



# CHEMLINE 750 DIAPHRAGM VALVE

Data Page



## pneumatically actuated

SERIES: Type 750

SIZES: 1/2" – 2"

ENDS: True Union Socket, Threaded or ChemFlare™<sup>1</sup> Spigot<sup>2</sup> bodies with Plain, Socket, Threaded or Flanged ends

DIAPHRAGMS: EPDM<sup>3</sup>, FKM-B (Viton®) or PTFE

CONTROL FUNCTIONS: Normally Closed, Normally Open or Double Acting



The Chemline Type 750 Pneumatically Actuated Diaphragm Valve features a new design plastic piston actuator, reversible normally closed to normally open. It offers compact dimension, long cycling life and higher leakage resistance, all at a cost lower than 730 Series pneumatically actuated diaphragm valves.

The Type 750 is part of the 700 Series of diaphragm valves. They feature interchangeable bodies, diaphragms and actuators. Modular construction minimizes spare parts requirements. All major parts are solid plastic, corrosion resistant and light weight to minimize stress on plastic piping. Being a diaphragm valve, it is available for sanitary or slurry applications. With a PTFE diaphragm, it has corrosion resistance superior to ball or butterfly valves.

## Features

### Solid Plastic Body Actuator

- Light weight
- Corrosion resistant inside and out

### Good Flow Characteristics

- High C<sub>v</sub> values due to smooth and wide body cavity
- Bidirectional
- Self draining

### Modular Construction

- Spare parts requirements are minimized because of only 3 actuator and diaphragm sizes for 6 valve sizes
- Convertible from Normally Closed to Normally Open or Double Acting

### New Design for Superior Sealing

- Risk of leakage is reduced
- Lower control air pressures are required for full pressure closure

### Easy Maintenance

- Actuator may be easily removed after valve is installed
- Body is easily removed with True Union ends

### Long Life Maintenance Free Actuator

- Valve is factory tested to 1,000,000 plus cycles
- Piston seal has double lip ring to retain grease

## Actuator Housing of "Ixef"

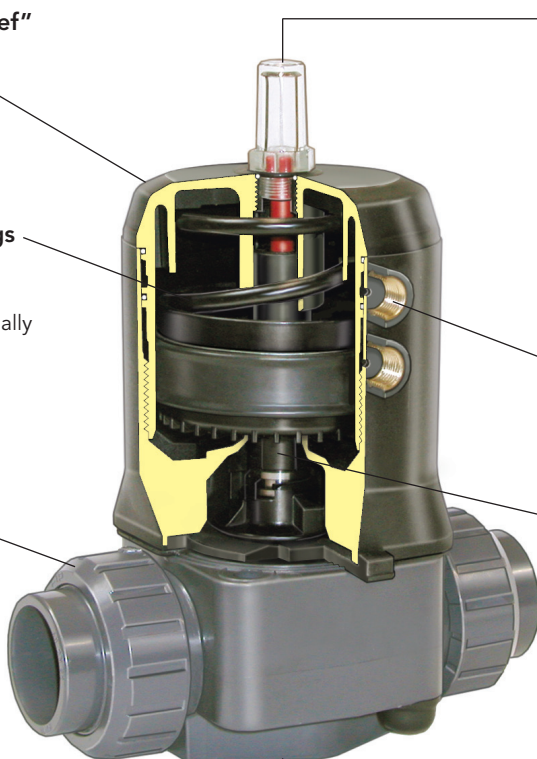
Virtually unbreakable,  
corrosion proof and  
lightweight

## Multi-coil Nested Springs

- Epoxy coated for corrosion resistance
- Field Reversible from Normally Closed to Normally Open

## True Union Ends

- Spigot or solid flanged bodies are also available



## Threads at top of actuator are for easy mounting of a large selection of Accessories:

- Position Indicator
- Travel Stop/Position Indicator
- Travel Stop/Position Indicator with manual override
- Limit Switches mechanical or proximity

## Air Supply Ports

- Rp 1/4 threaded
- Standard NAMUR spacing

## Polished SS Spindle and Self-Lubricating Bearing

provide extremely long cycling life (factory tested to 1,000,000 plus cycles)

