





Installation



Operation



Maintenance



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			CVCL 1 ② 3 4 DIST CODE 002 SHEET 2 OF 2
		TYPE OF	VALVE AND MAIN FEATURES
			DRAWN PC 8-14-2012
			DIFFERENTIAL PRESSURE CONTROL CHKD VL 8-14-2012
			APVD CH 8-16-2012
			OPERATING DATA
		l. 	DIFFERENTIAL CONTROL FEATURE: DIFFERENTIAL CONTROL (4) IS A NORMALLY OPEN CONTROL THAT RESPONDS TO DIFFERENTIAL PRESSURE CHANGES BETWEEN THE MAIN VALVE INLET AND A REMOTE LOCATION. AN INCREASE IN DIFFERENTIAL PRESSURE TENDS TO CLOSE CONTROL (4) AND A DECREASE IN DIFFERENTIAL PRESSURE TENDS TO OPEN CONTROL (4). THIS CAUSES MAIN VALVE COVER PRESSURE TO VARY AND THE MAIN VALVE MODULATES (OPENS AND CLOSES) MAINTAINING A CONSTANT DIFFERENTIAL PRESSURE BETWEEN THE MAIN VALVE INLET AND THE REMOTE LOCATION. <u>PRESSURE DIFFERENTIAL CONTROL (4) ADJUSTMENT:</u> TURN THE ADJUSTING SCREW CLOCKWISE TO INCREASE THE SETTING.
ATE		11.	SPEED CONTROL: ANGLE NEEDLE VALVE (5) CONTROLS THE OPENING AND CLOSING SPEED OF THE MAIN VALVE. TURN THE ADJUSTING STEM CLOCKWISE TO MAKE THE MAIN VALVE OPEN OR CLOSE SLOWER. DO NOT CLOSE VALVE (5) COMPLETELY OR THE MAIN VALVE WILL NOT OPEN OR CLOSE. (SUGGESTED INITIAL SETTING OF NEEDLE VALVE IS 1/4 TO 1/2 TURN OPEN).
		.	OPTIONAL FEATURE OPERATING DATA:
NUALLY BY			<u>SUFFIX B (ISOLATION VALVES):</u> CK2 COCKS (B) ARE USED TO ISOLATE THE PILOT SYSTEM FROM MAIN LINE PRESSURE. THESE VALVES MUST BE OPEN DURING NORMAL OPERATION.
CAD REVISION RECORD - DO NOT REVISE MAI	SEE SHEET 1	IV.	 <u>SUFFIX P (PRESSURE GAUGE):</u> PRESSURE GAUGES (P1), (P2), AND (P3) PROVIDE PRESSURE READING IN THE INLET, OUTLET, AND COVER CONNECTIONS. <u>SUFFIX V (VALVE POSITION INDICATOR):</u> VALVE POSITION INDICATOR (V) DISPLAYS A VISUAL POSITION OF THE MAIN VALVE STEM. <u>CHECK LIST FOR PROPER OPERATION:</u> () SYSTEM VALVES OPEN UPSTREAM AND DOWNSTREAM. () AIR REMOVED FROM THE MAIN VALVE COVER AND PILOT SYSTEM AT ALL HIGH POINTS. () PERIODIC CLEANING OF STRAINER (3) IS RECOMMENDED. () NEEDLE VALVE (5) OPEN AT LEAST 1/4 TURN. () CK2 COCKS (2A) AND (2B) OPEN DURING NORMAL OPERATION. () CK2 COCKS (B) OPEN (OPTIONAL FEATURE).

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- MODEL - 100-20 (Reduced Internal Port) 600 Series Hytrol Valve

SERVICE AND MAINTENANCE OF 600 SERIES VALVES

The 600 series main valves have only one part -the body- that is different from standard 100 Series Cla-Val main valve parts. The remaining parts of the 600 series main valve are standard Cla-Val main valve parts. All service and maintenance information for the standard 100 Series main valves in this manual also apply to the 600 series main valves.

