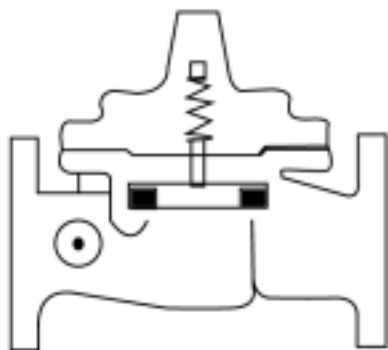


CLA-VAL

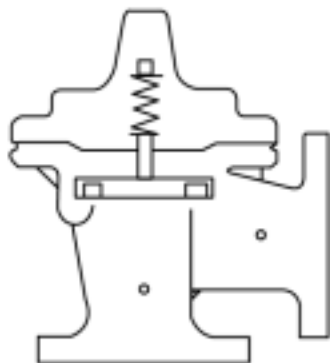
AUTOMATIC CONTROL VALVES

7100

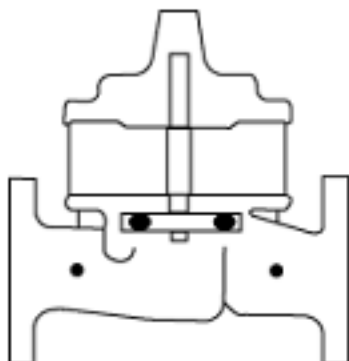
Place this manual with personal responsible
for maintenance of this valve



INSTALLATION



OPERATION



MAINTENANCE



CLA-VAL CO.

17TH AND PLACENTIA • NEWPORT BEACH • CALIF.

