE*



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 <b>CLA-VAL CO.</b> NEWPORT BEACH, CALIFORNIA	CATALOG NO. <b>790-68</b>	DRAWING NO. <b>201125</b>	REV <b>A</b>
	TYPE OF VALVE AND MAIN FEATURES <h2 style="text-align: center;">NOZZLE CONTROL VALVE</h2>		
		DESIGN	
		DRAWN	AK 4-30-99
		CHK'D	VL 5-4-99
		APVD	CH 5-5-99



**RESTRICTED TO  
MANAGEMENT APPROVAL**

ITEM NO.	BASIC COMPONENTS	QTY
1	100-42 ROLL SEAL MAIN VALVE	1
2	X58C RESTRICTION FITTING	1
3	CDHS18C DIFFERENTIAL CONTROL	1
4	X43 "Y" STRAINER	1

OPTIONAL FEATURE SUFFIX		ADDED TO CATALOG NUMBER
B	CK2 COCK (ISOLATION VALVE)	3

CAD REVISION RECORD - DO NOT REVISE MANUALLY	DESCRIPTION	BY	DATE
	RELEASED FOR PRODUCTION. (NED 44222)	AK	4-30-99
	ADDED "B" FEATURE (ECO 17738)	AK	5-27-99

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**CLA-VAL CO.**

NEWPORT BEACH, CALIFORNIA

CATALOG NO.  
790-68

DRAWING NO.  
201125

REV  
A

TYPE OF VALVE AND MAIN FEATURES

**NOZZLE CONTROL VALVE**

DESIGN		
DRAWN	AK	4-30-99
CHK'D	VL	5-4-99
APVD	CH	5-5-99

OPERATING DATA

I. PRESSURE DIFFERENTIAL CONTROL FEATURE:

PRESSURE DIFFERENTIAL CONTROL (3) IS NORMALLY OPEN AND RESPONDS TO DIFFERENTIAL PRESSURE CHANGES SENSED BETWEEN MAIN VALVE OUTLET AND REMOTE PRESSURE CONNECTION. AN INCREASE IN DIFFERENTIAL PRESSURE TENDS TO CLOSE CONTROL (3) AND A DECREASE IN DIFFERENTIAL PRESSURE TENDS TO OPEN CONTROL (3). THIS CAUSES MAIN VALVE LOADING CHAMBER PRESSURE TO VARY AND THE MAIN VALVE MODULATES (OPENS AND CLOSSES) MAINTAINING A RELATIVELY CONSTANT DIFFERENTIAL PRESSURE BETWEEN THE MAIN VALVE OUTLET AND REMOTE PRESSURE CONNECTION. PRESSURE DIFFERENTIAL CONTROL (3) ADJUSTMENT: TURN THE ADJUSTING SCREW CLOCKWISE TO INCREASE THE DIFFERENTIAL PRESSURE.

II. OPTIONAL FEATURE OPERATING DATA:

SUFFIX B (ISOLATION VALVES)

CK2 COCKS (B) ARE USED TO ISOLATE THE PILOT SYSTEM FROM MAIN LINE PRESSURE. THESE VALVE MUST BE OPEN DURING NORMAL OPERATION.

III. CHECK LIST FOR PROPER OPERATION:

- SYSTEM VALVES OPEN UPSTREAM AND DOWNSTREAM.
- AIR REMOVED FROM THE MAIN VALVE LOADING CHAMBER AND PILOT SYSTEM AT ALL HIGH POINTS.
- PERIODIC CLEANING OF STRAINER (4) IS RECOMMENDED.
- CK2 COCKS (B) OPEN (OPTIONAL FEATURE).
- REMOTE PRESSURE CONNECTION PROPERLY CONNECTED.

**RESTRICTED TO  
MANAGEMENT APPROVAL**

CAD REVISION RECORD - DO NOT REVISE MANUALLY

BY DATE

DESCRIPTION

SEE SHEET 1

LTR

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— SERIES — **100-42**

# 700 Series Roll Seal

## DESCRIPTION

The Cla-Val Model 100-42 Roll Seal valve is a hydraulically operated valve used to control liquid flow by means of a flexible control element, the liner.

The basic valve consists of only two parts: a one piece, investment cast body and an elastomeric liner. The valve body is constructed with internal ribs and slots forming a grillwork which surrounds the liner to provide support. A normally closed type valve is formed by the installed liner which covers the grillwork and seats against the raised seating surface in the valve body.

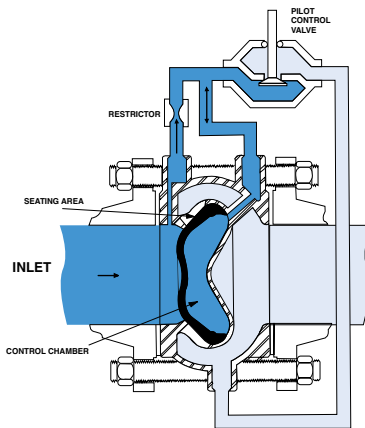
Upstream pressure actuates the valve to produce valve opening by rolling the liner off the seating surface and the slotted grillwork.

The valve is actuated by upstream pressure as the loading pressure (pressure supplied to the control chamber) is varied by an external pilot control system.

A typical pilot control system used to operate the Model 100-42 valve consists of a restriction and a suitable pilot connected to the valve.



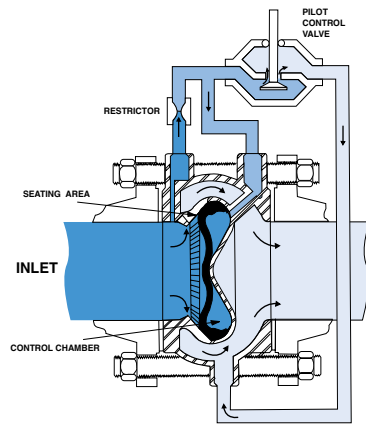
## PRINCIPLE OF OPERATION



**Model 100-42 Valve  
in Closed Position**

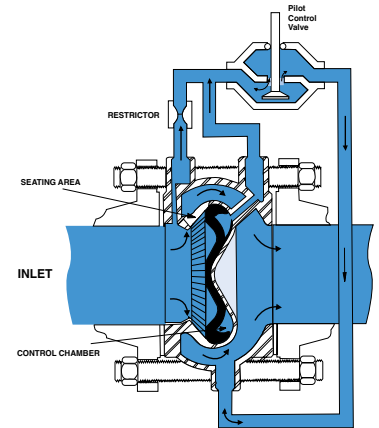
Upstream pressure is introduced to the control chamber (the chamber formed behind the liner) through the control piping and restrictor. When the pilot is closed, full inlet pressure is supplied to the control chamber, thus balancing the force developed by inlet pressure acting on the upstream face on the liner. Under these conditions, the liner remains in the fully closed position.

Since the operating pressure in the control chamber is greater than the outlet pressure, an additional closing force is developed across the liner, pressing the liner against the surrounding slotted grillwork area and seating surface.



**Model 100-42 Valve  
in Partially Open Position**

As loading pressure is lowered slightly below inlet pressure, the central portion of the liner is forced to invert and come to rest against the tip of the control chamber cavity. Reducing the loading pressure further (but still higher than outlet pressure) causes the liner to drape over the cone shaped portion of the control chamber cavity. This action causes the outer section of the liner to roll off the seating surface and a portion of the grillwork to partially open the valve.



**Model 100-42 Valve  
in Fully Open Position**

The valve is fully opened when loading pressure is sufficiently reduced to allow the liner to roll back completely and expose the full slot area. Restoring loading pressure reverses the liner rolling action to return the liner to the fully closed position.