The most important thing to remember when ordering main valve repair kits and replacement parts, except for the body, all other parts are going to be for a smaller size main valve. Cla-Val identifies main valve parts with the flange size of the standard 100 Series main valve. Refer to the "Main Valve Sizes Comparison" chart. For example, if you are servicing a 6" 100-20 Hytrol and needed a repair kit, you would order a repair kit for a 4" 100-01 Hytrol. This kit is also suitable for a 6" 100-20 Hytrol. Complete Technical Manuals include a repair kit data sheet N-RK that shows this relationship.

When you order repair parts, it is a good idea to include valve nameplate data (size, catalog number, and part number) and description of the parts desired. Do this to be sure parts will fit the valve you are working on and not be too big for it. Pilot controls and repair kits maintenance information remain the same for 100 or 600 Series valves.

UNDERSTANDING THE 600 SERIES VALVES

In 1987, Cla-Val introduced the Model 100-20 Hytrol as the basic main valve for the 600 Series of automatic control valves. To identify all new valves using the 100-20 Hytrol, an existing catalog number is modified. Making a 600 Series catalog number is simply done by using a "6" in front of the two digit catalog numbers or replacing the "2" with a "6" in three digit catalog numbers. Current schematics reflect both catalog numbers together separated by a slash (i.e. - 90-01/690-01, 58-02/658-02, 210-01/610-01, etc). Since these two valves 'share' the same catalog number and schematic, they provide the same function in a system. The only difference between the two valves is the relative capacity of the two main valve series.

The 100-01 Hytrol is the basic main valve for Cla-Val automatic control valves. This valve is the current version of the Clayton Hytrol valve design originated in 1936. The 100-01 Hytrol is designed as a full flow area valve. This means that the inlet, seat and outlet openings are the same size. Thus, the pressure drop is kept to a minimum for this globe style design.

The 100-20 Hytrol valve has all of the basic features and advantages of the original 100-01 Hytrol. Only one part has been changed - the body. It is designed with different size inlet, seat and outlet openings. The 100-20 Hytrol has inlet and outlet flanges one valve size larger than the seat opening size. This results in what is sometimes called a "reduced port' main valve. For example, a 4" 100-20 valve has a 3" seat. Note: valve size is always determined by the flange size. The following chart compares the 100-01 and the 100-20 main valves.

Basic Main Valve Size Comparison							
Globe Pattern Valves							
Flance Size (inch)	Seat	Size					
Thange Size (mon)	100-01 (100 Series)	100-20 (600 Series)					
3	3	2					
4	4	3					
6	6	4					
8	8	6					
10	10	8					
12	12	10					
14	14						
16	16	12 16 16					
18							
20	20						
24	24	16					
30	30	24					
36	36	30					
42		36					
48		36					
	Angle Pattern Valves						
Flange Size (inch)	Seat	Size					
	100-01 (100 Series)	100-20 (600 Series)					
4	4	3					
6	6	4					
8	8	6					

The 100-20 Hytrol is available only in ductile iron, 150 and 300 pressure class, and Bronze trim standard. Available extra cost main valve options include stainless steel trim, epoxy coating, Dura-Kleen stem, Delrin sleeved stem, and high temperature rubber parts. All four basic main valves have a 600 Series version available with all of the same benefits and size relationships. The following chart shows the relationship of Cla-Val main valve catalog numbers.

Cla-Val	Main	Val	ves
---------	------	-----	-----

	Catalog Number						
Catalog Name	Circa 1936	100-Series	600 Series				
Hytrol	100 (Angle =2100)	100-01	100-20				
Powertrol	100P & 100PA	100-02	100-21				
Powercheck	100PC & 100PCA	100-03	100-22				
Hycheck	181	100-04	100-23				

100-20







PARTS LIST DESCRIPTION

1 Pipe Plug

NO.