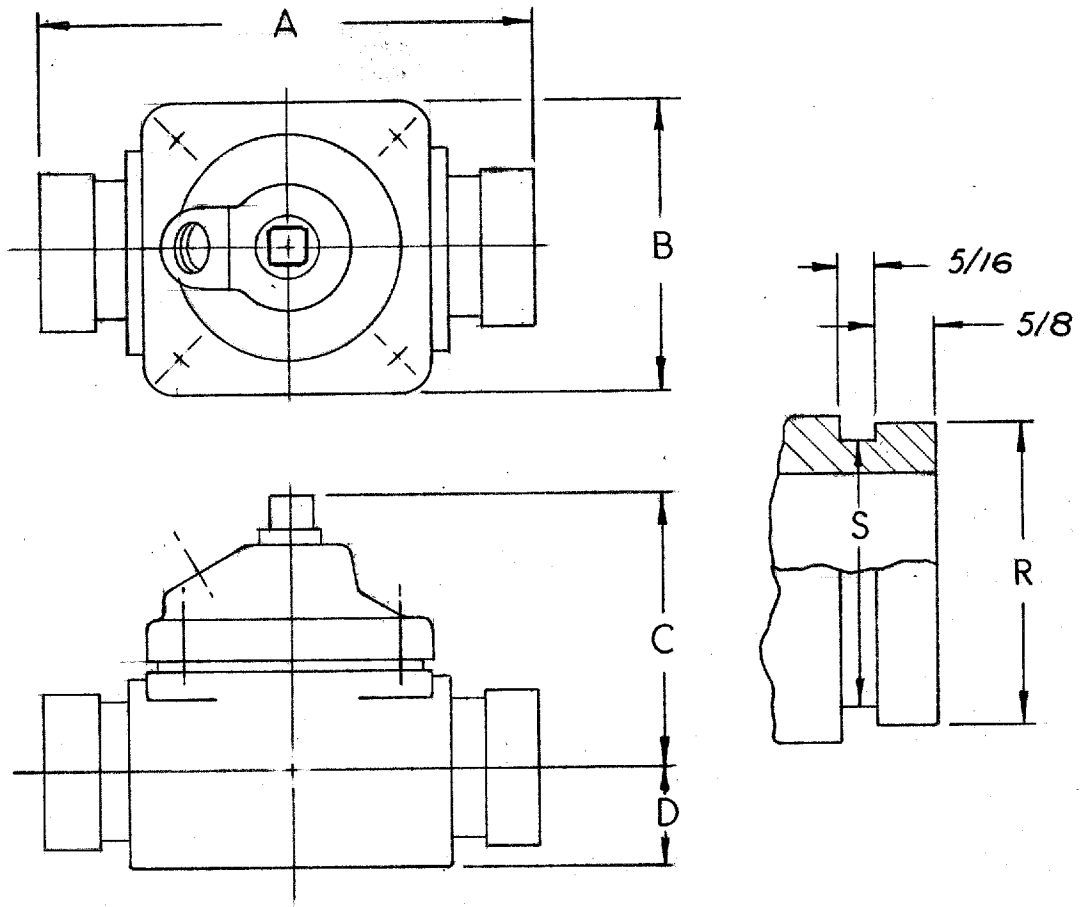
CATALOG NO. 7100

DESCRIPTION

7100 REMOTE CONTROL VALVE

DRAWING NO. 34870

DATE 4-17-58



VALVE SIZE	DIMENSIONS INCHES					
	A	B	C	D	R	S
1	5 1/4	3	3 3/4	1	1.312	1.190-1.175
1 1/4	6 1/4	4	5 5/8	1 5/16	1.660	1.535-1.520
1 1/2	6 1/4	4	5 5/8	1 5/16	1.900	1.775-1.760
2	7 1/4	4 7/8	7 7/16	1 5/8	2.375	2.250-1.235
2 1/2	8 3/8	5 3/4	9 3/8	2 5/8	2.875	2.720-2.702
3	9	6 7/16	10 7/16	2 7/8	3.500	3.344-3.326

For other dimensions and pertinent engineering information see drawing 34792.

Remote Control Valve



- Packless design--no lubrication
- Precisely engineered--close drip-tight
- Full line-sized opening--low flow resistance
- No internal or external orifice
- Diaphragm is fully supported for longer life
- Movable parts & seat ring replaceable without removing valve from line

The Cla-Val Model 7100 Valve is a diaphragm actuated, hydraulically operated valve designed for low original cost and long life. Its simple, rugged construction allows it to perform dependably under the most severe operating conditions. Its compact design makes it easy to install.

The 7100 Valve is ideal for any application where the need is for On-Off control, the controlling medium of which is usually the liquid itself, passing through a remote control. The control pressure, when applied against the flexible diaphragm, produces a drip-tight seal between the valve disc and its seat. In the open position, the diaphragm assembly lifts to provide full flow.

The 7100 Valve provides all the advantages of an automatic control valve at a cost comparable to manual valves of the same size and quality.

Specifications

Sizes:	1-3 inch Threaded 2 and 3 inch Flanged
End Details:	125 ASA B16.1
Pressure Rating:	125 Class-175 psi Max.
Temperature Range:	Water : 125°F Max. Petroleum Products: -40°F to 125°F Max

Material Specification

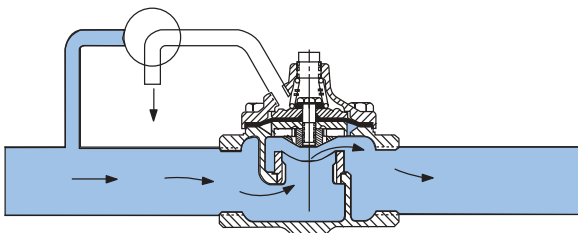
Main Body and Cover:	Cast Iron ASTM A-48
Main Valve Trim:	Delrin (DuPont 500) with Bronze seat (ASTM B-61)
Spring:	Stainless Steel AISI 302
Diaphragm and Disc:	Buna-N® Synthetic Rubber

Purchase Specification

Valve shall be full line size, diaphragm actuated. It shall be hydraulically operated by employing the fluid flowing through it to open as well as close the valve. The diaphragm shall be fabricated of nylon reinforced synthetic rubber, and shall be fully supported in both the open and closed positions and not be used as a disc or seating element. There shall be no packing glands, internal orifice, or continuous bleeding.

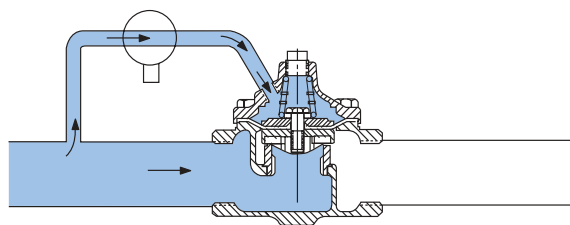
The disc shall be synthetic rubber and have a cross section retained on 3/2 sides. The disc shall close drip-tight against the valve seat. The seat ring shall be replaceable and all necessary repairs shall be possible without removing valve from the line. Valve shall be similar in all respects to the Model 7100 Valve as manufactured by Cla-Val, Newport Beach, California, or approved equal.

