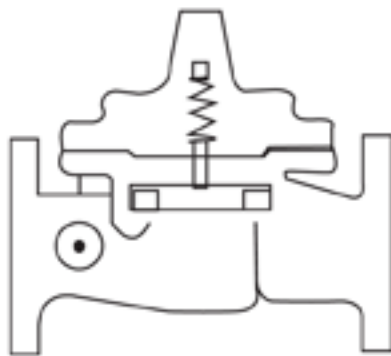


# CLA-VAL

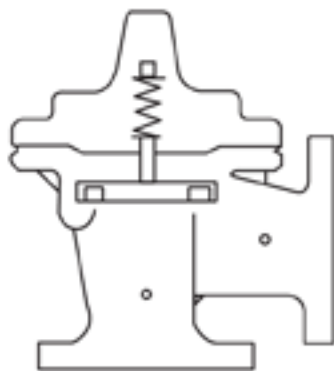
**AUTOMATIC CONTROL VALVES**

134-60

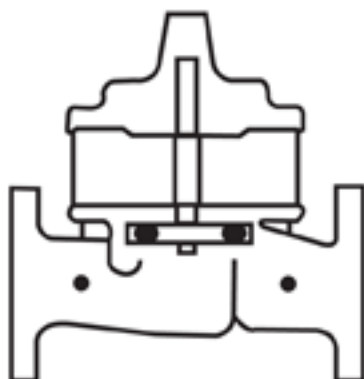
Place this manual with personal responsible  
for maintenance of this valve



## *INSTALLATION*



## *OPERATION*



## *MAINTENANCE*





NEWPORT BEACH, CALIFORNIA

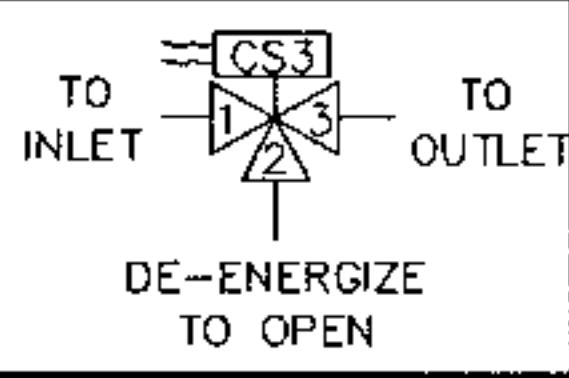
CATALOG NO. 134-60

DRAWING NO. 28301

REV A

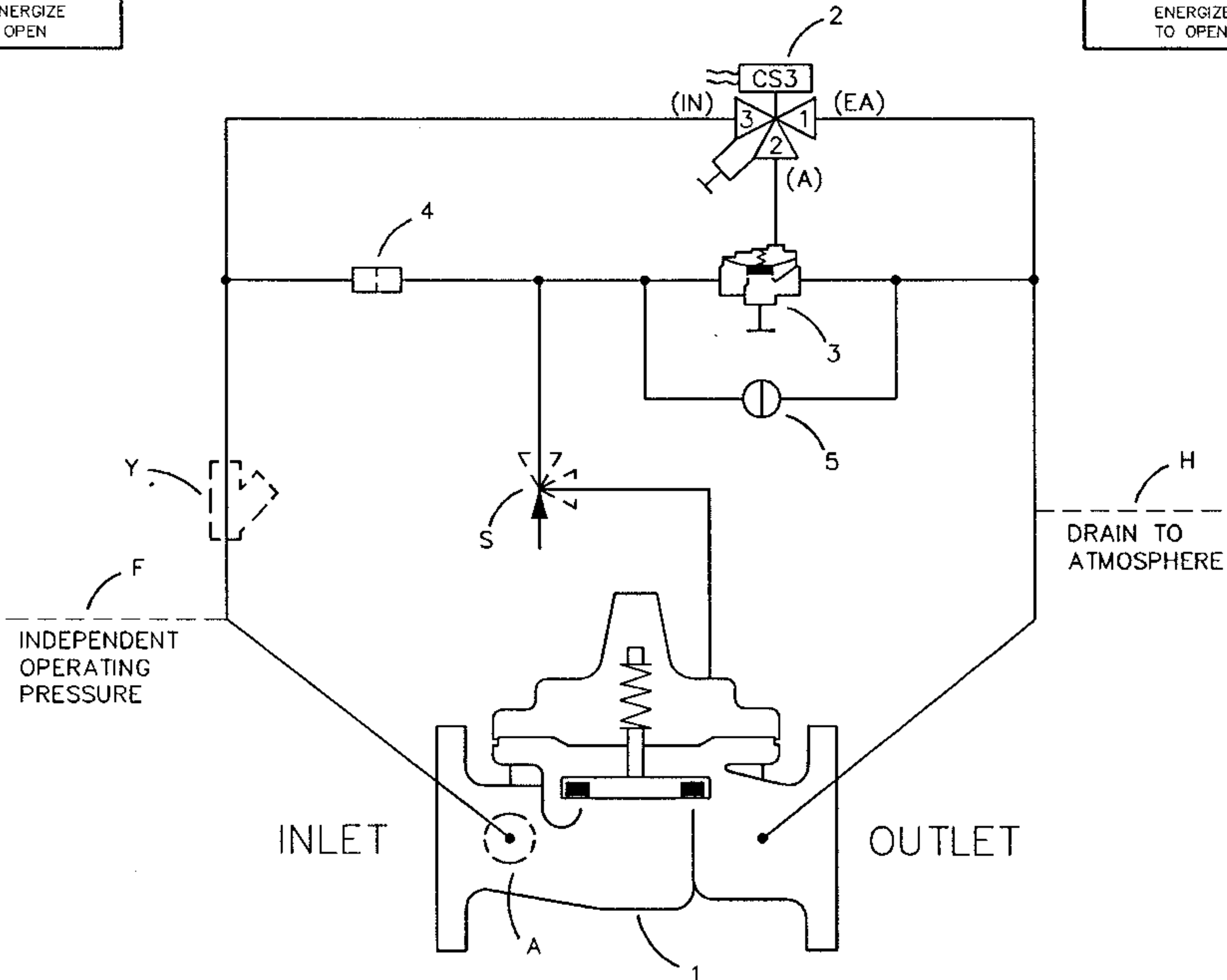
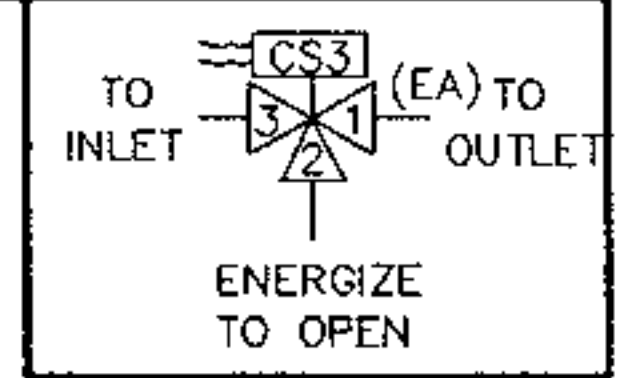
SOLENOID CONTROL VALVE,  
EQUIPPED WITH MANUAL BYPASS VALVE  
(SEA WATER FIRE DELUGE SERVICE)

DESIGN		
DRAW	EK	3-24-97
CHK'D	CH	3-26-97
APVD	CH	3-26-97



----- NOT FURNISHED BY CLA-VAL CO.