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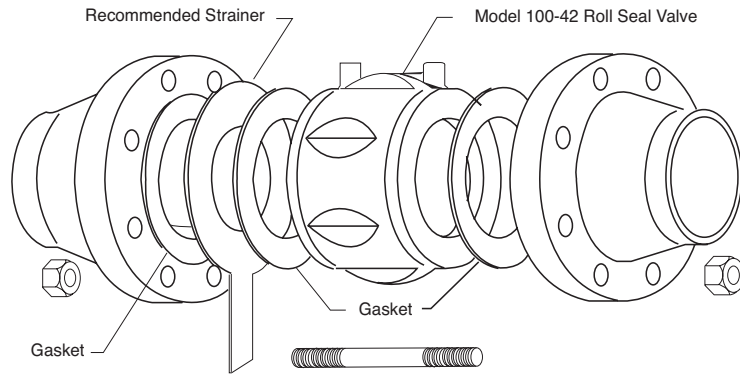
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## INSTALLATION

The Cla-Val Model 100-42 Roll Seal valve in 2", 3", and 4" sizes are designed to mount between standard pipe flanges (ANSI 125, 150, 250, and 300 series) as a wafer type valve. The outer portion of the valve body is constructed with fluted (recessed) sections to provide clearance for the class 125 and 150 flange bolt pattern while the basic outside diameter of the body centers within the class 250 and 300 flange bolt pattern.

The Model 100-42 valve in 6" through 12" sizes are constructed with separable "slip-on" style flanges. Furnished standard in either class 150 or 300 raised face type, the flanges are removable and interchangeable. The class 150 flange may be bolted up to class 125 pipeline flanges and the class 300 flange may be mated against a class 250 flange.

Locate pilot system port connections at the top of valve in pipeline to allow easy air venting. A line size strainer is recommended, mounted on the valve inlet.



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## PROCEDURE

1. The valve should be given a visual inspection before installation to be sure no foreign materials have collected inside the valve during shipment or storage.
  2. Pipelines should be flushed out before the valve is installed in the system. New systems, especially, should be cleaned as contaminants such as welding beads, scale, rocks, etc. are commonly contained within the pipeline.
  3. The valve should be installed in a location allowing sufficient working space around the valve to provide easy access for maintenance and removal for servicing.
  4. For 2", 3", and 4" sizes only. Insert the lower half pattern of stud bolts through the bolt holes of the upstream and downstream pipeline flanges.
  - 4a. For 2" & 3" valves only. The 125 and 150 series flanges use a different number of bolts than the 250 and 300 series flanges. Hence, the wafer valve body configuration is inherently self centering regardless of the flange used.
  - 4b. For the 4" valve, ANSI pipe flanges use an 8 bolt pattern regardless of pressure ratings, although the 250 and 300 series use larger bolts on a larger bolt circle. The 4" valve can be centered in the larger 250 and 300 class flanges by rotating the valve body into full radial contact with the bolt studs prior to tightening.
  5. If an inline basket type strainer is to be included in the installation, insert the strainer into the upstream pipe, making sure a gasket is placed between the strainer and the upstream flange.
  6. Install the valve between the flanges being sure to include the appropriate flange gaskets between each end of the valve and the mating pipe flange.
- Note: The valve must be installed with the flow arrow on side of body pointing to the downstream piping section. Cla-Val 700 Series valves may be installed in any position in either vertical or horizontal installations without any effect on valve operation.
7. Insert the remaining stud bolts and nuts and tighten evenly using a diagonal cross-over type pattern.

### Liner Retainer Removal 2"-12" Sizes

The 2" and 3" liner retainer is secured to the valve with an Allen screw. Loosen the Allen screw, pull the locking pin back towards center of retainer, and remove the retainer from valve.

To install, insert the retainer, (do not block inlet feed hole), push locking pin into position and tighten Allen screw.

The 4"-12" liner retainers are secured with a snap ring. Remove the snap ring and retainer.

To install, insert retainer and install snap ring into the groove of valve. Be sure snap ring is completely inserted into groove.

### Liner Removal 2"-12" Sizes

The tool used for removal should be free of sharp edges to prevent damage to the liner, the valve body seat or control chamber surfaces. A motorcycle tire iron or similar tool works well.

1. Insert the tool between the liner and the valve body as deeply as possible.
2. Using the seat edge as a fulcrum, rock the end of the tool away from the valve in a manner to pull the liner bead out of the body. Grasp the liner and remove from the valve body.

### Liner Installation 2", 3", 4" Sizes

Thoroughly clean out the interior of the valve body control chamber cavity.

Liberaly apply glycerine inside the control chamber cavity and around the seal bead area of the liner.

**DO NOT USE ANY HYDROCARBON OR SILICONE BASED LUBRICANTS ON LINERS AS THESE COMPOUNDS CAN SEVERELY ATTACK THE LINER MATERIAL.**

3. Fold the liner as shown and install into the valve body control chamber as deeply as possible.
4. Continuing to force the liner into the control chamber cavity, again fold the liner as shown to insert the liner seal bead section under the valve body seat surface.
5. Work the folded section of the liner into place by pushing against the folded area to slide the seal bead down the conical face of the control chamber.

### Liner Seating Instructions 2", 3", 4" Sizes

After installing the liner, it must be seated over the manifold ring in the valve body. The objective of this seating procedure is to place the inside lip of the liner over the outside lip of the manifold ring.

6. 4" valve with liner installed.
7. Pinch, pull and knead the liner 360° around to seat the liner on the manifold ring.
8. Using a dull tool or hammer handle, pry the outer part of the liner towards the center to help "seat" the liner.
9. Now push the liner down into the valve, holding your hand on the depressed liner, seal off the loading port with your finger.
10. Remove your hand from liner and continue holding your finger over the loading port. If liner is seated, it will be held in the open position as long as your finger is over the loading port. When you release your finger, the liner will pop up. If not seated, repeat with Step 7.

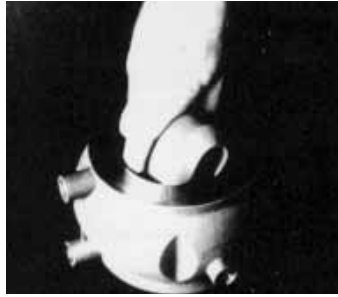
Install liner retainer into body.



1



2



3



4



5



6



7



8



9



10

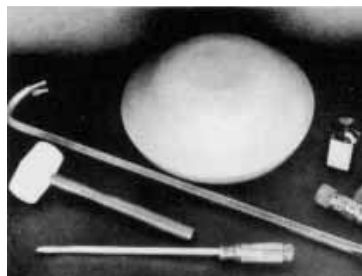
## Liner Installation

### 6", 8", 10", 12" sizes

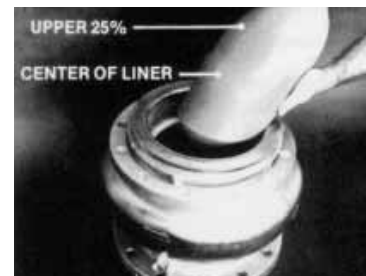
1. Tools required: Bottle of drugstore glycerine, 30" crowbar, double headed plastic hammer with 14" handle, rubber mallet and large flat blade screwdriver.
2. Liberally wipe glycerine on the inside of the valve and on the outer edge of the liner. Fold liner in half and insert into valve body.
3. Push liner in as far as possible forcing it out side ways.
4. Place the crowbar at the upper 25% point of the liner. Take your other hand and push on nose of liner to bend the liner over the crowbar. The less material folded over, the easier it will go into the valve. If too much is folded over, it will be difficult to complete liner installation.
5. Continue bending liner nose down into the valve. Use your hands and/or hammer handle to continue forcing it down into valve. It is important to keep the "V" of the bend near the 25% point. If it goes over the center, The liner won't go in, and it will be necessary to start over at Step 3.
6. Use the hammer to force the liner down and out into the valve body.
7. Use the hammer handle for the final insertion. Sometimes it is helpful to beat on the liner with the hammer for the final step.
8. To seat the liner on the manifold ring use the hammer handle to push down on the liner near bore of valve inlet and pry handle and liner towards the center. Continue this prying action for 360° around the liner for proper seating.
9. To test for liner seating, push down on the center of liner and close the loading port shut-off cock, or block it with your hand. When you release your hand from the liner, it should remain in the down position until the loading port is opened.
10. If liner appears seated, open loading port cock and liner should pop-up to the closed position. Repeat Steps 6-10 if liner is not seated.