Principle of Operation



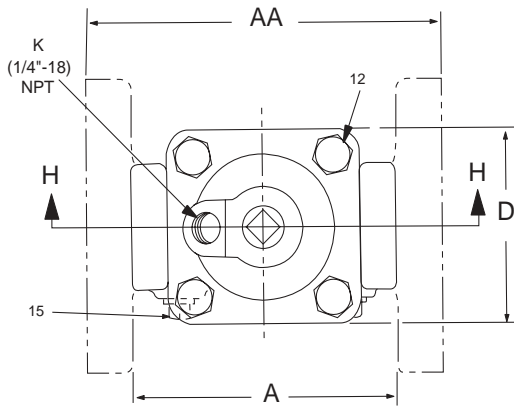
VALVE OPEN

When pressure in diaphragm chamber is relieved to a zone of lower pressure (usually atmosphere) the line pressure at the valve seat opens the valve.



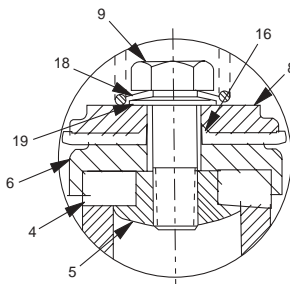
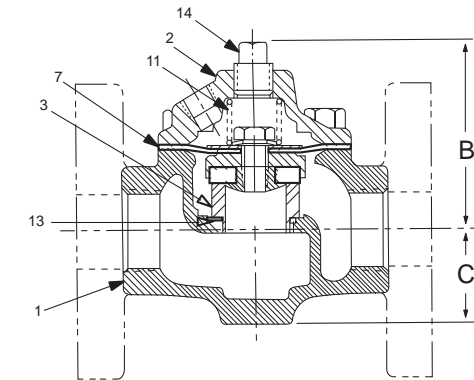
VALVE CLOSED

When pressure from the valve inlet (or an equivalent independent operating pressure) is applied to the diaphragm chamber the valve closes drip-tight.



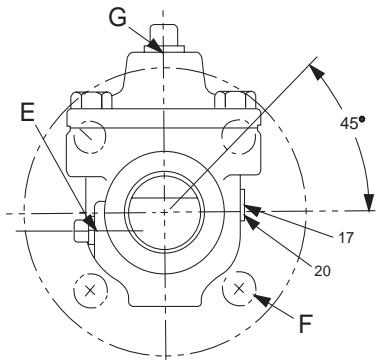
Dimensions

Valve Size (Inches)	1	1 1/4	1 1/2	2	2 1/2	3
A 125 Threaded	4 1/8	5 1/4	5 1/4	6 1/2	7 3/8	8 1/4
AA Flanged	—	—	—	8	—	9 3/4
B MAX.	3	4	4	4 7/8	5 1/2	6 1/8
C	1 1/2	1 7/8	1 7/8	2 1/2	3	3
D	3	4	4	4 7/8	5 3/4	6 1/2
E NPT	1/4	1/4	1/4	3/8	3/8	3/8
F	Di. of Bolt Holes	—	—	3/4	—	3/4
	Bolt Circle Dia.	—	—	4 3/4	—	6
	No. of Bolt Holes	—	—	4	—	4
G NPT	3/8	1/2	1/2	1/2	1/2	1/2
K NPT	1/4	1/4	1/4	1/4	1/4	1/4



Parts List

Item No.	Description	Qty.
1.	Body	1
2.	Cover	1
3.	Seat	1
4.	Disc	1
5.	Guide, Disc	1
6.	Retainer Disc	1
7.	Diaphragm	1
8.	Washer, Diaphragm	1
9.	Bolt, Stem	1
10.	Nut, Hex	1
11.	Spring	1
12.	Bolt Hex Hd.	4
13.	O-Ring	1
14.	Plug, Pipe	1
15.	Plug, Pipe	1
16.	O-Ring	1
17.	Screw Drive	2
18.	Washer, Bellville	1
19.	Washers	1
20.	Nameplate	1



Liquid Volume Displaced from Diaphragm Chamber when Valve Opens

Valve Size	Displacement
1"	.0034 Gals.
1 1/4" & 1 1/2"	.0045 Gals.
2"	.020 Gals.
2 1/2"	.035 Gals.
3"	.055 Gals.