----- OPTIONAL FEATURES



\*100GS ON 3", 4", 6", 8" & 10" ONLY  
100GSKX ON 12" & 16" ONLY  
KX = WITH STANDARD HYTROL BODY

ITEM NO.	BASIC COMPONENTS	QTY
1	*100GS/100GSKX HYTROL (MAIN VALVE)	1
2	CS3XM SOLENOID CONTROL	1
3	100-01 AUXILIARY HYTROL (REVERSE FLOW)	1
4	X58C RESTRICTION ASSEMBLY	1
5	CK2 COCK (MANUAL BYPASS)	1

OPTIONAL FEATURE SUFFIX	ADDED TO CATALOG NUMBER	QTY
A	X46A FLOW CLEAN STRAINER	1
F	INDEPENDENT OPERATING PRESSURE	
H	DRAIN TO ATMOSPHERE	1
S	CV FLOW CONTROL (OPENING)	1
Y	X43 "Y" STRAINER	1

CAD REVISION RECORD - DO NOT REVISE MANUALLY  
 DESCRIPTION  
 BY DATE  
 EK 3-24-97  
 LTR  
 - RELEASED FOR PRODUCTION (NED 42195)  
 A CONNECTED PILOT LINE TO MAIN VALVE; ADDED OPTIONAL

"THIS DRAWING IS THE PROPERTY OF CLA-VAL CO. AND SAME AND COPIES MADE THEREOF, IF ANY, SHALL BE RETURNED TO IT UPON DEMAND. DELIVERY AND DISCLOSURE HEREOF ARE SOLELY UPON CONDITION THAT THE SAME SHALL NOT BE USED, COPIED OR REPRODUCED, NOR SHALL THE SUBJECT HEREOF BE DISCLOSED IN ANY MANNER TO ANYONE FOR ANY PURPOSE, EXCEPT AS HEREIN AUTHORIZED, WITHOUT PRIOR WRITTEN APPROVAL OF CLA-VAL CO. THIS DRAWING IS SUBMITTED CONFIDENTIALLY AND MAY NOT BE USED IN THE MANUFACTURE OF ANY MATERIAL OR PRODUCT OTHER THAN SUCH MATERIALS AND PRODUCTS FURNISHED TO CLA-VAL CO. WHETHER OR NOT THE EQUIPMENT OR INFORMATION SHOWN HEREON IS PATENTED OR OTHERWISE PROTECTED, FULL TITLE AND COPYRIGHTS, IF ANY, IN AND TO THIS DRAWING AND/OR INFORMATION DELIVERED OR SUBMITTED ARE FULLY RESERVED CLA-VAL CO."



**CLA-VAL CO.**

NEWPORT BEACH, CALIFORNIA

CATALOG NO.

134-60

DRAWING NO.

28301

REV

A

TYPE OF VALVE AND MAIN FEATURES

SOLENOID CONTROL VALVE,  
EQUIPPED WITH MANUAL BYPASS VALVE  
(SEA WATER FIRE DELUGE SERVICE)

DESIGN

DRAW

EK

3-24-97

CHK'D

CH

3-26-97

APVD

CH

3-26-97

OPERATING DATA

I. SOLENOID CONTROL FEATURE:

SOLENOID CONTROL (2) IS A DIRECT ACTING, 3-WAY SOLENOID CONTROL THAT CHANGES POSITION WHEN THE COIL IS ENERGIZED OR DE-ENERGIZED. THIS APPLIES OR RELIEVES PRESSURE IN THE COVER CHAMBER OF AUXILIARY HYTROL (3) PROVIDING THE OPERATION SHOWN IN THE FOLLOWING TABLE:

SOLENOID CONTROL (2)		134E-60 SERIES		134D-60 SERIES	
		AUXILIARY HYTROL (3) POSITION	MAIN VALVE (1) POSITION	AUXILIARY HYTROL (3) POSITION	MAIN VALVE (1) POSITION
POSITION	PORTS CONNECTED				
ENERGIZED	2 (A) & 1 (EA)	OPEN	OPEN	CLOSED	CLOSED
DE-ENERGIZED	2 (A) & 3 (IN)	CLOSED	CLOSED	OPEN	OPEN

NOTE: SOLENOID CONTROL (2) IS EQUIPPED WITH A MANUAL ACTUATOR WHICH CAN BE USED TO OPERATE THE SOLENOID WITHOUT ELECTRICAL POWER. AFTER MANUAL ACTUATION, ALWAYS RETURN THE ACTUATOR TO ITS ORIGINAL POSITION OR THE SOLENOID WILL NOT RETURN TO THE DE-ENERGIZED POSITION.

II. MANUAL BYPASS FEATURE:

OPEN CK2 COCK (5) TO BYPASS BOTH SOLENOID CONTROL (2) AND AUXILIARY HYTROL (3). THIS RELIEVES PRESSURE IN THE MAIN VALVE COVER, THEREBY, OPENING THE MAIN VALVE.

CK2 COCK (5) MUST BE CLOSE DURING NORMAL OPERATION.

CAD REVISION RECORD - DO NOT REVISE MANUALLY

DATE

BY

DESCRIPTION

SEE SHEET 1.

LTR



NEWPORT BEACH, CALIFORNIA

CATALOG NO.

134-60

DRAWING NO.

28301

REV

A

TYPE OF VALVE AND MAIN FEATURES

SOLENOID CONTROL VALVE,  
EQUIPPED WITH MANUAL BYPASS VALVE  
(SEA WATER FIRE DELUGE SERVICE)

DESIGN

DRAW

EK

3-24-97

CHK'D

CH

3-26-97

APVD

CH

3-26-97

### OPERATING DATA-CONTINUED

#### III. OPTIONAL FEATURE OPERATING DATA:

##### SUFFIX A (FLOW CLEAN STRAINER)

A SELF-CLEANING STRAINER IS INSTALLED IN THE MAIN VALVE INLET BODY BOSS WHICH PROTECTS THE PILOT SYSTEM FROM FOREIGN PARTICLES.

##### SUFFIX F (INDEPENDENT OPERATING PRESSURE)

PILOT SUPPLY PRESSURE IS OBTAINED FROM AN INDEPENDENT SOURCE. (PILOT SUPPLY PRESSURE IS OBTAINED FROM THE MAIN VALVE INLET IF SUFFIX (F) IS NOT SPECIFIED.) NOTE: INDEPENDENT OPERATING PRESSURE MUST BE EQUAL TO OR GREATER THAN PRESSURE AT THE MAIN VALVE INLET AT ALL TIMES.

##### SUFFIX H (ATMOSPHERIC DRAIN)

PILOT SYSTEM DRAIN LINE IS DISCHARGED TO ATMOSPHERE. [PILOT SYSTEM DRAIN LINE IS CONNECTED TO THE MAIN VALVE OUTLET BOSS IF SUFFIX (H) IS NOT SPECIFIED.]

##### SUFFIX S (OPENING SPEED CONTROL)

FLOW CONTROL (S) CONTROLS THE OPENING SPEED OF THE MAIN VALVE. TURN THE ADJUSTING STEM CLOCKWISE TO MAKE THE MAIN VALVE OPEN SLOWER.

##### SUFFIX Y (Y-STRAINER)

A Y-PATTERN STRAINER IS INSTALLED IN THE PILOT SUPPLY LINE TO PROTECT THE PILOT SYSTEM FROM FOREIGN PARTICLES. THE STRAINER SCREEN MUST BE CLEANED PERIODICALLY.

#### IV. CHECK LIST FOR PROPER OPERATION:

- ( ) SYSTEM VALVES OPEN UPSTREAM AND DOWNSTREAM.
- ( ) AIR REMOVED FROM THE MAIN VALVE COVER AND PILOT SYSTEM AT ALL HIGH POINTS.
- ( ) PERIODIC CLEANING OF STRAINER (Y) IS RECOMMENDED (OPTIONAL FEATURE).
- ( ) FLOW CONTROL VALVE (S) OPEN AT LEAST 1/4 TURN (OPTIONAL FEATURE).
- ( ) CORRECT VOLTAGE TO SOLENOID CONTROL (2).

CAD REVISION RECORD - DO NOT REVISE MANUALLY

DATE

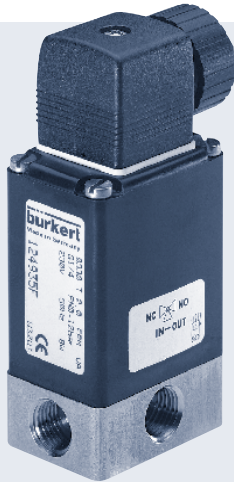
BY

DESCRIPTION

LTR

SEE SHEET 1.

## Flipper Solenoid Valve with Isolating Diaphragm



- 2/2 – 3/2-way; NPT 1/4, universal function
- Separating diaphragm isolates solenoid system from operating fluid
- Long service life, even in non-lube conditions
- Insensitive to contaminated fluids
- Specific clean and testing available
- Lockable manual override standard
- With electrical feedback signaller (optional)
- On request: explosion proof-, impulse- vacuum- or low power versions

The direct-acting 2-way and 3-way solenoid valve has a flipper as the switching method.

This unique valve hermetically isolates the actuator from the fluid. Making it less sensitive to contaminated fluids than a plunger-type system and provides a long service life, even in unlubricated applications.

The valve is available with several circuit functions. When the valve is energized the armature is pulled against a spring. The solenoid epoxy encapsulation efficiently dissipates the heat generated by the fluid.