**Threaded Inserts** in valve base for fixing valve to support structures

Normally Closed Version

## MINIMUM REQUIRED CONTROL PRESSURE PSI 100% ΔP

Control Function	Valve Size	Line Pressure PSI										
		0	15	30	45	60	75	90	105	120	135	150
		Control Pressure PSI										
Normally Closed	1/2" to 1"	60	58	56	53	49	46	43	39	38	34	31
	1-1/4" to 1-1/2"	68	67	65	64	63	61	60	59	57	56	55
	2"	60	56	53	50	47	44	40	37	34	31	28
Normally Open	1/2" to 1"	23	25	27	30	32	34	36	38	40	42	44
	1-1/4" to 1-1/2"	14	18	21	24	27	30	33	36	40	43	46
	2"	17	21	24	28	31	35	38	42	45	48	52

Minimum required control air pressures vary with line (fluid in the pipe) pressures.

Actuator closes against 100% drop (ie. pressure applied to inlet side of valve only) up to 150 psi, or up to 90 psi on both sides.

Maximum recommended control pressure is 90 psi for NC valves, 70 psi for NO/DA valves.

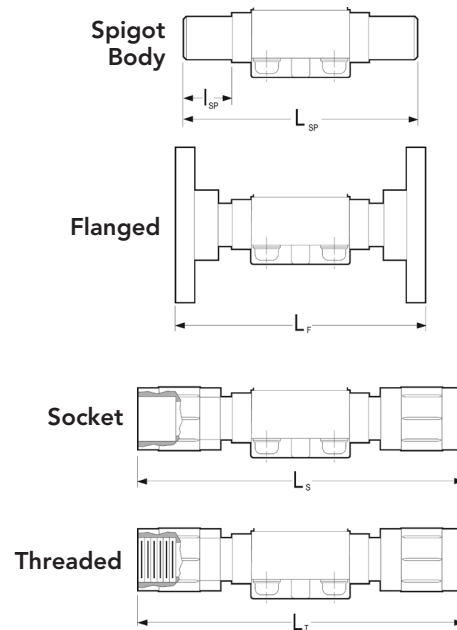
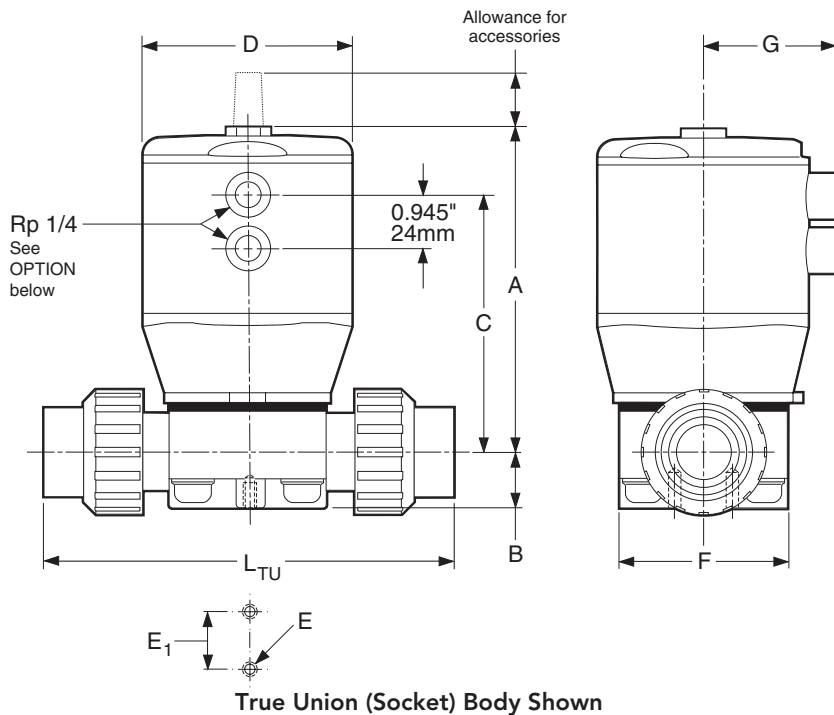
Maximum recommended control temperature is 40°C.

For double acting valves, use control pressures respective of open or closed side.