- 2 Drive Screws (for nameplate)
- 3 Hex Nut (8" and larger)
- 4 Stud (8" and larger)
- 5 Cover Bearing
- 6 Cover
- 7 Stem Nut
- 8 Diaphragm Washer
- 9 Diaphragm
- 10 Spacer Washers
- 11 Disc Guide
- 12 Disc Retainer
- 13 Disc
- 14 Stem
- 15 Seat
- 16 Body
- 17 Spring
- 22 Flat Head Screws (10" and larger)
- 23 Seat O-Ring
- 24 Hex Bolt (3 " Thru 6")
- 25 Nameplate (Mounted on inlet flange)
- 26 Upper Spring Washer (Epoxy coated valves only)
- 27 Lower Spring Washer (Epoxy coated valves only)
- 28 Cover Bearing Housing (20" & 24" & 30")
- 29 Cover Bearing Housing O-Ring (20" & 24" & 30")
- 30 Hex Bolt (20" & 24")
- 31 Pipe Cap (20" & 24 & 30"")

WHEN ORDERING PARTS, BE SURE TO GIVE COMPLETE NAMEPLATE DATA, ITEM NUMBER AND DESCRIPTION.







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e-FlowMeter

MODEL-X144





Installation view of the X144 e-FlowMeter Note: Consult Factory for Angle Pattern Applications

Frequency Measurement

The X144 e-FlowMeter uses the vortex shedding method to measure flow. The meter is inserted into the inlet tapping of the valve and the measurement cylinder is oriented parallel to the direction of flow. The flow enters the measurement cylinder where it encounters the bluff body, generating vortices, which in turn, deflects off the piezoelectric sensor.

The sensor counts the vortices and communicates the data to the meter's integral circuit board. The flow data signal is converted to 4-20mA, or transistor (NPN) pulse, depending on the desired application.

- The e-FlowMeter can be retrofitted to an existing Cla-Val Automatic Control Valve or factory assembled on a new valve
- Alleviates the need for an in-line meter and the associated installation costs
- IP68 Submersible (verfied by independent lab testing)
- Provides flow data with accuracy +/- 2% of Full Scale
- Mounts on either inlet body tapping of the Cla-Val Control Valve
- Stainless Steel Construction
- 4-20mA Loop Powered
- Plug-and-Play Metering
- No Moving Parts
- Independent laboratory tested:
 - Utah State University,
 - Imperial College London



The Cla-Val Model X144 e-FlowMeter is a vortex shedding insertion flow meter designed to be retrofitted into a Cla-Val Automatic Control Valve to provide accurate flow measurement data without the need to install a separate meter.

Configured for installation in the inlet tapping of a Cla-Val Automatic Control Valve, the X144 can be used in valves directly downstream of a flow disturbance such as elbows, valves or a reducer. (See page 2 for installation guidelines)

The X144 e-FlowMeter employs an innovative swivel mechanism which allows the meter to be inserted into tappings as small as 1/2-inch. For applications involving installation in close proximity to pump discharge, please consult factory with details.



Installation Guidelines and Typical Applications

Installation Locations

For optimum performance, it is recommended that the valve in which the X144 e-FlowMeter is installed be located as shown below.



Information Transmission

The X144 e-FlowMeter measures and transmits flow information via a 4-20mA signal to SCADA equipment.



Data Acquisition and Storage using Cla-Val Power Generator

- The X144 e-FlowMeter connects to most commercially available loggers with the choice of 4-20mA or pulse output.
- The X145 e-Display is an ideal companion to the X144 e-flowMeter, providing access to real-time data
- Both the e-Display and the e-FlowMeter can be powered by the Cla-Val X143MP Micro-Turbine Power Generator

To learn more about the X143MP Power Generator, visit www.cla-val.com/electronic-products



X144 Dimensions

X144 Sizes	S	1	2	3	4	
Full Port Valve	Sizes	2*, 2-1/2, 3	4, 6	8, 10	12, 14, 16, 18, 20, 24, 30**	
Reduced Port Valv	ve Sizes	4	6, 8	10, 12	14, 16, 18, 20, 24 **	C
Overall Length (in inches)		8.85	9.45	13.18	17.91	
Insertion Length (in inches) B		2.3	2.8	6.8	11.25	
Pipe Thread (NPT)	С	1/2"	3/4"	1"	1"	CLA-I
Overall Width (in inches) D		3.25	3.25	3.25	3.25	

*2" X144 e-FlowMeter may be installed on new valves only

** Consult factory for larger applications

X144 e-FlowMeter Operational Flow Range = from 1 ft/s to 20 ft/s



X144 e-FlowMeter vs. Mag Meter



Options

- Remote Mounted Display X145 e-Display
- Field Optimization using e-FlowMeter Customer Software
- Pulsed output proportional to flow rate for low power consumption



X145 e-Display

В

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Α

Product Details

Insertion Tool and Locking Ring

- Required for installation
- Tool allows the proper installation and alignment of the bluff body to be parallel to upstream flow.