### Technical Data

#### Design/Function

Direct-acting  
Fast-acting  
Insensitive to abrasive, slightly contaminated fluids

#### Body materials

Stainless steel / Brass

#### Applications

Neutral gases and liquids  
Aggressive fluids  
Deminerlized water  
Vacuum  
Unlubricated compressed air  
Water and gas analysis  
Dryer systems  
Pharmaceutical industry  
Food processing  
Steam traps Pilot valve for process valves

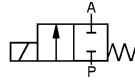
### Burkert Contromatic USA

2602 McGaw Avenue  
Irvine, CA 92614  
Tel. 949.223.3100  
Fax 949.223.3198  
www.burkert-usa.com

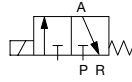
**Technical data**

**Circuit Function**

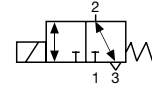
**A** 2/2-way valve, normally closed



**C** 3/2-way valve, normally closed



**T** 3/2-way valve, direct acting, universal function, any flow direction



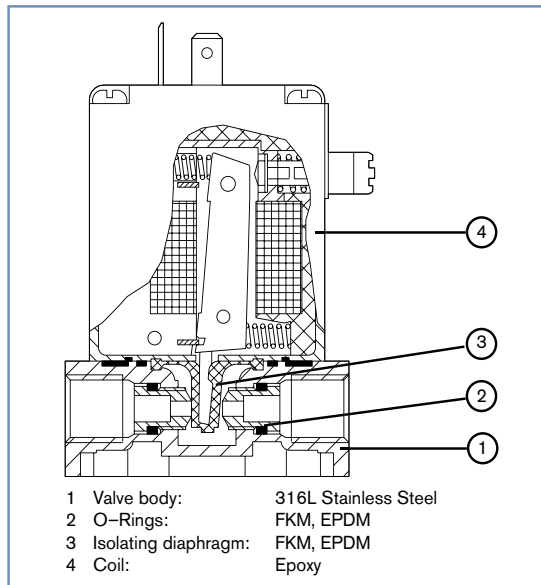
**Operating data (valve)**

<b>Pressure range max.</b>	232 PSI (see specifications)
<b>Port connection</b>	Threaded port NPT 1/4"
<b>Orifice</b>	5/64" to 5/32" Sub-base (on request)
<b>Body material</b>	316L Stainless steel / Brass
<b>Seal material</b>	FKM, EPDM
<b>Fluids</b>	EPDM: Alkalis, acids up to a medium concentration, alkaline washing and bleaching lyes. FKM: Oxydizing acids, salt solutions, exhaust gas
<b>Fluid temperature</b>	-22°F to 194°F (EPDM) -10°F to 176°F (FKM)
<b>Ambient temperature</b>	max. 131°F
<b>Max. viscosity</b>	approx. 37 mm <sup>2</sup> /s

**Operating data (actuator)**

<b>Operating voltages</b>	AC: 110, 230 V/50 Hz, DC: 24 V
<b>Voltage tolerance</b>	±10 %
<b>Power consumption</b>	AC 30 VA (inrush) 15 VA / 8 W (hold) DC 8 W 5 W (on request)
<b>Duty cycle</b>	100% continuously rated
<b>Cycling rate</b>	approx 1000 c.p.m.
<b>Protection class</b>	NEMA 4 (IP65) with cable plug Type 2508
<b>Electrical connection</b>	cable plug Type 2508 (DIN 43650, form A) for 7 mm o cable (supplied as standard)
<b>Installation</b>	as required

**Materials**



DTS 1000082396 EN Version: - Status: RL (released | freigegeben | valide) printed: 30.06.2006

**Ordering chart for standard versions** (other versions on request)

Circuit Functions	Orifice	C <sub>v</sub> <sup>1)</sup>	Port Connection [NPT]	Pressure Range [PSI]	Body Material	Seal Material	Voltage <sup>2)</sup>	Electrical Classifications <sup>3)</sup>	Item No.
<b>A</b>	1/8"	.27	1/4"	0 - 145	Stainless Steel	EPDM	24 DC	--	454 768 J
							120/60	--	US01957
						FKM	120/60	--	454 676 E
					Brass	FKM	120/60	UL/FM	US04159
					Stainless Steel	FKM	24 DC	--	US03936
					Brass	FKM	120/60	UL/FM	453 226 S
	5/32"	.33	1/4"	0 - 70	Stainless Steel	FKM	120/60	Haz-Ex	455 111 R
							240/60	UL/FM	453 228 C
						FKM	120/56	Haz-Ex	456 734 S
					Brass	FKM	240/60	UL/FM	453 229 D
					Stainless Steel	FKM	24 DC	UL/FM	453 020 T
					Brass	FKM	Haz-Ex	453 302 H	
<b>C</b>	1/8"	.27	1/4"	0 - 145	Brass	FKM	24/60	UL/FM	453 019 W
							120/60	UL/FM	453 018 V
							120/56	Haz-Ex	455 303 A
					Stainless Steel	FKM	120/60	UL/FM	453 232 Y
					Brass	FKM	120/56	Haz-Ex	455 304 B
					Brass	FKM	24 DC	UL/FM	453 235 T
	5/32"	.33	1/4"	0 - 70	Brass		Haz-Ex	455 305 C	
							120/60	UL/FM	452 863 Y
							120/56	Haz-Ex	457 263
					Brass	FKM	24 DC	UL/FM	454 762 C
					Stainless Steel	FKM	120/60	UL/FM	454 490 Z
					Stainless Steel	FKM	24 DC	UL/FM	US03365
<b>T</b>	1/8"	.27	1/4"	0 - 85	Brass	FKM	120/60	UL/FM	454 126 P
							24 DC	UL/FM	453 026 M
							120/60	UL/FM	453 024 K
					Stainless Steel	FKM	24 DC	UL/FM	US03061
					Brass	FKM	120/60	UL/FM	453 558 F
					Brass	FKM	24 DC	UL/FM	455 055 U
	5/32"	.33	1/4"	0 - 58	Brass		120/60	UL/FM	US03075
							120/56	Haz-Ex	455 114 L
						Stainless Steel	FKM	--	--
					Stainless Steel	FKM	120/60	UL/FM	453 634 T
					Stainless Steel	FKM	120/56	Haz-Ex	455 115 M
					Stainless Steel	FKM	120/56	Haz-Ex	455 115 M

**Notes:**

- C<sub>v</sub> reduced 20% with DC current operation.
- 120/56 suitable for 50Hz or 60 Hz power.
- U.L. is a U.L. listed valve per U.L. Standard Groups A, B, C, and D.
  - FM is FM approved for Haz Location, CL I Div 2, Groups A, B, C, and D.
  - Haz-Ex is FM approved for Haz location CL 1, Div 1, Groups A, B, C and D
  - Valve comes with no electrical plug if no electrical class is given.

Vacuum versions available on request.

**Options**

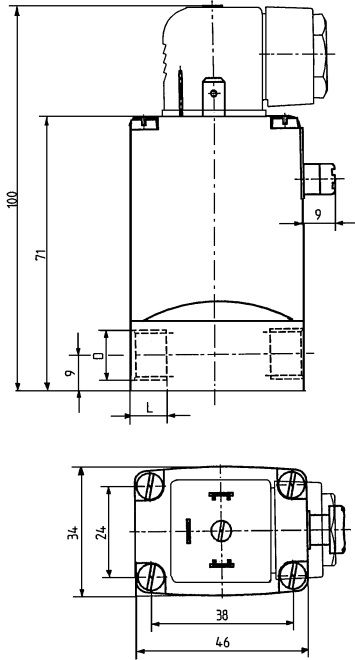
- Diagnosis: Electrical feedback signaller
- Impulse coil
- Specific clean and testing
- Vacuum version
- Brass valve body
- Sub-base version Type 331
- Explosion-proof version



Dimensions [mm]

2/2 - Way

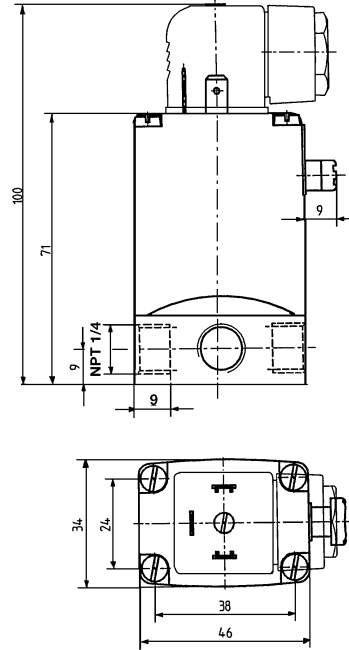
Standard Version



Dimensions [mm]