When the liner is fully seated, the inside diameter of the liner will be seated over the outside diameter of the manifold ring. The manifold ring is a raised circular ridge at the bottom of the open cavity which provides for even distribution of the fluid coming in and going out the loading port.

**Install liner retainer into body.**



1



2



3



4



5



6



7



8



9



10

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## PLACING VALVE INTO OPERATION **Important Procedure for All Installations:**

In most instances, the 700 Series Cla-Val Control valves will be shipped complete with a pilot control system mounted on the Model 100-42 valve. Consult the appropriate start up and operation instructions for the pilot control used before pressurizing the system.

IT IS IMPORTANT THAT THE PRESSURIZATION AND DEPRESSURIZATION OF ALL INSTALLATIONS BE CARRIED OUT IN A MANNER TO PREVENT IMPOSING A REVERSE PRESSURE CONDITION ON THE CLA-VAL MODEL 100-42 VALVE. PRESSURIZATION OF THE SYSTEM SHOULD BE ACCOMPLISHED BY PRESSURIZING THE INLET SIDE FIRST.

DEPRESSURIZATION OF THE SYSTEM SHOULD BE ACCOMPLISHED BY DEPRESSURIZING THE OUTLET SIDE FIRST. FAILURE TO FOLLOW THIS PROCEDURE COULD RESULT IN DISLODGE- MENT AND/OR DESTRUCTION OF THE RUBBER LINER.

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## START-UP INSTRUCTIONS

### Pressure Reducing 790 Series Valves

The following instructions are for valves equipped with a Model CRD Pressure Reducing Pilot Control.

1. Remove the adjustment cap and back off adjustment screw setting (turn counterclockwise) of the CRD Pressure Reducing Pilot Control to fully relieve all loading on the range spring.
2. Slowly open the **upstream** main line block valve to pressurize the **inlet** section of the valve.
3. Bleed any entrapped air from the control chamber of the valve and tubing sections by loosening fittings at the highest points. Retighten fittings. Install gauge on downstream port of CRD.
4. Slowly increase tension on the range spring, by means of the adjustment screw (turn clockwise) until the desired downstream pressure is attained. Use a gauge.
5. Open the downstream main line block valve.
6. If required, reset the pilot adjustment screw setting to obtain the downstream pressure desired.
7. Tighten the adjustment screw lock nut and replace the adjustment cap.

### Back Pressure Control 750 Series Valves

The following instructions are for valves equipped with a Model CRL Back Pressure Pilot Control.

1. Remove the adjustment cap and increase tension on the range spring, by means of the adjustment screw (turn clockwise) until maximum spring load is attained.
2. Slowly open the **upstream** main line block valve to pressurize the **inlet** section of the valve.
3. Bleed any entrapped air from the control chamber of the valve and tubing sections by loosening fittings at the highest points. Retighten fittings.
4. Open the downstream main line block valve.
5. Gradually decrease tension on the range spring by means of the adjustment screw (turn counterclockwise) until upstream pressure decreases to the desired setpoint.
6. Tighten the adjustment screw lock nut and replace the adjustment cap.

### Relief Valve Applications 750 Series Valves

The following instructions are for valves equipped with a Model CRL Pressure Relief Pilot Control.

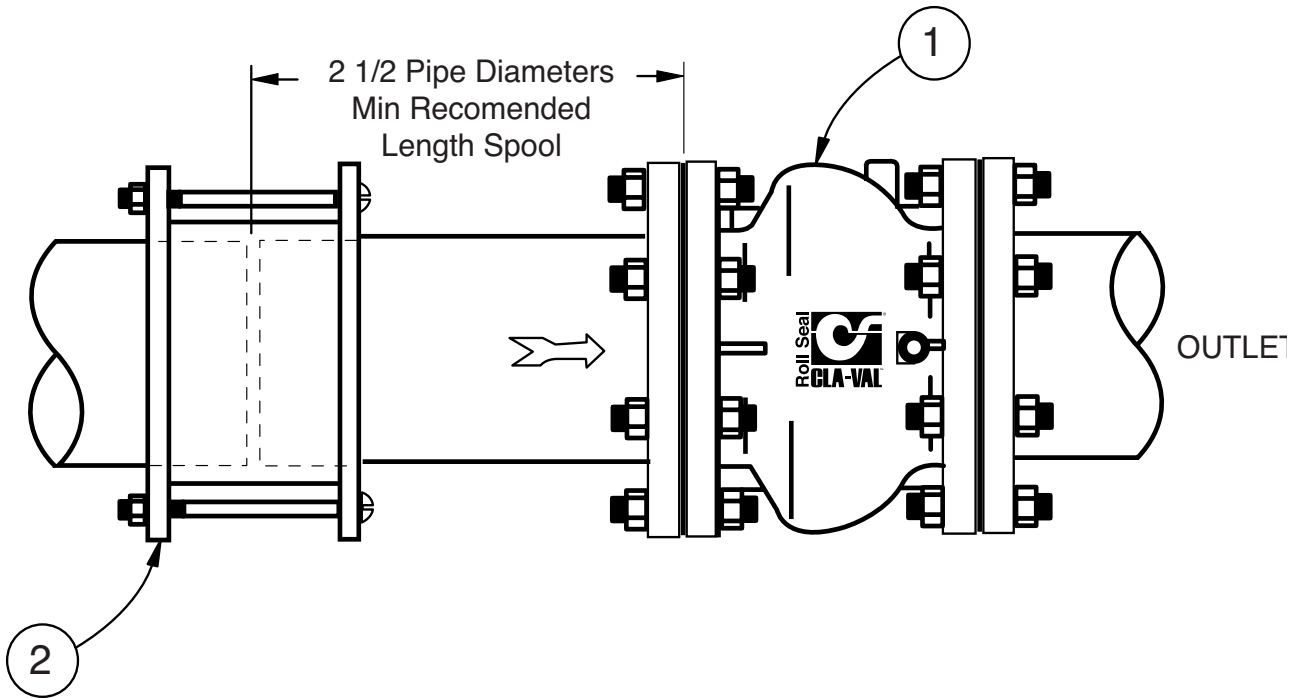
Due to the nature of intended use, the system being protected with the relief valve will most likely not be able to furnish the pressure source needed to establish the proper setpoint of the pilot control. Due to this fact, in most instances, the relief valve setting procedures will either have to be carried out at other locations or an auxiliary pressure source will have to be supplied at the site in order to carry out the following procedure.

1. Remove the adjustment cap and increase tension on the range spring by means of the adjustment screw (turn clockwise) until maximum spring load is attained.
2. Slowly introduce **inlet** pressure to the valve at the desired setpoint value. Bleed all air.
3. Gradually decrease tension on the range spring by means of the adjustment screw (turn counterclockwise) until flow is initiated through the valve.
4. Reduce system pressure back to normal value. Tighten the adjustment screw lock nut and replace the adjustment cap. The valve is now ready for service.