Lower pressure will have slightly less capacity -- Higher pressure slightly more due to diaphragm flexibility

When Ordering, Please Specify

- Catalog No.7100
- Valve Size
- Number of valves required

Variations Available

Catalog No.	Description of Variable
7100 KH	Equipped with heavy spring
7100 KR	7100KH arranged for reverse flow
7100 KX	Equipped with extra heavy spring

Flow Characteristics

The clean, full-throated design of the Model 7100 VALVE provides minimum pressure loss and optimum C_v factors for all valve sizes.

$$C_v = \frac{\text{Flow Rate in GPM}}{\sqrt{\text{Pressure Loss in psi}}}$$

Valve Size	C_v Factor	Pressure Loss in psi With Valve Wide Open													
		5	10	15	20	30	40	50	60	80	100	150	200	300	400
1"	13	.14	.6	1.3	2.3	5.1	9.2	14.5	21.						
1 1/4"	23		.18	.42	.74	1.7	3.0	4.7	6.7	12.0	18.8				
1 1/2"	25			.17	.38	.66	1.5	2.7	4.2	6.0	10.5	16.8			
2"	46				.19	.4	.8	1.2	1.7	3.0	4.7	10.5	18.8		
2 1/2"	72					.17	.4	.5	.7	1.3	1.9	4.4	7.6	17.0	
3"	106						.14	.2	.3	.6	.9	2.0	3.5	8.0	14.5
		Flow of Water -- Gallons Per Minute													



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Lausanne, Switzerland
Phone: 41-21-643-15-55
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www.cla-val.com

Represented By:

— MODEL — **7100**

Remote Control Valve

DESCRIPTION

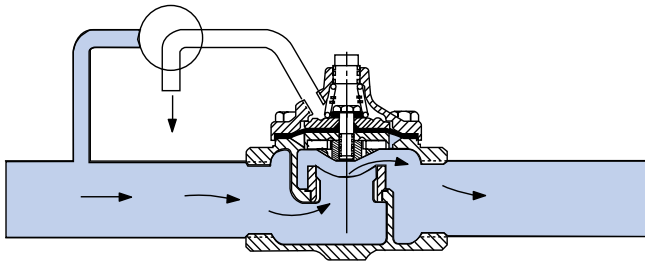
The Cla-Val 7100 Valve is a hydraulically operated, diaphragm actuated, globe pattern valve. This valve consists of three major components, the Body, Diaphragm Assembly and Cover. The Diaphragm Assembly is the only moving part.

The Body contains a renewable seat insert.

The Diaphragm Assembly uses a diaphragm of nylon fabric bonded with synthetic rubber. A synthetic rubber disc forms a seal with the valve seat when pressure is applied above the diaphragm. The Diaphragm Assembly forms a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure.

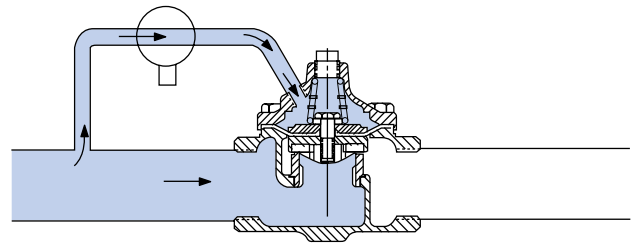
OPERATION

When equipped with a three-way control valve the Cla-Val 7100 Valve either opens wide or closes tight.



VALVE OPEN

When pressure in diaphragm chamber is relieved to a zone of lower pressure (usually atmosphere) the line pressure at the valve seat opens the valve.



VALVE CLOSED

When pressure from the valve inlet (or an equivalent independent operating pressure) is applied to the diaphragm chamber the valve closes drip-tight.

INSTALLATION

1. Before valve is installed, pipe lines should be flushed of all chips, scale and foreign matter.
2. Place valve in the line with flow through the valve in the direction indicated on inlet plate or by flow arrows.
3. Allow sufficient room around valve to make adjustments, and for disassembly.
4. Cla-Val 7100 Valves operate in any position.
5. If a pilot control system is installed with the 7100 Valve, use care to prevent damage. If necessary to remove fittings or tubing, be sure they are kept clean and replaced exactly as they were.
6. After the valve is installed and the system is first pressurized, vent air from the cover chamber and tubing by loosening fittings at all high points.