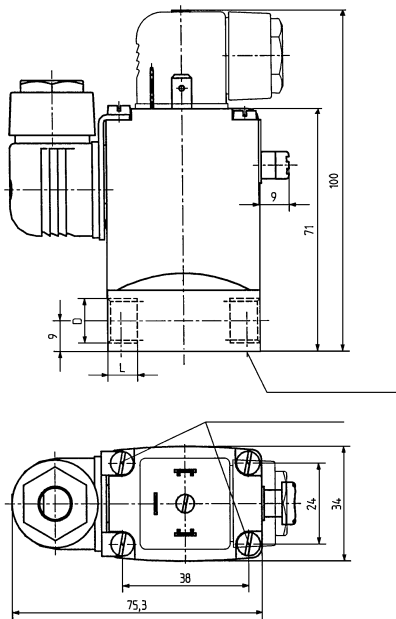
3/2 - Way

Standard Version

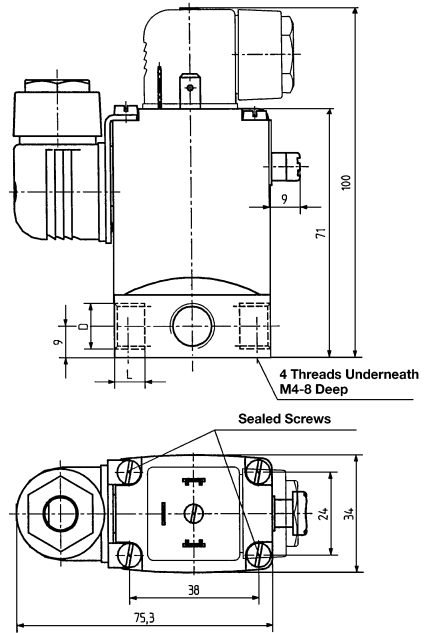


DTS 1000082396 EN Version: - Status: RL (released | freigegeben | valide) printed: 30.06.2006

Valve with Electrical Feedback Signaller Type 1060  
(on request)



Valve with Electrical Feedback Signaller Type 1060  
(on request)



In case of special application conditions,  
please consult for advice.

We reserve the right to make technical  
changes without notice.

0602/2\_US-en

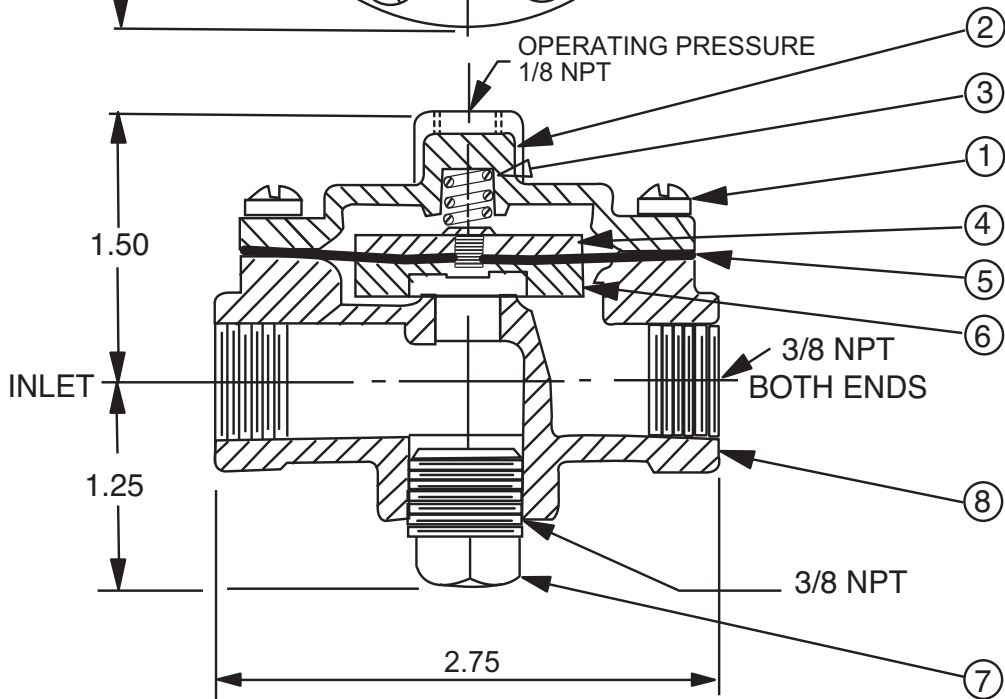
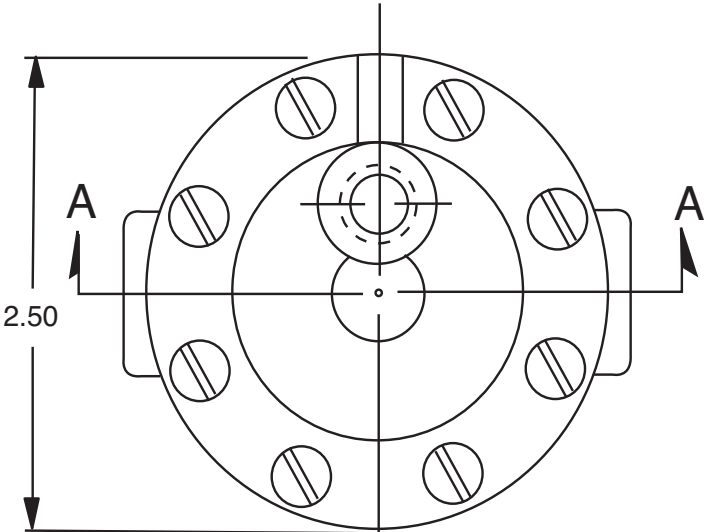




—MODEL —

**100-01**

# 3/8"-1 Hytrol Valve



## SECTION AA

## 100-01 3/8" HYTROL VALVE

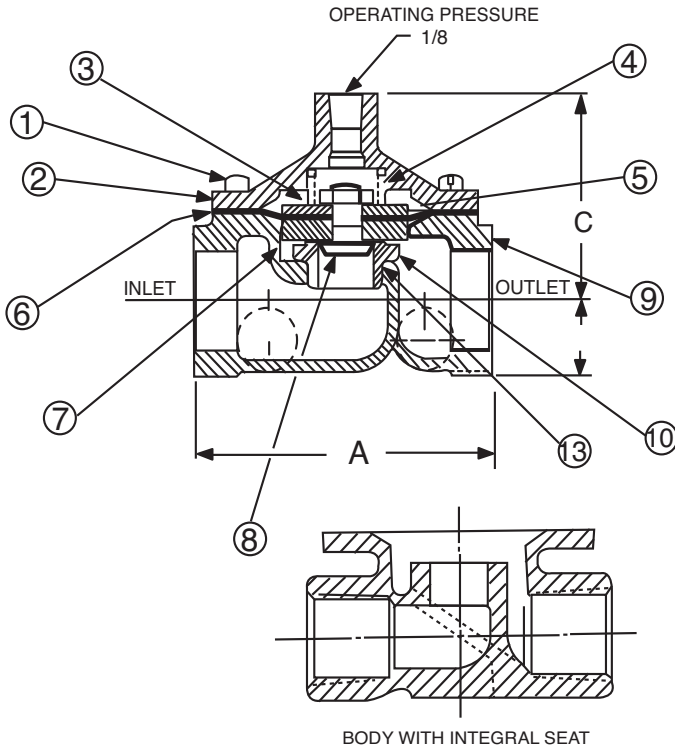
### PARTS LIST

ITEM	DESCRIPTION
1.	Cover Screw (8 Required)
2.	Cover
3.	Spring
4.	Diaphragm Washer
* 5.	Diaphragm
* 6.	Disc Retainer Assembly
7.	Body Plug (3/8 NPT)
8.	Body

\* Recommended Spare Parts

**When Ordering parts, please specify**

- All nameplate data
- Description
- Item Number
- Material

—MODEL— **100-01****1/2"-3/4"-1" Hytrol Valve****100-01 3/4" & 1/2" Hytrol Valve****PARTS LIST**