## Taking Valve Out of Service

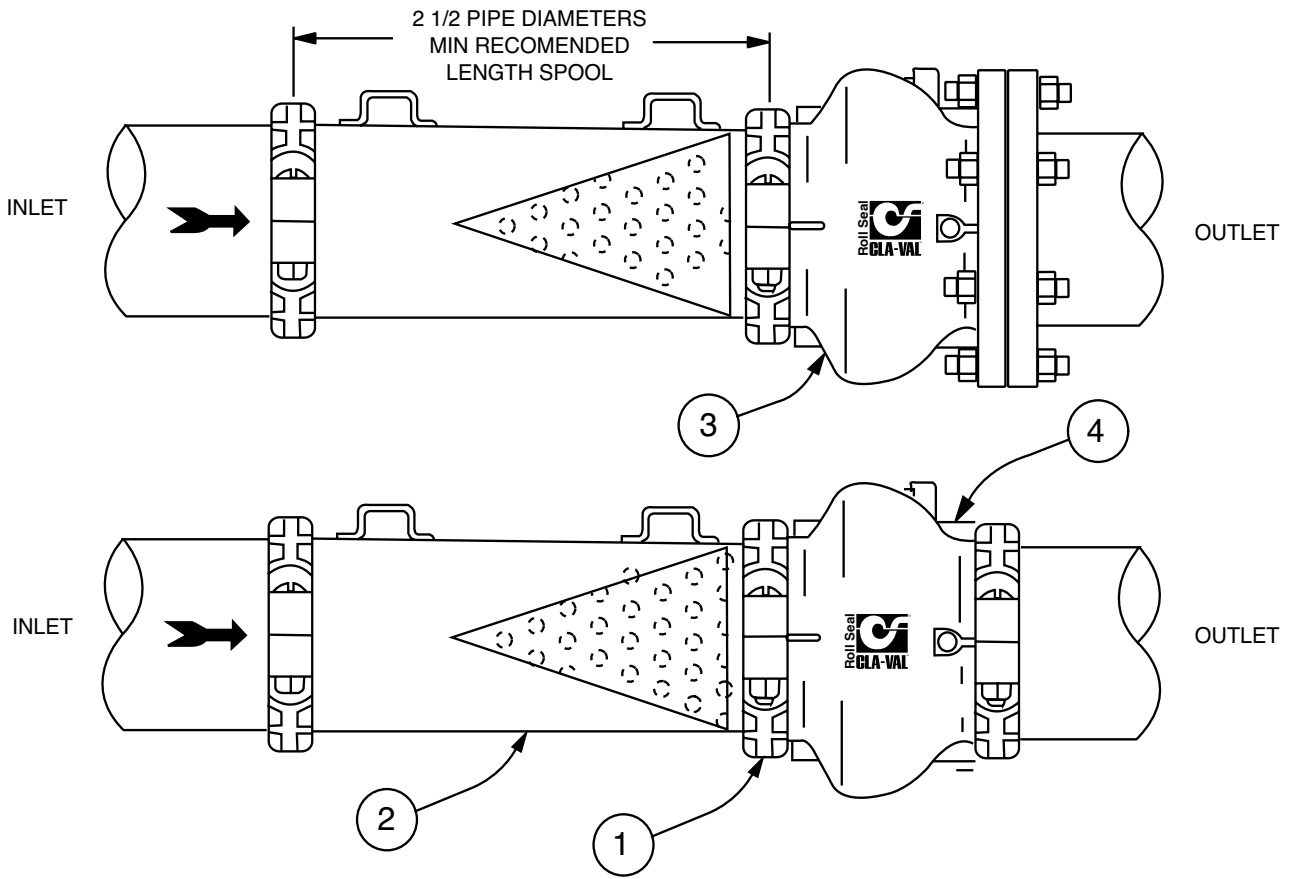
The following procedure should be followed when taking the Model 100-42 valve out of service.

1. Close the upstream main line block valve first. Then close the downstream main line block valve.
  2. Vent the **downstream** section to fully relieve pressure in the outlet section of the valve.
  3. Vent the **upstream** section to fully relieve pressure in the inlet section and control chamber of the Model 100-42 valve.
  4. If the valve liner is to be inspected or replaced, remove the valve from the main line.
- 
-



Recommended Pipe layout  
6" - 12" Flange style 100-42

- 2 Pipe Coupling (Rubber Gasket Type)
- 1 100-42 Main Valve, Flange X Flange



Recommended Pipe layout  
6" - 12" Grooved style 100-42

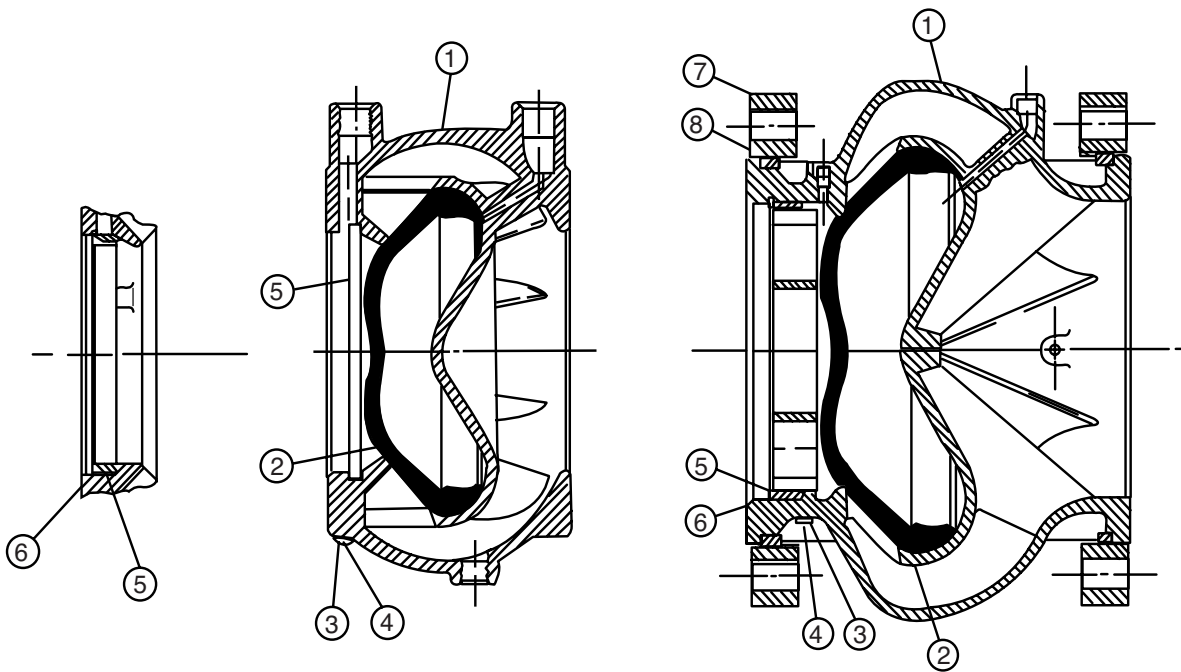
- 1 COUPLER FOR GROOVED PIPE
- 2 SPOOL STRAINER ASSEMBLY (WITH CONE)
- 3 100-42 MAIN VALVE, GROOVE X FLANGE
- 4 100-42 MAIN VALVE, GROOVE X GROOVE

**When ordering  
please specify:**

- All nameplate data
- Description
- Part Numbers
- Item Number
- Material

Item No.	Description	No. Req'd	Material (Standard)
1	Body	1	316L Stainless Steel "L"
2*	Liner	1	Natural Rubber
3	Nameplate	1	Aluminum
4	Drive Screw	2	316L Stainless Steel
5	Liner Retainer	1	316L Stainless Steel
6	Retaining Ring	1	316L Stainless Steel
7	Slip-on Flange	2	Steel-Cad. Pl.
8	Flange Retainer Ring	2	Steel-Cad. Pl.

\*Recommended Spare Part



4" Wafer Style Valve

2-3" Wafer Style Valve

6"-12" Flanged Valve



NEWPORT BEACH, CALIFORNIA

CATALOG NO.  
X58C

DRAWING NO.  
48834

REV  
AN

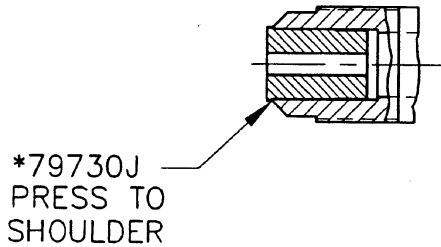
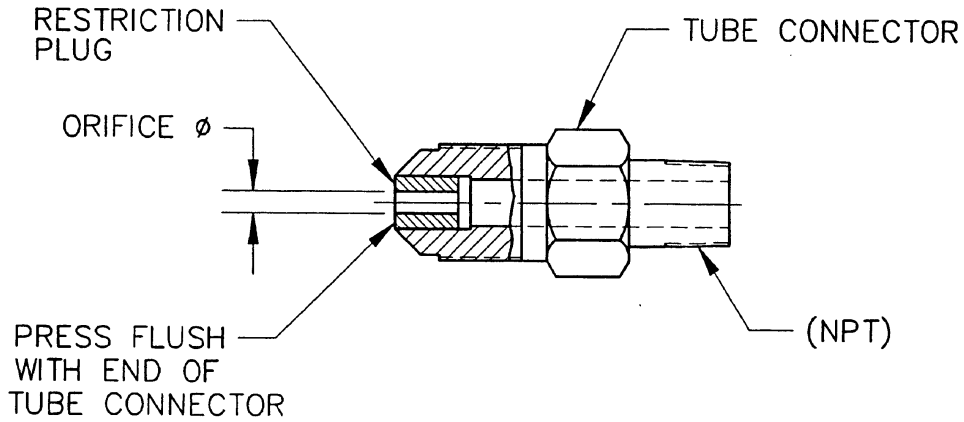
TYPE OF VALVE AND MAIN FEATURES