Power Requirement

12/24 VDC, 0.7 Watts minimum.

X144 e-Flow Meter Sizing

 The X144 threads directly into the inlet tapping of a Cla-Val Control Valve. The size of the e-FlowMeter is dependent on the specific valve size for which it has been calibrated - no additional fittings are required. See dimension chart on previous page.

Cabling

The unit is supplied with 20 feet of shielded cable.

Maximum Operating Pressure : 400 PSI

X144 e-FlowMeter Analog Range (4-20mA Scaling): Factory Settings

Port Style	Line Size inches (mm)	**2" (50) (100-49 Body)	2-1/2" (65)	3" (80)	4" (100)	6" (150)	8" (200)	10" (250)	12" (300)	14" (350)	16" (400)	18" (450)	20" (500)	24" (600)	30" (750)
Full Port Valves 4mA = 0	20mA Range (GPM)	260	375	575	1000	2250	3900	6000	8750	10500	14000	17500	22000	31000	52000
(GPM - I/s)	20mA Range (l/s)	16.4	23.7	36.3	63.1	140	245	380	550	660	880	1100	1390	1950	3280
Full Port Pulse Weight*	Gal/Pulse	5	6.5	9.5	17	38	65	100	150	175	235	290	365	515	865
0	l/Pulse	19	25	36	65	145	245	380	565	660	890	1100	1380	1950	3275
Reduced Port Valves	20mA Range (GPM)				675	1600	2900	4500	5650	7750	9350				
4mA = 0 (GPM- I/s)	20mA Range (I/s)				42.5	100	180	285	355	490	590		oncult	Faator	.,
Reduced Port Valves Pulse Weight*	Gal/Pulse	not available			11.5	26	48	75	95	130	155	- Consult Factory		у	
	l/Pulse					99	180	285	360	495	585				

* Note: * Pulse Width = 250ms

**2" X144 e-FlowMeter may be installed on new valves only



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- MODEL - CDHS2



PRESSURE DIFFERENTIAL CONTROL

DESCRIPTION

The Differential Control is a spring-loaded, diaphragm-type, direct acting shutoff valve which closes when controlling pressure exceeds the predetermined setting. It is designed for use in conjunction with a Clayton Hytrol Valve, and operates within very close pressure limits. Pressure adjustments is made by turning the adjusting stem to vary spring pressure on the diaphragm. A jam nut locks the adjusting stem is position when desired setting is obtained.

OPERATION

The Differential Control is normally held open by the force compression spring above the diaphragm; controlling differential pressure is applied with the higher pressure under the diaphragm. When the controlling differential exceeds the spring setting, the yoke is lifted to seat the disc and closes the control, stopping all flow. When the controlling differential drops below spring setting, the spring returns the control to its normally-open position.

INSTALLATION

Install control as shown in the assembly drawing of the complete valve. Always be sure that the differential controlling pressure is connected with the high pressure under the diaphragm, against the spring. (see sectional valve)

DISASSEMBLY

Follow the sequence of the item numbers assigned to the parts in the cross sectional illustration fro recommended order of disassembly. Item 1thru 5 should be removed as an assembly.

NOTE: Check valves, cocks, tube lines and any other control in the system for restrictions before disassembly of components.