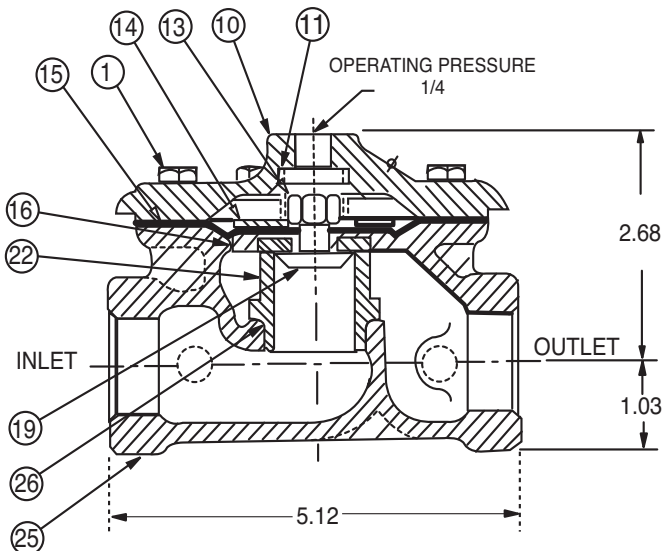
ITEM	DESCRIPTION
1	COVER SCREW
2	COVER
3	SPRING
4	STEM NUT
5	DIAPHRAGM WASHER
*6	DIAPHRAGM
*7	DISC RETAINER ASSEMBLY
8	DISC GUIDE & STEM
9	BODY
10	SEAT
11	NAMEPLATE
12	BODY PLUG HEX HD.
13	O-RING SEAT (FOR OLD STYLE BODY ONLY)

\* Recommended Spare Parts

	1/2	3/4
A	1-7/16	3-1/2
C (MAXIMUM)	2-3/8	2-3/8
D	25/32	29/32

**When Ordering parts, please specify**

- All nameplate data
- Description
- Item Number
- Material

**100-01 1" Hytrol Valve****PARTS LIST**

ITEM	DESCRIPTION
1	COVER SCREW
2	NAMEPLATE
3	NAMEPLATE SCREW
10	COVER
11	SPRING
13	STEM NUT
14	DIAPHRAGM WASHER
15	DIAPHRAGM
16	DISC RETAINER ASSEMBLY
19	DISC GUIDE
22	SEAT
24	BODY PLUG
25	BODY
26	O-RING, SEAT

\* Recommended Spare Parts



NEWPORT BEACH, CALIFORNIA

CATALOG NO.  
X58C

DRAWING NO.  
48834

REV  
AP

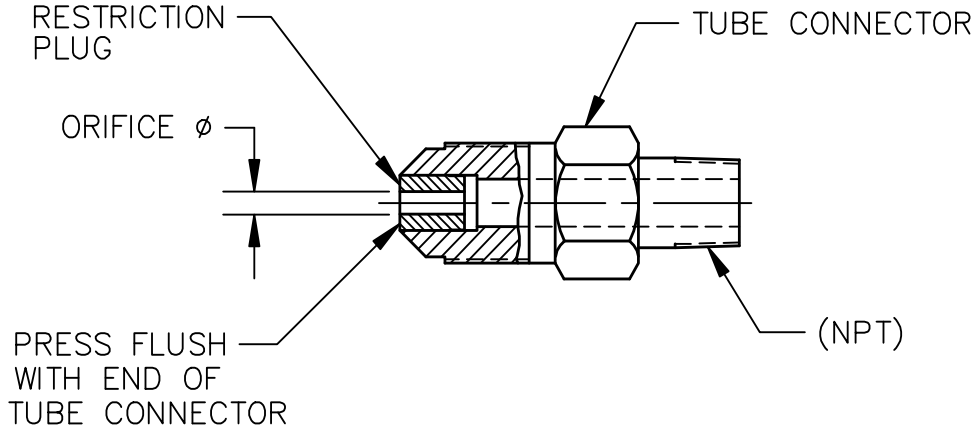
TYPE OF VALVE AND MAIN FEATURES

X58C RESTRICTION ASSEMBLIES

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

TLC	10-18-94
AK	09-15-98
EK	9-29-11
AM	REINSTATED PN 68565B & 64673H (ECO 15043)
AN	ADDED PN 48834-05F (NED 43663)
AP	ADDED PN 48834-06D (NED 75779)

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



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.
4. SEE SHEETS 3 & 4 FOR UL APPROVED DRAWING.



NEWPORT BEACH, CALIFORNIA

CATALOG NO.  
X58C

DRAWING NO.  
48834

REV  
AP

TYPE OF VALVE AND MAIN FEATURES

X58C RESTRICTION ASSEMBLIES


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

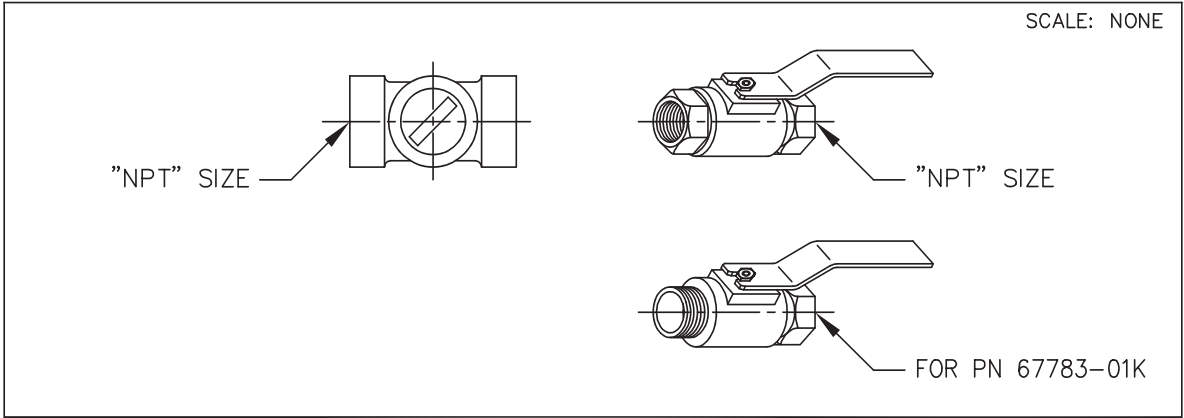
X58C STOCK NO.	TUBE CONNECTOR		RESTRICTION PLUG	
	SIZE TUBE X NPT	MATERIAL	ORIFICE DIA	MATERIAL
	<u>37° FLARE</u>			
**44734C	3/8 X 3/8-18 NPT	ALUMINUM	.125 (1/8)	S. STEEL
	<u>45° FLARE</u>			
*37814B	1/4 X 1/8-27 NPT	BRASS	.031 (1/32)	S. STEEL
*80500C	1/4 X 1/8-27 NPT	BRASS	.062 (1/16)	S. STEEL
*67739D	3/8 X 1/8-27 NPT	BRASS	.040	S. STEEL
*64672K	3/8 X 3/8-18 NPT	BRASS	.062 (1/16)	S. STEEL
*99329-01D	3/8 X 3/8-18 NPT	BRASS	.094 (3/32)	S. STEEL
**79730J	1/2 X 1/2-14 NPT	BRASS	.125 (1/8)	S. STEEL
**48834-05F	3/8 X 3/8-18 NPT	BRASS	.125 (1/8)	S. STEEL
*85484E	1/4 X 1/8-27 NPT	BRASS	.031 (1/32)	DELTRIN
*85486K	1/4 X 1/8-27 NPT	BRASS	.040	DELTRIN
**48834-03A	1/4 X 1/8-27 NPT	BRASS	.125 (1/8)	DELTRIN
*48834-04J	1/4 X 1/8-27 NPT	BRASS	.093	DELTRIN
*88409-01G	3/8 X 1/8-27 NPT	BRASS	.031 (1/32)	DELTRIN
*88409J	3/8 X 1/8-27 NPT	BRASS	.052	DELTRIN
*42346H	3/8 X 1/8-27 NPT	BRASS	.062 (1/16)	DELTRIN
**48834-01E	3/8 X 1/8-27 NPT	BRASS	.125 (1/8)	DELTRIN
*42775H	3/8 X 1/4-18 NPT	BRASS	.062 (1/16)	DELTRIN
**63604D	3/8 X 1/4-18 NPT	BRASS	.156 (5/32)	DELTRIN
*10253D	3/8 X 3/8-18 NPT	BRASS	.031 (1/32)	DELTRIN
*46946A	3/8 X 3/8-18 NPT	BRASS	.062 (1/16)	DELTRIN
**64673H	3/8 X 3/8-18 NPT	BRASS	.125 (1/8)	DELTRIN
*68565B	3/8 X 3/8-18 NPT	BRASS	.094 (3/32)	DELTRIN
**43302K	3/8 X 3/8-18 NPT	BRASS	.188 (3/16)	DELTRIN
**12900H	1/2 X 1/2-14 NPT	BRASS	.125 (1/8)	DELTRIN
**48834-02C	1/2 X 1/2-14 NPT	BRASS	.188 (3/16)	DELTRIN
**48834-06D	1/2 X 1/2-14 NPT	BRASS	.250 (1/4)	DELTRIN