MAINTENANCE

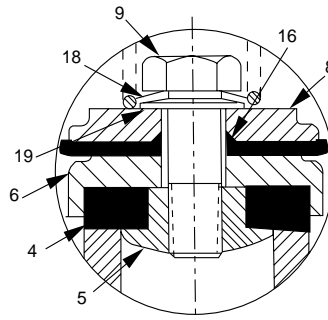
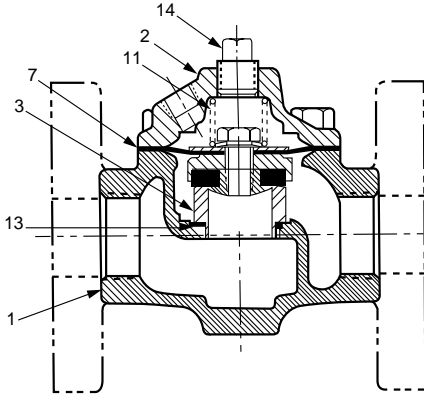
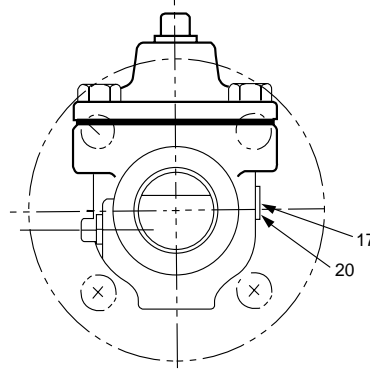
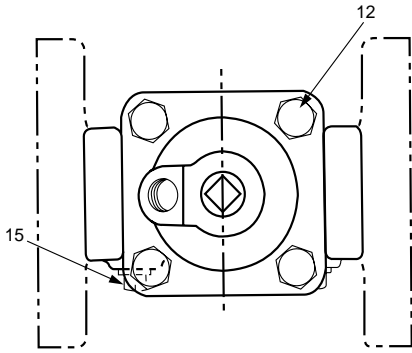
Cla-Val 7100 Valves require no lubrication or packing and a minimum of maintenance.

Disassembly

The inspection or maintenance of the 7100 Valve can be accomplished without removal from the line. After pressure has been shut off and the pressure released from the valve and cover chamber, unscrew cover bolts and remove Cover, Spring and Diaphragm Assembly. Remove seat only if damage is evident. Check Disc for excessive wear or embedded particles.

Reassembly

To reassemble reverse the order of disassembly.



Parts List

Item No.	Description	Qty.
1.	Body	1
2.	Cover	1
3.	Seat	1
4.	Disc	1
5.	Guide, Disc	1
6.	Retainer Disc	1
7.	Diaphragm	1
8.	Washer, Diaphragm	1
9.	Bolt, Stem	1
10.	Nut, Hex	1
11.	Spring	1
12.	Bolt Hex Hd.	4
13.	O-Ring	1
14.	Plug, Pipe	1
15.	Plug, Pipe	1
16.	O-Ring	1
17.	Screw Drive	2
18.	Washer, Bellville	1
19.	Washers	1
20.	Nameplate	1

SERVICE SUGGESTIONS

SYMPTOM	PROBABLE CAUSE	PROCEDURE
Fails to Close	Insufficient Pressure to Cover Chamber	Check Pilot Control System Pressure. In order for valve to close, pressure to valve cover chamber must be equal to, or greater than, pressure at valve inlet.
	Damaged Diaphragm	The following method will determine if there is a damaged diaphragm without removing the valve cover: Put pressure into the valve and disconnect control tube from valve cover chamber. If there is continuous flow through the tube connector fitting, the diaphragm is damaged, or the diaphragm assembly on the stem bolt is loose.
Closes but fails to hold drip tight	Mechanical Obstruction	Remove valve cover, and diaphragm-disc assembly. Check for foreign objects in valve seat or imbedded in valve disc.
	Worn disc or scarred seat	Check as above, and replace disc or seat if necessary.
Fails to Open	Insufficient line pressure	Minimum requirement with cover chamber vented to atmosphere, 7-10 psi (7100KH).
	Pilot Control System not draining to atmosphere	With line pressure in valve, disconnect control tube from valve cover chamber. Valve should open. Check for obstruction in control tube, pilot valve and pilot valve drain to atmosphere
Hammers while opening and continues to pulsate while flowing.	Low flow condition with fall of pipe at valve outlet creating negative pressure at valve outlet	At top of pipe fall, install air vent to break vacuum. A small spring loaded ball check may be installed in downstream body tapping of valve.



Technical Bulletin



7100KH Remote Control Valve Repair Kits

Diaphragm and Disc Assembly consists of items: Diaphragm Washer (5), Diaphragm (6), Belleville Washer (7), Disc Retainer (8), Disc (9), Disc Guide (10), Stem Bolt (12), O-ring (16), and Washer (22). Does NOT include Spring (11). Reference Drawing 34792.