INSPECTIONS

Inspect all threads for damage, or evidence of cross threading. Check valve disc for chips, breaks, scoring, or embedded foreign particles. Inspect diaphragm (21) and center bearing hole in powertrol body (23) for damage. Check all parts for damage, corrosion, wear, and cleanliness

REPAIR & REPLACEMENT

Minor nicks and scratches may be polished out using a fine grade of emery or crocus cloth. Replace all parts which are damaged. When ordering replacement parts be sure to specify item and part number and all nameplate data.

SERVICE SUGGESTIONS

SYMPTOMS	PROBABLE CAUSE	REMEDY
Fails to open	Controlling differential not changing.	Check with gauge or manometers
	Diaphragm assembly stuck closed.	Disassembled and free
	No spring compression.	Screw in adjust- ment 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.	Disassembled and free
	Damaged diaphragm	Disassemble and replace
	Spring compressed solid	Back off adjusting stem



REASSEMBLY

Reassembly is the reverse of disassembly. Caution must be taken to avoid having the yoke (25) drag on the inlet nozzle of the body(26). Follow this procedure:

- 1. Place yoke assembly (25) in body (26) and crew the disc retainer assembly (18) in until it bottoms.
- 2. Install gasket (17) onto plug (16) and screw into body (23). Disc retainer must enter guide hole in the plug as it is assembled. Screw the plug in by hand. Use wrench to tighten only.
- З. Place gasket (24) and powertrol body (23) onto body (26). Locate high pressure port properly with respect to body ports in (26).
- 4. Temporarily install one screw)12) to hold partially assembled unit next steps are completed.
- Place lower diaphragm washer (22), diaphragm (21) and diaphragm washer (20) on yoke extension (25). Screw on diaphragm nut (19). NOTE: Be sure the rounded edge on the periphery of washers (22) and (20) are next to the diaphragm, to prevent excessive diaphragm wear.
- Hold the diaphragm so that screw holes in the diaphragm and powertrol body (23) align. Tighten diaphragm nut (19) with a wrench. At the final tightening release the diaphragm and permit it to rotate approximately 5° to 10°. The diaphragm holes should now be properly aligned with the body holes, so the yoke (25) will not contact the nozzle in the body 923). To check for proper alignment proceed as follows:

Rotate diaphragm clockwise and counter-clockwise as far as possible. Diaphragm screw holes should rotate equal distance on either side of powertrol body screw holes, 1/8".

- 7. Remove screw installed as instructed in step 4 above.
- 8. Install spring (15) with spring guide (14) on top of spring.
- Install cover (13) with screws (12), then spring adjustment 9. assembly.

TEST PROCEDURE

Before assembling onto the Hytrol Valve, remove tube fitting from body plug (16) and make sure control stem moves freely; push disc retainer (18) in with a screwdriver. With a light spring (15) compression, somewhere near the minimum setting, the stem should return out when screwdriver pressure is removed.

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CDHS2

Pressure Differential Control

Stock Numbers								
Body	Seat	Number						
Seat	Size							
3/8"	1/8"	C-1800						
3/8"	1/8"	C-8486						
3/8"	1/4"	44398						

PART

	ΞT
3/8 NP1	
	2
	0
	Э
LOW PRESSURE 1/8 NPT 6	5
	5
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	,
	4
1	
	4
	5
	3
	0
	.0
	2
	5
	1
	Υ T
3/8 NPT	
	3
	6
	1