CAD REVISION RECORD - DO NOT REVISE MANUALLY  
 DATE  
 BY  
 DESCRIPTION  
 SEE SHEET 1  
 LTR

THIS DRAWING IS THE PROPERTY OF CLA-VAL CO. AND SAME AND COPIES MADE THEREOF, IF ANY, SHALL BE RETURNED TO IT UPON DEMAND. DELIVERY AND DISCLOSURE HEREOF ARE SOLELY UPON CONDITION THAT THE SAME SHALL NOT BE USED, COPIED OR REPRODUCED, NOR SHALL THE SUBJECT HEREOF BE DISCLOSED IN ANY MANNER TO ANYONE FOR ANY PURPOSE, EXCEPT AS HEREIN AUTHORIZED, WITHOUT PRIOR WRITTEN APPROVAL OF CLA-VAL CO. THIS DRAWING IS SUBMITTED CONFIDENTIALLY AND MAY NOT BE USED IN THE MANUFACTURE OF ANY MATERIAL OR PRODUCT OTHER THAN SUCH MATERIALS AND PRODUCTS FURNISHED TO CLA-VAL CO. WHETHER OR NOT THE EQUIPMENT OR INFORMATION SHOWN HEREON IS PATENTED OR OTHERWISE PROTECTED, FULL TITLE AND COPYRIGHTS, IF ANY, IN AND TO THIS DRAWING AND/OR INFORMATION DELIVERED OR SUBMITTED ARE FULLY RESERVED CLA-VAL CO.

AK	07-10-08	BB	ADDED PN'S 67783-62B (NED 62200)
AK	08-14-08	BC	ADDED PN'S 67783-63K (NED 62218)
PC	10-1-2008	BD	ADDED PN 67783-64H (NED 62446)
CAD REVISION RECORD - DO NOT REVISE MANUALLY		BY	DATE
LTR	DESCRIPTION		
A-AY	SEE REVISION FILE		
BA	ADDED PN'S 67783-59H, 67783-60F & 67783-61D (ECO 20434)	AK	03-14-06

 <b>CLA-VAL CO.</b> NEWPORT BEACH, CALIFORNIA	CATALOG NO.	DRAWING NO.	REV
		67783	BD
TYPE OF VALVE AND MAIN FEATURES		DESIGN	
<h1 style="text-align: center;">CK2 COCK/BALL VALVE</h1>		DRAWN	MGR 4-02-80
		CHK'D	KD 4-03-80
		APV'D	CH 4-07-80



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	MONEL W/ LOCKING 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	-63K	3/8"
-04D -60F ***	-12G	-20K	-28C	-54J	-43B SUPSD BY-04D	-49J	-62B	1/2"
-05A -61D ***	-13E	-21H	-29A	-64H	-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)

"THIS DRAWING IS THE PROPERTY OF CLA-VAL CO. AND SAME AND COPIES MADE THEREOF, IF ANY, SHALL BE RETURNED TO IT UPON DEMAND. DELIVERY AND DISCLOSURE HEREOF ARE SOLELY UPON CONDITION THAT THE SAME SHALL NOT BE USED, COPIED OR REPRODUCED, NOR SHALL THE SUBJECT HEREOF BE DISCLOSED IN ANY MANNER TO ANYONE FOR ANY PURPOSE, EXCEPT AS HEREIN AUTHORIZED, WITHOUT PRIOR WRITTEN APPROVAL OF CLA-VAL CO. THIS DRAWING IS SUBMITTED CONFIDENTIALLY AND MAY NOT BE USED IN THE MANUFACTURE OF ANY MATERIAL OR PRODUCT OTHER THAN SUCH MATERIALS AND PRODUCTS FURNISHED TO CLA-VAL CO. WHETHER OR NOT THE EQUIPMENT OR INFORMATION SHOWN HEREON IS PATENTED OR OTHERWISE PROTECTED, FULL TITLE AND COPYRIGHTS, IF ANY, IN AND TO THIS DRAWING AND/OR INFORMATION DELIVERED OR SUBMITTED ARE FULLY RESERVED CLA-VAL CO."



— MODEL — **X46**

# Flow Clean Strainer

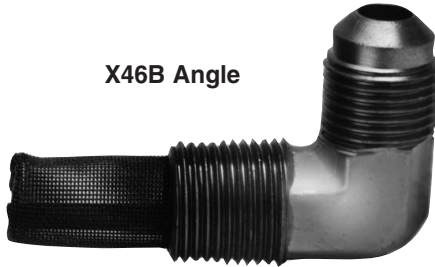


**X46A Straight**

- Self Scrubbing Cleaning Action
- Straight Type or Angle Type

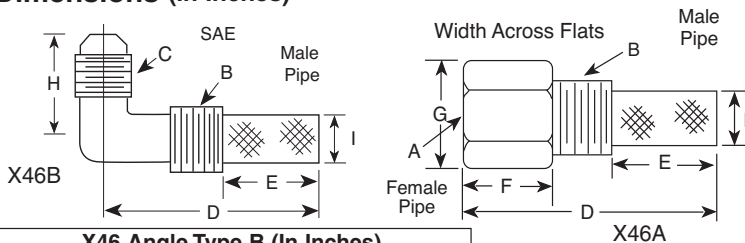
The Cla-Val Model X46 Strainer is designed to prevent passage of foreign particles larger than .015". It is especially effective against such contaminant as algae, mud, scale, wood pulp, moss, and root fibers. There is a model for every Cla-Val. valve.

**X46B Angle**



The X46 Flow Clean strainer operates on a velocity principle utilizing the circular "air foil" section to make it self cleaning. Impingement of particles is on the "leading edge" only. The low pressure area on the downstream side of the screen prevents foreign particles from clogging the screen. There is also a scouring action, due to eddy currents, which keeps most of the screen area clean.

## Dimensions (In Inches)



B(NPT)	C(SAE)	D	E	H	I
1/8	1/4	1-3/8	5/8	7/8	1/4
1/4	1/4	1-3/4	3/4	1	3/8
3/8	1/4	2	7/8	1	1/2
3/8	3/8	1-7/8	7/8	1	1/2
1/2	3/8	2-3/8	1	1-1/4	5/8

A (NPT)	B (NPT)	D	E	F	G	I
1/8	1/8	1-3/4	3/4	1/2	1/2	1/4
1/4	1/4	2-1/4	1	3/4	3/4	3/8
3/8	3/8	2-1/2	1	7/8	7/8	1/2
3/8	1/2	2-1/2	1-1/4	1/2	7/8	3/4
1/2	1/2	3	1-1/4	1	1-1/8	3/4
3/8	3/4	3-3/8	2	1/2	1	7/8
3/4	3/4	4	2	1	1-1/2	7/8
3/8	1	4-1/4	2-3/4	1/2	1-3/8	7/8
1	1	4-1/2	2-3/4	1-1/4	1-3/4	7/8
1/2	1	4-1/4	2-3/4	1/2	1-3/8	7/8

### When Ordering, Please Specify:

- Catalog Number X46
- Straight Type or Angle Type
- Size Inserted Into and Size Connection
- Materials

## INSTALLATION

The strainer is designed for use in conjunction with a Cla-Val Main Valve, but can be installed in any piping system where there is a moving fluid stream to keep it clean. When it is used with the Cla-Val Valve, it is threaded into the upstream body port provided for it on the side of the valve. It projects through the side of the Main Valve into the flow stream. All liquid shunted to the pilot control system and to the cover chamber of the Main Valve passes through the X46 Flow Clean Strainer.

## INSPECTION

Inspect internal and external threads for damage or evidence of cross-threading. Check inner and outer screens for clogging, embedded foreign particles, breaks, cracks, corrosion, fatigue, and other signs of damage.

## DISASSEMBLY

Do not attempt to remove the screens from the strainer housing.

## CLEANING

After inspection, cleaning of the X46 can begin. Water service usually will produce mineral or lime deposits on metal parts in contact with water. These deposits can be cleaned by dipping X46 in a 5-percent muriatic acid solution just long enough for deposit to dissolve. This will remove most of the common types of deposits.