X58C RESTRICTION ASSEMBLIES

DESIGN		
DRAWN	JC	12-3-85
CHK'D	JC	12-4-85
AP'VD	CH	12-11-85

AM	REINSTATED PN 68565B & 64673H (ECO 15043)	TLC	-18-94
AN	ADDED PN 48834-05F (NED 43663)	AK	J-15-98

CAD REVISION RECORD - DO NOT REVISE MANUALLY			
DESCRIPTION	BY	DATE	
SEE REVISION FILE			
REDRAWN ON CAD (ECO 14229)	EK	11-18-93	



NOTES:

1. \*FOR IDENTIFICATION, THESE STOCK NO'S ARE TO BE STAINED BLUE WITH 74234-03.
2. \*\*FOR IDENTIFICATION, THESE STOCK NO'S ARE TO BE STAINED RED WITH 74234-05.
3. SEE DWG 76740 FOR STAINLESS STEEL X58C.

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—MODEL— **CDHS-18**

**3/8" Differential Control**

**DESCRIPTION**

The Cla-Val CDHS-18 Differential Control Valve is a normally open, spring loaded, diaphragm type valve that operates hydraulically and is designed to close on a rising differential pressure. When used as a pilot control with Cla-Val Valves, it acts as a flow limiting control.

**INSTALLATION**

The Differential Control may be installed in any position. There is one inlet port and two outlet ports in the body for either straight or angle installation. The outlet port senses the high pressure or inlet to the differential producing device. One of the outlet ports can be used for a gauge connection. The port above the diaphragm (located in the control cover) is used to sense the low pressure or outlet side of the differential producing device. A flow arrow is marked on the body casting.

**OPERATION**

The Differential Control is normally held open by the compression spring and the sensing pressure above the diaphragm. When the rate of flow through the main valve increases, the sensing pressure above the diaphragm of the control decreases and the higher pressure at the outlet port closes the control; which, in turn, closes the main valve. When the rate of flow through the main valve decreases, the sensing pressure above the diaphragm increases. This opens the control and in turn opens the main valve. This action causes the main valve to modulate, limiting the flow rate to the setting of the control.

**ADJUSTMENT**

The Differential Control Valve can be adjusted to limit the rate of flow as specified on the data plate. Rate of flow adjustment is made by turning the adjustment screw to vary the spring pressure on the diaphragm. The greater the compression on the spring the higher the flow rate.

1. Turn the adjustment screw in (clockwise) to increase flow rate.
2. Turn the adjustment screw out (counterclockwise) to decrease flow rate.

**DISASSEMBLY**

The Differential Control Valve should be removed from the Hytrol Valve assembly. Make sure that pressure shutdown is accomplished prior to disconnecting assembly. During disassembly inspect all threads for damage or evidence of cross-threading.

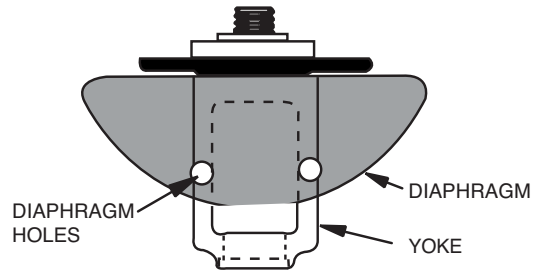
NOTE: A bench vice equipped with soft brass jaws should be used to hold the valve body during disassembly and reassembly. **DO NOT** tighten vice jaws more than enough to hold unit firmly. Excessive pressure may spring or crack casting

1. Remove adjusting screw cap (16).
2. Loosen lock nut on adjusting stem assembly (9) and turn adjusting screw counterclockwise to relieve tension on spring.
3. Remove bottom plug (8) and gasket (6).
4. Remove disc retainer assembly (5) and inspect sealing surface for damage or wear. Replace if necessary.
5. Remove 8 screws (12) and carefully lift off cover (2) spring guide (10) and spring (13) can now be removed.
6. Remove diaphragm assembly.
7. Remove diaphragm nut (7) and diaphragm washer (4).
8. Remove diaphragm (3), inspect for damage and replace if necessary.
9. Inspect all parts for damage, corrosion, wear, foreign particles, and cleanliness.
10. Repair minor nicks and scratches, these may be polished out using a fine grade of emery or crocus cloth.

**REASSEMBLY**

Prior to reassembly replace all parts which are damaged or worn. When ordering replacement parts be sure to specify item, part number, and all nameplate data.

1. Place diaphragm (3) on top of yoke (11) place diaphragm washer (4) over diaphragm with rounded edges down or next to diaphragm. Screw on diaphragm nut (7) with the spring guide shoulder in up position. The nut is not tightened at this time.
2. Align diaphragm flange holes with and folding diaphragm as shown. Tighten diaphragm nut, retaining alignment shown.
3. Place yoke assembly in body (1) and screw the disc retainer assembly (5) in until it bottoms.
4. Screw in plug (8).  
**NOTE:** The yoke arms can be viewed through the 3/8" NPT high pressure sensing outlet. There should be even spacing between the yoke arms and the 3/8" NPT inlet boss seat assembly. There must be no drag or friction between these parts. If there is drag, repeat step 2.
5. Align diaphragm flange holes with the body holes and position spring and spring guide (13) (10).
6. Replace cover (2) and secure with 8 screws (12).
7. Remove plug (8) and turn adjusting screw clockwise until the disc retainer assembly moves down.
8. Replace gasket (6) and plug (8).
9. Replace cap (16).



DIAPHRAGM HOLE ALIGNMENT

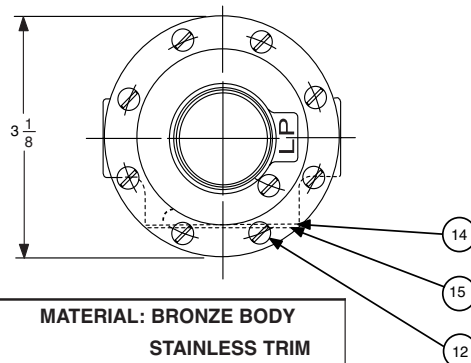
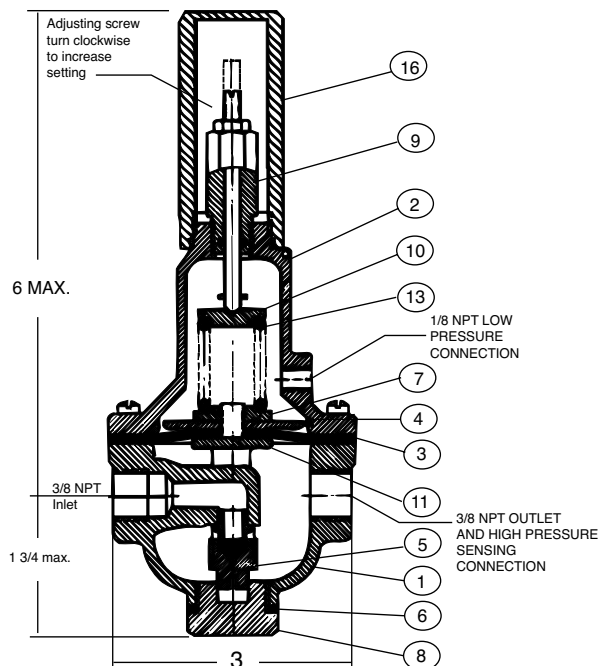
**SERVICE SUGGESTIONS**