ITEM NO.	DESCRIPTION	MATERIAL	PART NO.
1	Grove Pin 1/16 x 1/4 Type 5	S.S.	67520
2	Adjusting Stem	S.S.	C-2003
3	JamNut 1/4 - 28 Hex	Brass	67798-01
0	Light	21000	01100 01
4	O-Bing	Buna-N	00508
5	Stuffing Box	Brass	C-2004
6	Tube Nut. 3/8	Brass	NPN
7	Tubing, 3/8 O.D.	Copper	NPN
8	Tube Elbow, 3/8	Brass	67306-04
9	Tube X 1/8 Pipe	Brass	67863-01
10	Nipple, 1/8 x 1/4 Pipe	Brass	67585-02
11	Tube Elbow, 3/8	Brass	67306-05
	Tube x 1/8 Pipe		
12	Machine Screw, 10-32 x 1 1/4 (Rd. Hd)	Brass	67578-73
13	Cover	Brass	C-6657
14	Spring Guide	S.S.	C-1510
15	*Spring	S.S.	32919
16	Plug	S.S.	32914
17	*Gasket, Body	Fiber	40174
	to Plug		
18	*Disc Retainer	S.S. & Buna-N®	C-5926
	Assembly		
19	Diaphragm Nut	Brass	TV-5911
20	Upper Diaphragm	Brass	C-1803
	Washer		
21	*Diaphragm	Buna-N	C-6936
22	Lower Diaphragm	Brass	C-1804
	Washer		
23	Powertrol Body	_	
	C-1800	Brass	C-1805
	C-8486	Brass	C-1805
	44398	Brass	C-1805
24	Gasket	Buna-N	80594-01
25	Yoke Assembly	Brass & S.S.	C-1799
26	Body and Seat	Bronze & S.S.	
	Assembly		
	3/8" NPT Body	Bronze &	83397-01
	W/1/8" Seat In	5.5.	
	PIACE	Bronzo 8	00007.00
	3/8" INPT BODY	DIONZE &	83397-02
	W/ 1/4 Jeal II	0.0.	
	FIGUE		





ITEM



Cla-Val Product Identification

How to Order

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.



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



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



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



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

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.

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 \$100.00.

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.

SPECIFY WHEN ORDERING

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

Valve Size

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)

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.

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.
- 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.
- Goods authorized for return are subject to a 35% (\$100 minimum) restocking charge and a service charge for inspection, reconditioning, replacement of rubber parts, retesting, repainting and repackaging as required.
- Authorized returned goods must be packaged and shipped prepaid to Cla-Val, 1701 Placentia Avenue, Costa Mesa, California 92627.



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Phone: 949-722-4800 • Fax: 949-548-5441

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 Phone:
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www.cla-val.com

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		Diaphragn Stock	n Assembly Number	Valve	Diaphragm Assembly Stock Number		
0120		100-01 100-20		0120	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.

E	Buna-N [®] Star	ndard Mate	Viton (For KB Valves)				
Valve Size	ve Repair Kit ze Stock Number		Valve Size		Repa Stock N	ir Kit Iumber	
		100-01	100-20			100-01	100-20
3/8" 1/2" - 3/4" 1" 1 1/4" - 1 1/2" 2" 2 1/2" 3" 4" 6" 8" 10" 12" 14" 14"	(Also 81-01) (Also 81-01)	9169801K 9169802H 9169803F 9169804D 9169805A 9169812G 9169813E 9169815K 9817901D 9817902B 9817903K 9817904H 9817905E	N/A N/A N/A N/A N/A N/A 9169805A 9169812G 9169812G 9169813E 9169815K 9817901D 9817902B N/A 9817903K	3/8" 1/2" - 3/4" 1" 1 1/4" - 1 1/2" 2" 2 1/2" 3" 4" 6" 8"	(Also 81-01) (Also 81-01)	9169806J 9169807G 9169808E 9169809C 9169810A 9169817F 9169818D 9169819B 9169820K 9169834A	N/A N/A N/A N/A 9169810A 9169818D 9169819B 9169820K
20" 24"		N/A 9817906C	9817905E 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	Kit Stock Number	Valve	Kit Stock Number	
Size	100-02	Size	100-02 & 100-03	100-21 & 100-22
3/" /8	9169901H	2½"	9169910J	N/A
1/2" & 3/4"	9169902F	3"	9169911G	9169905J
1"	9169903D	4"	9169912E	9169911G
1¼" & 1½"	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	Kit Stock Number		Valve	Kit Stock Number	
Size	100-04	100-23	Size	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)

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

Larger Sizes: Consult Factory.

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	CRL60/55L-60	9170033G		
CDHS-18	9170003K	CRL-4A	43413E		
CDS-4	9170014G	CRL-5 (55B)	65755B		
CDS-5	14200A	CRL-5A (55G)	20666E		
CDS-6	20119301A	CRL-18	20309801C		
CDS-6A	20349401C	CV	9170019F		
		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