**Caution: use extreme care when handling acid.** If the deposit is not removed by acid, then a fine grit (400) wet or dry sandpaper can be used with water. Rinse parts in water before handling. An appropriate solvent can clean parts used in fueling service. Dry with compressed air or a clean, lint-free cloth. Protect from damage and dust until reassembled.

## REPLACEMENT

If there is any sign of damage, or if there is the slightest doubt that the Model X46 Flow Clean Strainer may not afford completely satisfactory operation, replace it. Use Inspection steps as a guide. Neither inner screen, outer screen, nor housing is furnished as a replacement part. Replace Model X46 Flow Clean Strainer as a complete unit.

When ordering replacement Flow-Clean Strainers, it is important to determine pipe size of the tapped hole into which the strainer will be inserted (refer to column A or F), and the size of the external connection (refer to column B or G).



— MODEL — **CV**  
**Flow Control**



### DESCRIPTION

The Cla-Val Model CV Flow Control is a simply-designed, spring-loaded check valve. Rate of flow is full flow in one direction and restricted in other direction. Flow is adjustable in the restricted direction. It is intended for use in conjunction with a pilot control system on a Cla-Val Automatic Control Valve.

### OPERATION

The CV Flow Control permits full flow from port A to B, and restricted flow in the reverse direction. Flow from port A to B lifts the disc from seat, permitting full flow. Flow in the reverse direction seats the disc, causing fluid to pass through the clearance between the stem and the disc. This clearance can be increased, thereby increasing the restricted flow, by screwing the stem out, or counter-clockwise. Turning the stem in, or clockwise reduces the clearance between the stem and the disc, thereby reducing the restricted flow.

### INSTALLATION

Install the CV Flow Control as shown in the valve schematic. All connections must be tight to prevent leakage.

### DISASSEMBLY

Follow the sequence of the item numbers assigned to the parts in the cross sectional illustration for recommended order of disassembly.

Use a scriber, or similar sharp-pointed tool to remove O-ring from the stem.

### INSPECTION

Inspect all threads for damage or evidence of cross-threading. Check mating surface of seat and valve disc for excessive scoring or embedded foreign particles. Check spring for visible distortion, cracks and breaks. Inspect all parts for damage, corrosion and cleanliness.

### CLEANING

After disassembly and inspection, cleaning of the parts can begin. Water service usually will produce mineral or lime deposits on metal parts in contact with water. These deposits can be cleaned by dipping the parts in a 5-percent muriatic acid solution just long enough for deposits to dissolve. This will remove most of the common types of deposits. **Caution: use extreme care when handling acid.** If the deposit is not removed by acid, then a fine grit (400) wet or dry sandpaper can be used with water. Rinse parts in water before handling. An appropriate solvent can clean parts used in fueling service. Dry with compressed air or a clean, lint-free cloth. Protect from damage and dust until reassembled.

### REPAIR AND REPLACEMENT

Minor nicks and scratches may be polished out using a fine grade of emery or crocus cloth; replace parts if scratches cannot be removed.

Replace O-ring packing and gasket each time CV Flow Control is overhauled.

Replace all parts which are defective. Replace any parts which create the slightest doubt that they will not afford completely satisfactory operation. Use Inspection steps as a guide.

### REASSEMBLY

Reassembly is the reverse of disassembly; no special tools are required.

### TEST PROCEDURE

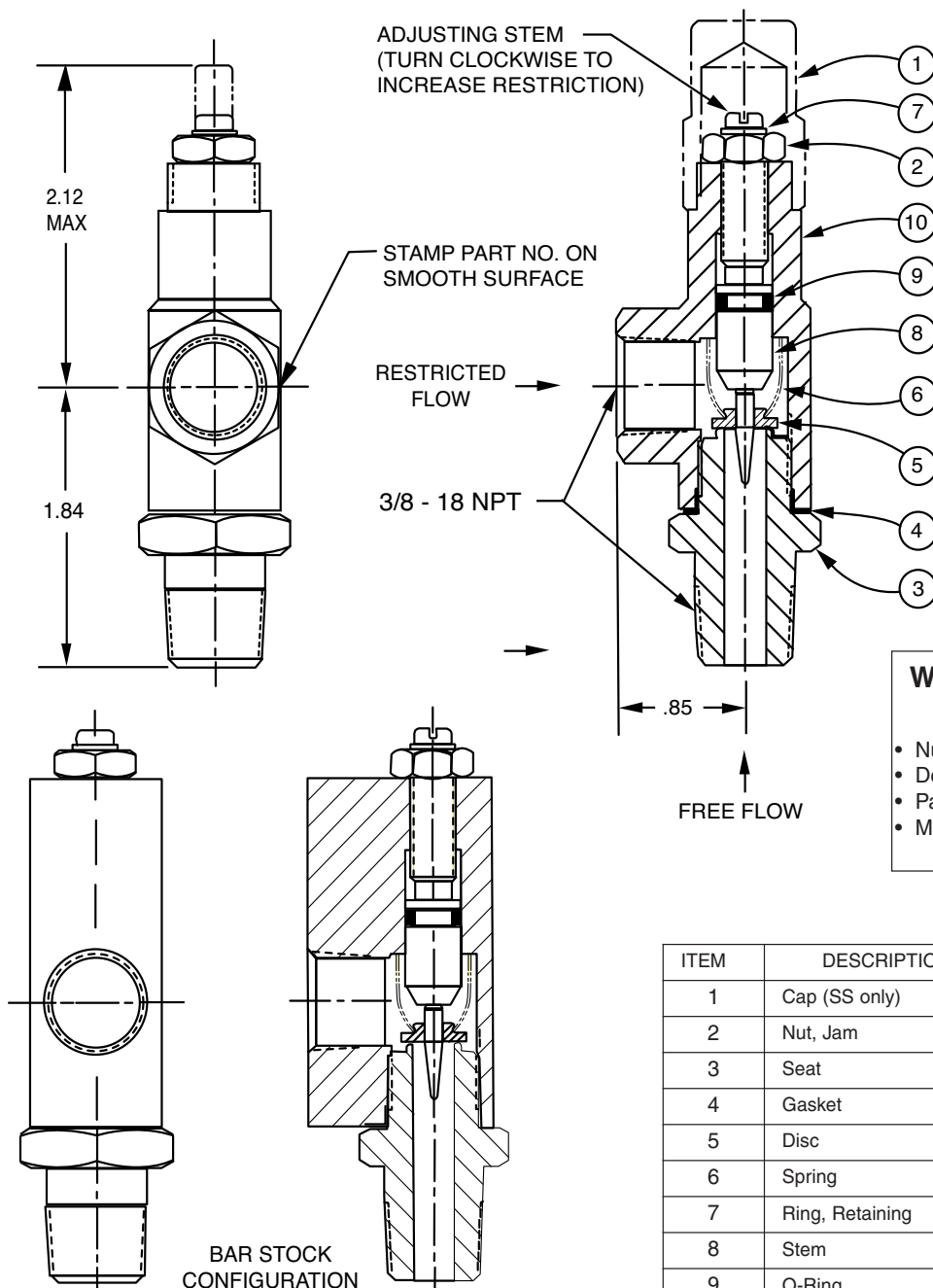
No testing of the flow Control is required prior to reassembly to the pilot control system on Cla-Val Main Valve.