SYMPTOM	PROBABLE CAUSE	REMEDY
FAILS TO OPEN	CONTROLLING DIFFERENTIAL NOT CHANGING	CHECK WITH GAUGE OR MANOMETERS
	DIAPHRAGM ASSEMBLY STUCK CLOSED	DISASSEMBLE AND FREE
	NO SPRING COMPRESSION	SCREW IN ADJUSTING STEM
	FOREIGN OBJECT UNDER DISC RETAINER	DISASSEMBLE AND REMOVE
FAILS TO CLOSE	INSUFFICIENT CONTROLLING DIFFERENTIAL	INCREASE DIFFERENTIAL
	FOREIGN OBJECT UNDER DISC	DISASSEMBLE AND REMOVE
	DIAPHRAGM ASSEMBLY STUCK OPEN	DISASSEMBLE AND FREE
	DAMAGED DIAPHRAGM	DISASSEMBLE AND REPLACE
	SPRING COMPRESSED SOLID	BACK OFF ADJUSTING STEM



# CDHS-18

## 3/8" Differential Control



MATERIAL: BRONZE BODY STAINLESS TRIM		
BODY SIZE	SEAT SIZE	STOCK NUMBER
3/8"	1/4	68017
3/8"	1/4	69597*

\*Same as 68017 except cover at 90°

Repair Parts Kits*		Part Number
Standard	Buna <sup>®</sup> N <sup>®</sup>	9170003K
High Temp.	Viton <sup>®</sup>	9170009G

ITEM	DESCRIPTION	MATERIALS	PART NUMBER	LIST PRICE
1	Body & Seat Assembly	BFR/SS	83397-02G	
2	Cover	BRZ	C6657F	
*	3 Diaphragm	Buna N <sup>®</sup>	C6936JD	
	4 Diaphragm Washer	BRS	C1803A	
*	5 Disc Retainer Assembly	BRS/RB	C5256H	
*	6 Gasket	FIB	40174F	
	7 Diaphragm Nut	BRS	V5911C	
	8 Plug, Body	BRZ	V5653A	
	9 Adj. Stem Assembly	BZ/SS	C2002J	
	10 Spring Guide	303	C1510B	
	11 Yoke	BRZ	V6951H	
*	12 Mach. Screw Fil. Hd. (8)	SS	67578-21B	
	13 Spring	316SS	36773A	
	14 Nameplate	BRS	C002201G	
	15 Nameplate Screw	—	—	
	16 Cap, Adj. Screw	PLS	12576-01D	



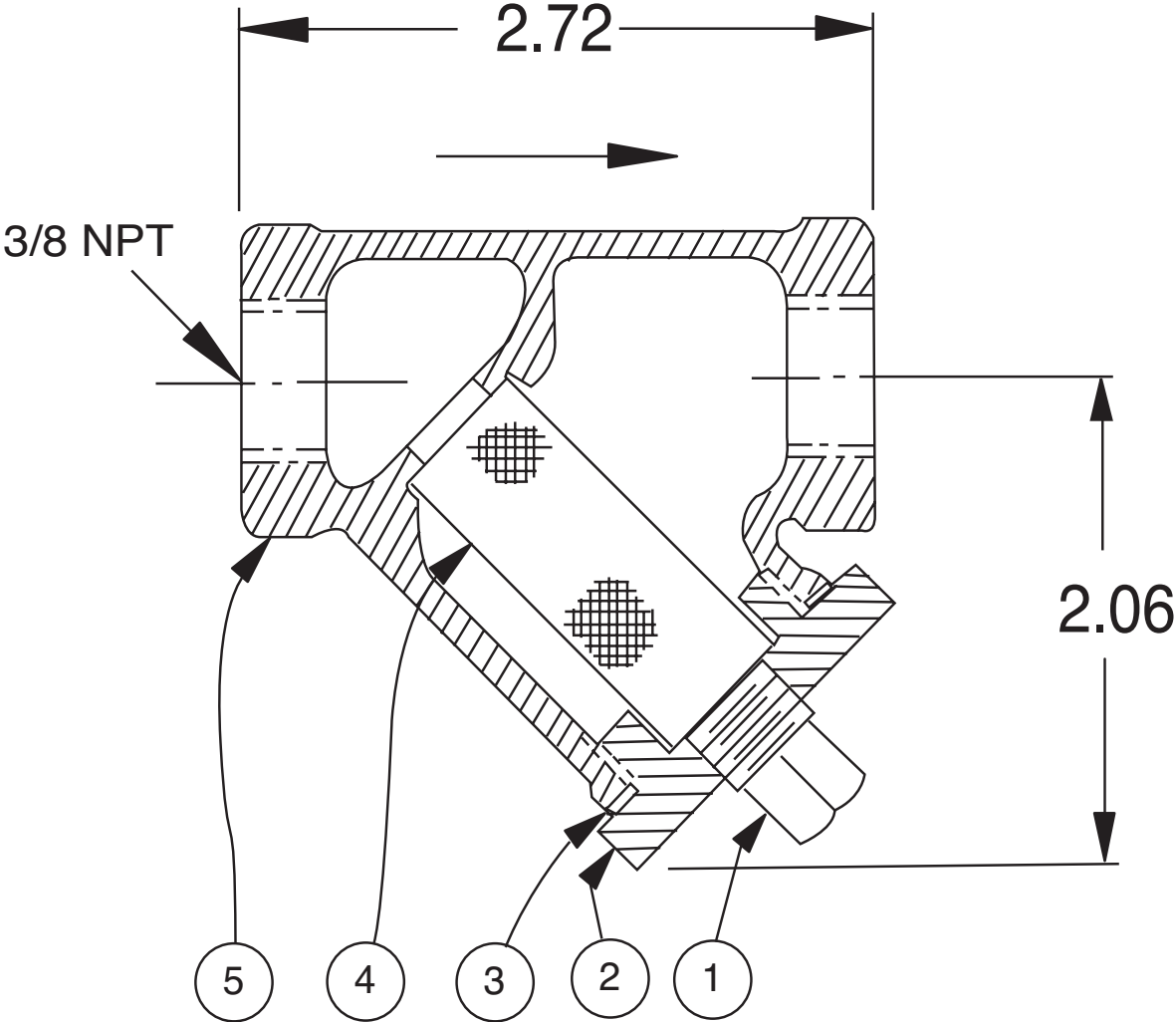
# X43 Strainer

ITEM	DESCRIPTION	MATERIAL
1	Pipe Plug	Steel
2	Strainer Plug	Brass
3	Gasket	Copper
4	Screen	SST
5	Body	Brass


Standard 60 mesh pilot system strainer for fluid service.

SIZE	STOCK NUMBER
3/8 x 3/8	33450J

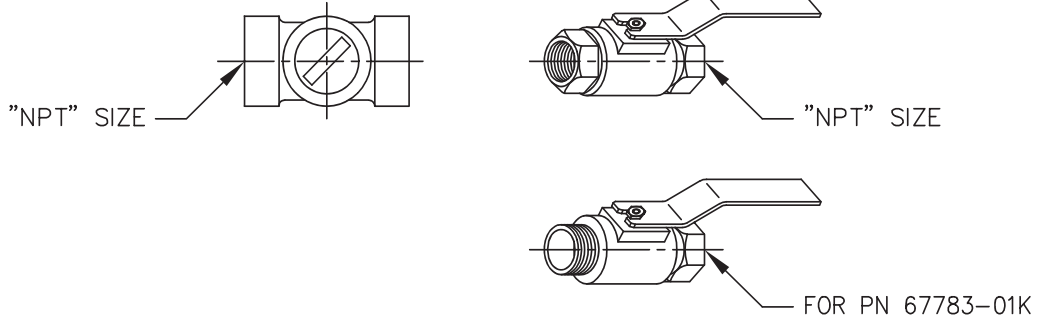
No parts available. Replacement assembly only.