Materials: Buna-N Rubber, Delrin and Brass - 125 Degrees F. Max.

Valve Size	Repair Assembly	Diaphragm	Disc	"KH" Spring	Cover WIDTH	Diaphragm. DIAMETER.
1"	8255701J	39953F	V5322C	82789K	3"	3.00" (Square)
1 1/4"	8255702G	33719G	V5562D	33722A	4"	3.74" (Round)
1 1/2"	8255702G	33719G	V5562D	33722A	4"	3.74" (Round)
2"	8255703E	33877C	81858D	C3152A	4 7/8"	4.60" (Round)
2 1/2"	8255704C	35011G	81219J	C3153J	5 3/4"	5.45" (Round)
3"	8255705K	35013C	80178H	C1106J	6 1/2"	6.30" (Round)

Other parts may be ordered individually by description (see Drawing 34752 or Technical Manual). Give all nameplate information including size, catalog number and part number.

To determine valve size, do one of the following:

- Measure valve cover width and compare with Cover WIDTH dimension above.
- Measure diaphragm diameter and compare with dimension above.

7100AKT Remote Control Valve Repair Kits

For "High Temperature" Service - 250 Degrees F. Max.

Diaphragm and Disc Assembly consists of items: Stem Bolt (4), Diaphragm Washer (6), Diaphragm (7), Disc Retainer (8), Stem Nut (16), Disc Guide (12), O-ring (13), and Disc (14).

Materials: Viton Rubber, Bronze and Brass

Valve Size	Assembly	Diaphragm	Disc	Spring
1"	64605K	63442J	64322J	82789K
1 1/4"	64606H	63437J	44736H	33722A
1 1/2"	64606H	63437J	44736H	33722A
2"	64607F	63438G	44752E	C3152A
2 1/2"	64608D	63439E	44834A	C3153J
3"	64609B	63441A	44856D	C1106J

7100 Series Hytrol Valves Parts and Assemblies

RDH990126

7100KH Diaphragm and Disc Assembly

Materials: Buna-N Rubber, Delrin and Brass - 125 Degrees F. Max

Valve Size	Assembly	List Price	Diaphragm	List Price	Disc	List Price
1"	8255701J		39953F		V5322C	
1 1/4"	8255702G		33719G		V5562D	
1 1/2"	8255702G		33719G		V5562D	
2"	8255703E		33877C		81858D	
2 1/2"	8255704C		35011G		81219J	
3"	8255705K		35013C		80178H	

7100KAT Diaphragm and Disc Assembly

Materials: Viton Rubber, Bronze and Brass - 250 Degrees F. Max

Valve Size	Assembly	List Price	Diaphragm	List Price	Disc	List Price
1"	64605K		63442A		64322A	
1 1/4"	64606H		63437J		44736H	
1 1/2"	64606H		63437J		44736H	
2"	64607F		63438G		44752E	
2 1/2"	64608D		63439E		44834A	
3"	64609B		63441A		44856D	

7100KX KX = Extra Heavy Spring

Valve Size	Valve	List Price	KX Spring	List Price
1"	83850J		39244K	
1 1/4"	83851G		37486J	
1 1/2"	83852E		37486J	
2"	83463A		V6339F	
2 1/2"	83853C		38037J	
3"	83116E		38038G	
3"	21143D		43559E	

7100KX KX = Extra Heavy Diaphragm (2 ply)

Valve Size	Valve	List Price	D & D Assy	List Price	Diaphragm	List Price
1"			10032B		3995301D	
1 1/4"						
1 1/2"						
2"	26511G		1625201H		42112D	
2 1/2"			1625202F		42402J	
3"					43122B	

7100KX KX = Extra Heavy Diaphragm (2 ply) and cover port to valve outlet

Valve Size	Valve	List Price	D & D Assy	List Price	Diaphragm	List Price
1"			10032B		3995301D	
1 1/4"						
1 1/2"						
2"	85682D		1625201H		42112D	
2 1/2"	85570A		1625202F		42402J	
3"	22447H				43122B	

7100KHR KR = KH Valve in Reverse flow - Cover rotated 180 degrees & new nametag

Valve Size	Valve	List Price
1"	84300	
1 1/4"	84301	
1 1/2"	84302	
2"	84303H	
2 1/2"	84304F	
3"	84305C	