CV

3/8" Flow Control



**When ordering parts,  
please specify:**

- Number Stamped on Side
- Description (CV Flow Control)
- Part Description
- Material

ITEM	DESCRIPTION	QTY
1	Cap (SS only)	1
2	Nut, Jam	1
3	Seat	1
4	Gasket	1
5	Disc	1
6	Spring	1
7	Ring, Retaining	1
8	Stem	1
9	O-Ring	1
10	Housing	1



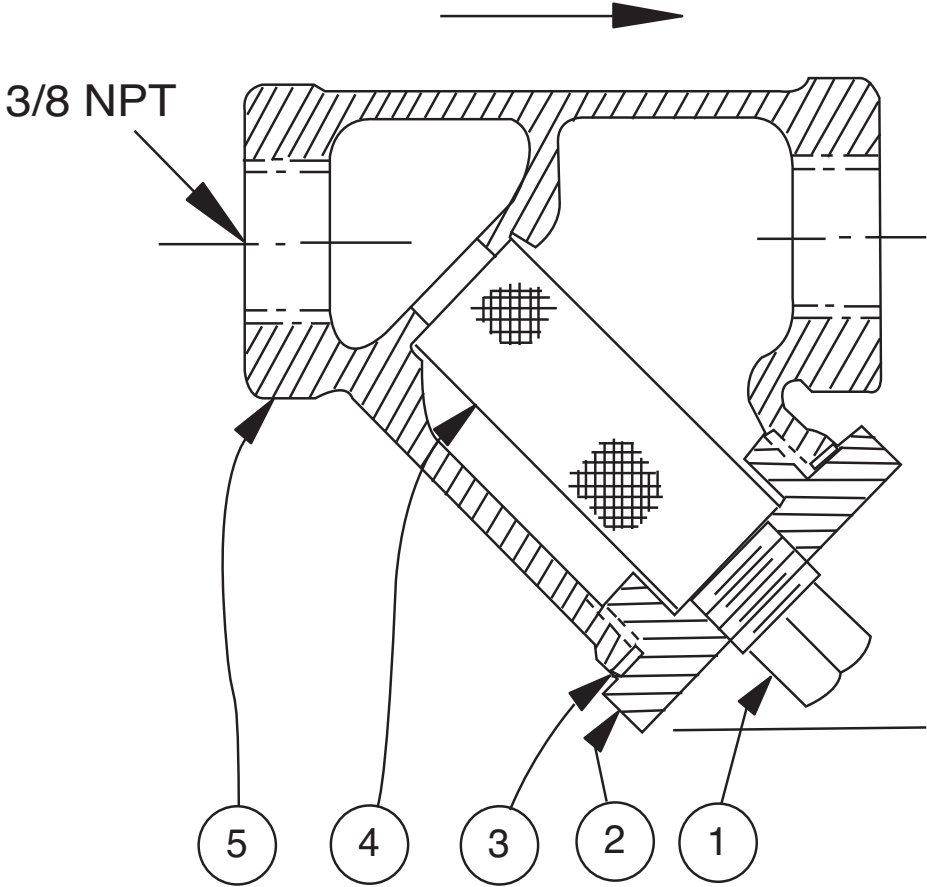
# X43 Strainer

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

No parts available. Replacement assembly only.

Standard 60 mesh pilot system strainer for fluid service.

Size	Stock Number
3/8 x 3/8	33450J

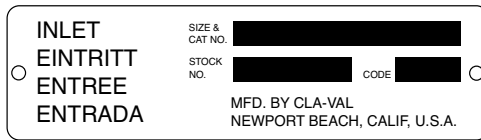


### Proper Identification

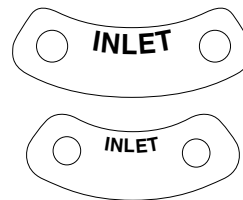
For ordering repair kits, replacement parts, or for inquiries concerning valve operation, it is important to properly identify Cla-Val products already in service by including all nameplate data with your inquiry. Pertinent product data includes valve function, size, material, pressure rating, end details,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



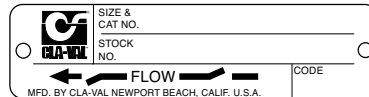
This brass plate appears on valves sized 2 1/2" and larger and is located on the top of the inlet flange.



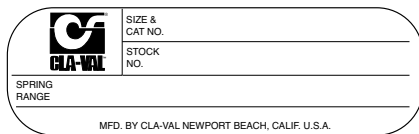
These two brass plates appear on 3/8", 1/2", and 3/4" size valves and are located on the valve cover.



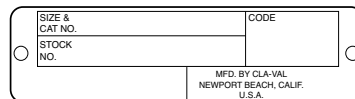
This brass plate appears on altitude valves only and is found on top of the outlet flange.



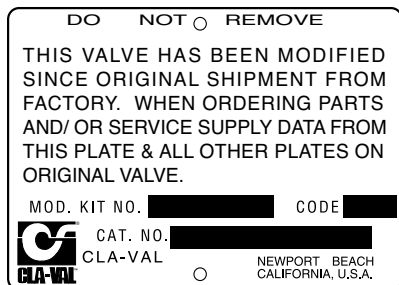
These two brass plates appear on threaded valves 1" through 3" size or flanged valves 1" through 2". It is located on only one side of the valve body.



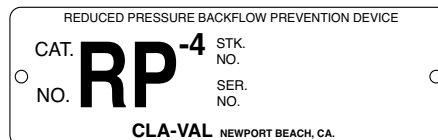
This tag is affixed to the cover of the pilot control valve. The adjustment range appears in the spring range section.



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 \$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.

### RISK

All goods are shipped at the risk of the purchaser after they have been delivered by 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% (\$100 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.



E-Product I.D. (R-3/2011)

## CLA-VAL

PO Box 1325 Newport Beach CA 92659-0325  
Phone: 949-722-4800 • Fax: 949-548-5441

### CLA-VAL CANADA

4687 Christie Drive  
Beamsville, Ontario  
Canada L0R 1B4  
Phone: 905-563-4963  
Fax: 905-563-4040

### CLA-VAL EUROPE

Chemin des Mesanges 1  
CH-1032 Romanel/  
Lausanne, Switzerland  
Phone: 41-21-643-15-55  
Fax: 41-21-643-15-50

©COPYRIGHT CLA-VAL 2011 Printed in USA  
Specifications subject to change without notice.

[www.cla-val.com](http://www.cla-val.com)

Represented By:



— MODEL — **REPAIR KITS**  
**Seawater Service**

**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"	33272F	C2525	24"	N/A	89068B

**Consult Factory**

**Repair Kits for 100-01/100-20 Hytrol Valves**

**For:** Hytrol Main Valves—**125/150 Pressure Class Only.**

Supplied Shrink Wrapper (1" and smaller) or Bagged (6" and larger)

Includes: Diaphragm, Disc (or Disc Assembly) and spare Spacer Washers.

**Seawater Service**

**Repair Kits**

Buna-N® Standard				Ston (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"	N/A	9169820K		
10"	9817902B	9817901D					
12"	9817903K	9817902B					
14"	9817904H	N/A					
16"	9817905E	9817903K					
20"	N/A	9817905E					
24"	N/A	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

Supplied Shrink Wrapped (4" and Smaller) or Bagged (6" and larger)

Includes: Diaphragm, Disc (or Disc Assembly) and spare Spacer Washers.

Valve Size	Kit Stock Number		Valve Size	Kit Stock Number	
	100-02			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"	9169904I		6"	9169913C	9169912E
2"	9169905J		8"	9169916G	9169913C
			10"	N/A	9169916G

# Consult Factory Seawater Service Repair Kits

Larger Sizes: Consult Factory.

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

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

Supplied Shrink Wrapped (4" and Smaller) or Bagged (6" and larger)

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", 24"	N/A	20210907F

Larger Sizes: Consult Factory.

## Repair Kits for Pilot Control Valves

Supplied Shrink Wrapped 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 & 7-A	1263901K	CDB-KB	9170012A
CDB-7	9170017K	CRA (w/bucking spring)	9170001D	CRA-KB	9170018H
CDH-2	18225D	CRD (w/bucking spring)	9170002B	CRD-KB (w/bucking spring)	9170008J
CDHS-2	44607A	CRD (no bucking spring)	9170003K	CRL-KB	9170013J
CDHS-2B	9170004H	CRD-22	98923G	CDHS-2BKB	9170010E
CDHS-2F	9170005E	CRL (55F, 55L)	9170007A	CDHS-2FKB	9170011C
CDHS-3C-A2	24657K	CRL-4A	43413E	CDHS-18KB (no bucking spring)	9170009G
CDHS-8A	2666901A	CRL-5 (55B)	65755B	102C-KB	1726202D
CDHS-18	9170003K	CRL-5A (55G)	20666E	Buna-N®	
CDS-4	9170014G	CV	9170019F	CRD DISC RET. (SOLID)	C5256H
CDS-5	14200A	X105L (O-ring)	00951E	CRD DISC RET. (SPRING)	C5255K
CDS-6	20119301A	102B-1	1502201F		
CFM-2, CFM-9, CFCM-M1	12223E	102C-2 & -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 & Rod	89016A
CFC2-C1	Disc, Distributor & Seals	2674701E
CSM 11-A2-2	Mechanical Parts Assy.	97544B
CSM 11-A2-2	Pilot Assembly Only	18053K
33A 1"	Complete Internal Assembly & Seal	2036030B
33A 2"	Complete Internal Assembly & Seal	2040830J

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