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 <b>CLA-VAL CO.</b> NEWPORT BEACH, CALIFORNIA	CATALOG NO.	DRAWING NO.	REV
		67783	BA
TYPE OF VALVE AND MAIN FEATURES		DESIGN	
CK2 COCK/BALL VALVE		DRAWN	MGR 4-02-80
		CHK'D	KD 4-03-80
		APV'D	CH 4-07-80

SCALE: NONE



CLA-VAL PART NO. AND MATERIAL

BRONZE WITH HANDLE	STEEL WITH HANDLE	IRON WITH HANDLE	316 SST WITH HANDLE	316 SST W/ LOCKING HANDLE	BRONZE WITH HANDLE	MONEL WITH HANDLE	SIZE "NPT"
67783-01K*	-09C	-17F	-25J SUPSD BY-26G		-41F SUPSD BY-01K		1/8"
-02H	-10A	-18D	-26G	-51E SUPSD BY-26G -52C	-42D SUPSD BY-02H	-55F	1/4"
-03F * -59H***	-11J	-19B	-27E	-46E SUPSD BY-27E -53A	-45G -57B * *	-48A SUPSD BY-49J	3/8"
-04D -60F ***	-12G	-20K	-28C	-54J	-43B SUPSD BY-04D	-49J	1/2"
-05A -61D ***	-13E	-21H	-29A		-44K SUPSD BY-05A	-56D	3/4"
-06J	-14C	-22F	-30J			-58K	1"
-07G	-15K	-23D	-31G				1 1/4"
-08E	-16H	-24B	-32E				1 1/2"
-50G			-47C				2"

- \* SEE ENGINEERING APPROVED VENDORS TABLE (SHEET 2 OF 2).
- \*\* HAMMOND VALVE 8501 ONLY.
- \*\*\* WILKINS CK2 (SEE SHEET 2 OF 2)

LTR	A-AY	SEE REVISION FILE	DATE
			03-14-06
EBA	BA	ADDED PN'S 67783-59H, 67783-60F & 67783-61D (ECO 20434)	BY
			AK

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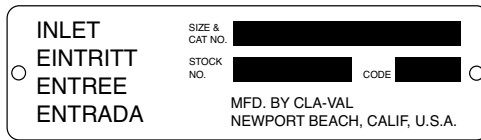
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### Proper Identification

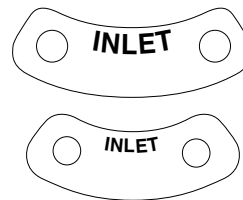
For ordering repair kits, replacement parts, or for inquiries concerning valve operation, it is important to properly identify Cla-Val products already in service by including all nameplate data with your inquiry. Pertinent product data includes valve function, size, material, pressure rating, end details, type of pilot controls used and control adjustment ranges.

### Identification Plates

For product identification, cast-in body markings are supplemented by identification plates as illustrated on this page. The plates, depending on type and size of product, are mounted in the most practical position. **It is extremely important that these identification plates are not painted over, removed, or in any other way rendered illegible.**



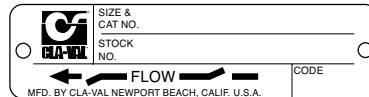
This brass plate appears on valves sized 2 1/2" and larger and is located on the top of the inlet flange.



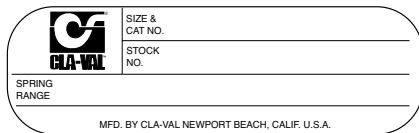
These two brass plates appear on 3/8", 1/2", and 3/4" size valves and are located on the valve cover.



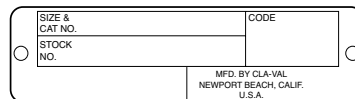
This brass plate appears on altitude valves only and is found on top of the outlet flange.



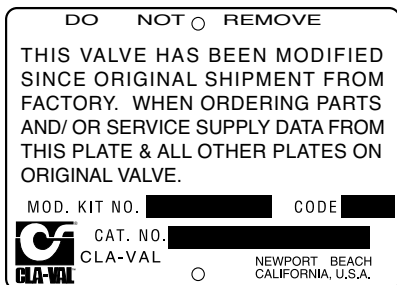
These two brass plates appear on threaded valves 1" through 3" size or flanged valves 1" through 2". It is located on only one side of the valve body.



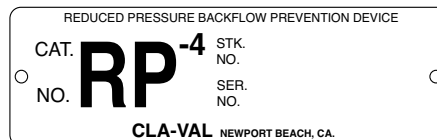
This tag is affixed to the cover of the pilot control valve. The adjustment range appears in the spring range section.



This brass plate is used to identify pilot control valves. The adjustment range is stamped into the plate.



This aluminum plate is included in pilot system modification kits and is to be wired to the new pilot control system after installation.



This brass plate is used on our backflow prevention assemblies. It is located on the side of the Number Two check (2" through 10"). The serial number of the assembly is also stamped on the top of the inlet flange of the Number One check.

## HOW TO ORDER

Because of the vast number of possible configurations and combinations available, many valves and controls are not shown in published product and price lists. For ordering information, price and availability on product that are not listed, please contact your local Cla-Val office or our factory office located at:

P. O. Box 1325  
Newport Beach, California 92659-0325  
(949) 722-4800  
FAX (949) 548-5441

## SPECIFY WHEN ORDERING

- Model Number
- Globe or Angle Pattern
- Adjustment Range (As Applicable)
- Valve Size
- Threaded or Flanged
- Body and Trim Materials
- Optional Features
- Pressure Class

## UNLESS OTHERWISE SPECIFIED

- Globe or angle pattern are the same price
- Ductile iron body and bronze trim are standard
- X46 Flow Clean Strainer or X43 "Y" Strainer are included
- CK2 Isolation Valves are included in price on 4" and larger valve sizes (6" and larger on 600 Series)

## LIMITED WARRANTY

Automatic valves and controls as manufactured by Cla-Val are warranted for three years from date of shipment against manufacturing defects in material and workmanship that develop in the service for which they are designed, provided the products are installed and used in accordance with all applicable instructions and limitations issued by Cla-Val. Electronic components manufactured by Cla-Val are warranted for one year from the date of shipment.

We will repair or replace defective material, free of charge, that is returned to our factory, transportation charges prepaid, if upon inspection, the material is found to have been defective at time of original shipment. This warranty is expressly conditioned on the purchaser's providing written notification to Cla-Val immediate upon discovery of the defect.

Components used by Cla-Val but manufactured by others, are warranted only to the extent of that manufacturer's guarantee.

This warranty shall not apply if the product has been altered or repaired by others, Cla-Val shall make no allowance or credit for such repairs or alterations unless authorized in writing by Cla-Val.

## DISCLAIMER OF WARRANTIES AND LIMITATIONS OF LIABILITY

The foregoing warranty is exclusive and in lieu of all other warranties and representations, whether expressed, implied, oral or written, including but not limited to any implied warranties or merchantability or fitness for a particular purpose. All such other warranties and representations are hereby cancelled.

Cla-Val shall not be liable for any incidental or consequential loss, damage or expense arising directly or indirectly from the use of the product. Cla-Val shall not be liable for any damages or charges for labor or expense in making repairs or adjustments to the product. Cla-Val shall not be liable for any damages or charges sustained in the adaptation or use of its engineering data and services. No representative of Cla-Val may change any of the foregoing or assume any additional liability or responsibility in connection with the product. The liability of Cla-Val is limited to material replacements F.O.B. Newport Beach, California.

## TERMS OF SALE

### ACCEPTANCE OF ORDERS

All orders are subject to acceptance by our main office at Newport Beach, California.

### CREDIT TERMS

Credit terms are net thirty (30) days from date of invoice.

### PURCHASE ORDER FORMS

Orders submitted on customer's own purchase order forms will be accepted only with the express understanding that no statements, clauses, or conditions contained in said order form will be binding on the Seller if they in any way modify the Seller's own terms and conditions of sales.

### PRODUCT CHANGES

The right is reserved to make changes in pattern, design or materials when deemed necessary, without prior notice.

### PRICES

All prices are F.O.B. Newport Beach, California unless expressly stated otherwise on our acknowledgement of the order. Prices are subject to change without notice. The prices at which any order is accepted are subject to adjustment to the Seller's price in effect at the time of shipment. Prices do not include sales, excise, municipal, state or any other Government taxes. Minimum order charge \$75.00.

### RESPONSIBILITY

We will not be responsible for delays resulting from strikes, accidents, negligence of carriers, or other causes beyond our control. Also, we will not be liable for any unauthorized product alterations or charges accruing there from.

### RISK

All goods are shipped at the risk of the purchaser after they have been delivered by us to the carrier. Claims for error, shortages, etc., must be made upon receipt of goods.

### EXPORT SHIPMENTS

Export shipments are subject to an additional charge for export packing.

### RETURNED GOODS

1. Customers must obtain written approval from Cla-Val prior to returning any material.
2. Cla-Val reserves the right to refuse the return of any products.
3. Products more than six (6) months old cannot be returned for credit.
4. Specially produced, non-standard models cannot be returned for credit.
5. Rubber goods such as diaphragms, discs, o-rings, etc., cannot be returned for credit, unless as part of an unopened vacuum sealed repair kit which is less than six months old.
6. Goods authorized for return are subject to a 35% (\$75 minimum) restocking charge and a service charge for inspection, reconditioning, replacement of rubber parts, retesting, repainting and repackaging as required.
7. Authorized returned goods must be packaged and shipped prepaid to Cla-Val, 1701 Placentia Avenue, Costa Mesa, California 92627.



## CLA-VAL

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Represented By:



— MODEL — **REPAIR KITS**

**Complete Replacement Diaphragm Assemblies for 100-01 and 100-20 Hytrol Main Valves**  
**For:** Hytrol Main Valves with Ductile Iron, Bronze Trim Materials—**125/150 Pressure Class Only.**  
**FACTORY ASSEMBLED**  
 Includes: Stem, Disc Guide, Disc, Disc Retainer, Spacer Washers, Diaphragm, Diaphragm Washer and Stem Nut.

Valve Size	Diaphragm Assembly Stock Number		Valve Size	Diaphragm Assembly Stock Number	
	100-01	100-20		100-01	100-20
3/8" (Also 81-01 )	49097K	N/A	6"	40456G	33273E
1/2" - 3/4" (Also 81-01 )	C2518D	N/A	8"	45276D	40456G
1"	C2520K	N/A	10"	81752J	45276D
1 1/4"-1 1/2"	C2522 F	N/A	12"	85533J	81752J
2"	C2524B	N/A	14"	89067D	N/A
2 1/2"	C2523D	N/A	16"	89068B	85533J
3"	C2525J	C2524B	20"	N/A	89068B
4"	33273E	C2525J	24"	N/A	89068B

**Repair Kits for 100-01/100-20 Hytrol Valves**  
**For:** Hytrol Main Valves—**125/150 Pressure Class Only.**  
 Includes: Diaphragm, Disc (or Disc Assembly) and spare Spacer Washers.

Buna-N® Standard Material				Viton (For KB Valves)			
Valve Size	Repair Kit Stock Number		Valve Size	Repair Kit Stock Number			
	100-01	100-20		100-01	100-20		
3/8" (Also 81-01 )	9169801K	N/A	3/8" (Also 81-01 )	9169806J	N/A		
1/2" - 3/4" (Also 81-01 )	9169802H	N/A	1/2" - 3/4" (Also 81-01 )	9169807G	N/A		
1"	9169803F	N/A	1"	9169808E	N/A		
1 1/4" - 1 1/2"	9169804D	N/A	1 1/4" - 1 1/2"	9169809C	N/A		
2"	9169805A	N/A	2"	9169810A	N/A		
2 1/2"	9169811J	N/A	2 1/2"	9169817F	N/A		
3"	9169812G	9169805A	3"	9169818D	9169810A		
4"	9169813E	9169812G	4"	9169819B	9169818D		
6"	9169815K	9169813E	6"	9169820K	9169819B		
8"	9817901D	9169815K	8"	9169834A	9169820K		
10"	9817902B	9817901D					
12"	9817903K	9817902B					
14"	9817904H	N/A					
16"	9817905E	9817903K					
20"	N/A	9817905E					
24"	9817906C	9817905E					

**When ordering, please give complete nameplate data of the valve and/or control being repaired.  
 MINIMUM ORDER CHARGE APPLIES.**

### Repair Kits for 100-02/100-21 Powertrol and 100-03/100-22 Powercheck Main Valves

**For:** Powertrol and Powercheck Main Valves—125/150 Pressure Class Only

Includes: Diaphragm, Disc (or Disc Assembly) and O-rings and full set of spare Spacer Washers.

Valve Size	Kit Stock Number 100-02	Valve Size	Kit Stock Number	
			100-02 & 100-03	100-21 & 100-22
3/8"	9169901H	2 1/2"	9169910J	N/A
1/2" & 3/4"	9169902F	3"	9169911G	9169905J
1"	9169903D	4"	9169912E	9169911G
1 1/4" & 1 1/2"	9169904B	6"	9169913C	9169912E
2"	9169905J	8"	99116G	9169913C
		10"	9169939H	99116G
		12"	9169937B	9169939H

### Repair Kits for 100-04/100-23 Hy-Check Main Valves

Larger Sizes: Consult Factory.

**For:** Hy-Check Main Valves—125/150 Pressure Class Only

Includes: Diaphragm, Disc and O-Rings and full set of spare Spacer Washers.

Valve Size	Kit Stock Number		Valve Size	Kit Stock Number	
	100-04	100-23		100-04	100-23
4"	20210901B	N/A	12"	20210905H	20210904J
6"	20210902A	20210901B	14"	20210906G	N/A
8"	20210903K	20210902A	16"	20210907F	20210905H
10"	20210904J	20210903K	20"	N/A	20210907F
			24"	N/A	20210907F

### Repair Kits for Pilot Control Valves (In Standard Materials Only)

Larger Sizes: Consult Factory.

Includes: Diaphragm, Disc (or Disc Assembly), O-Rings, Gaskets or spare Screws as appropriate.

BUNA-N® (Standard Material)				VITON (For KB Controls)	
Pilot Control	Kit Stock Number	Pilot Control	Kit Stock Number	Pilot Control	Kit Stock Number
CDB	9170006C	CFM-7	1263901K	CDB-KB	9170012A
CDB-30	9170023H	CFM-7A	1263901K	CRA-KB	N/A
CDB-31	9170024F	CFM-9	12223E	CRD-KB (w/bucking spring)	9170008J
CDB-7	9170017K	CRA (w/bucking spring)	9170001D	CRL-KB	9170013J
CDH-2	18225D	CRD (w/bucking spring)	9170002B	CDHS-2BKB	9170010E
CDHS-2	44607A	CRD (no bucking spring)	9170003K	CDHS-2FKB	9170011C
CDHS-2B	9170004H	CRD-18	20275401K	CDHS-18KB (no bucking spring)	9170009G
CDHS-2F	9170005E	CRD-22	98923G	102C-KB	1726202D
CDHS-3C-A2	24657K	CRL (55F, 55L)	9170007A		
CDHS-8A	2666901A	CRL-4A	43413E		
CDHS-18	9170003K	CRL-5 (55B)	65755B		
CDS-4	9170014G	CRL-5A (55G)	20666E		
CDS-5	14200A	CRL-18	20309801C		
CDS-6	20119301A	CV	9170019F		
CDS-6A	20349401C	X105L (O-ring)	00951E	Buna-N®	
CFCM-M1	1222301C	102B-1	1502201F	CRD Disc Ret. (Solid)	C5256H
CFM-2	12223E	102C-2	1726201F	CRD Disc Ret. (Spring)	C5255K
		102C-3	1726201F		

### Repair Assemblies (In Standard Materials Only)

Control	Description	Stock Number
CF1-C1	Pilot Assembly Only	89541H
CF1-CI	Complete Float Control less Ball and Rod	89016A
CFC2-C1	Disc, Distributor and Seals	2674701E
CSM 11-A2-2	Mechanical Parts Assembly	97544B
CSM 11-A2-2	Pilot Assembly Only	18053K
33A 1"	Complete Internal Assembly and Seal	2036030B
33A 2"	Complete Internal Assembly and Seal	2040830J

When ordering, please give complete nameplate data of the valve and/or control being repaired. MINIMUM ORDER CHARGE APPLIES