## WORKING PRESSURES PSI

Size	PVC			CPVC				PP				PVDF			
	25°C 77°F	40°C 104°F	60°C 140°F	30°C 86°F	45°C 113°F	60°C 140°F	80°C 176°F	30°C 86°F	45°C 113°F	60°C 140°F	80°C 176°F	30°C 86°F	60°C 140°F	100°C 212°F	120°C 248°F
1/2" to 2"	150	90	26	150	103	70	40	150	90	58	22	150	98	48	36

Temperature Ranges: PVC 0 to 60°C (32 to 140°F), CPVC 0 to 80°C (32 to 176°F), PP 0 to 80°C (32 to 176°F), PVDF 0 to 120°C (32 to 248°F).



**NON UNION ENDS**

**DIMENSIONS** INCHES

Size	A	B	C	D	E	E <sub>1</sub>	F	G	I <sub>SP</sub>
1/2"	5.70	1.00	4.40	3.74	M6	1.00	2.90	4.23	0.90
3/4"	5.70	1.00	4.40	3.74	M6	1.00	2.90	4.23	1.10
1"	5.70	1.00	4.40	3.74	M6	1.00	2.90	4.23	1.20
1-1/4"	6.70	1.60	5.00	4.50	M8	1.80	3.90	4.97	1.30
1-1/2"	6.70	1.60	5.00	4.50	M8	1.80	3.90	4.97	1.40
2"	8.50	1.60	6.65	5.70	M8	1.80	5.00	6.17	1.50

**"L" END DIMENSIONS** INCHES

Size	Union Socket L <sub>TU</sub>	Spigot L <sub>SP</sub>	Socket <sup>1</sup> L <sub>S</sub>	Threaded <sup>1</sup> L <sub>T</sub>	PVC/CPVC	PP/PVDF	Pounds	C <sub>V</sub>
					Flanged <sup>1</sup> L <sub>F</sub>	Flanged <sup>1</sup> L <sub>F</sub>		
1/2"	6.4	5.5	7.5	7.3	5.8	7.4	2.7	6.5
3/4"	6.6	5.7	8.1	7.5	6.0	7.6	2.7	9.6
1"	7.1	6.1	8.6	8.3	6.3	8.0	2.7	12.0
1-1/4"	8.1	6.9	9.5	9.1	7.2	8.8	5.5	21.0
1-1/2"	9.2	7.6	10.8	10.8	7.9	9.5	5.5	29.0
2"	10.8	8.9	12.2	11.2	9.4	10.8	9.3	54.0

<sup>1</sup>Fabricated Socket, Threaded and Flanged dimensions.

Weights are for  
PVC Spigot valves.

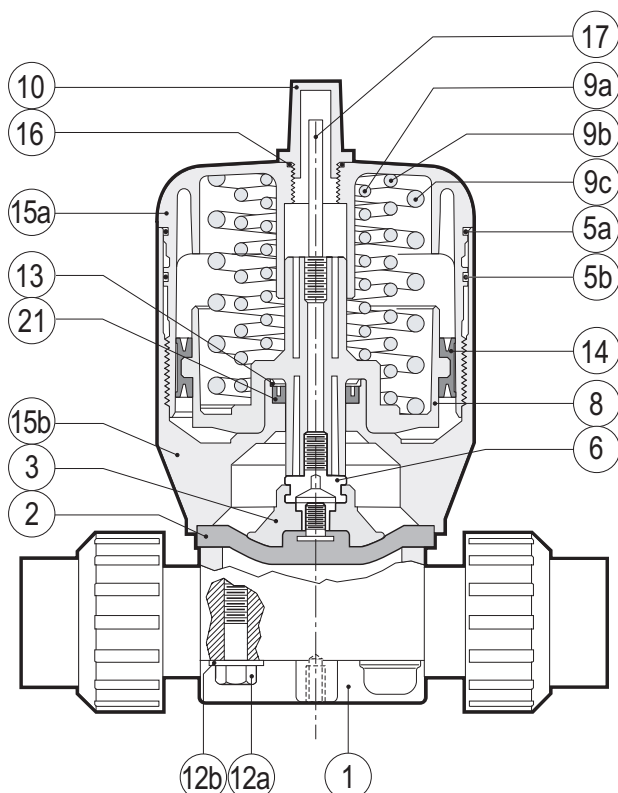
**AIR CONSUMPTION** CUBIC INCHES

Size	Normally Closed	Normally Open
1/2" to 1"	11.6	10.4
1-1/4" to 1-1/2"	18.9	20.1
2"	41.5	48.2

**OPTION**

• In-Line Air Supply Ports

- For space saving, actuators are available with air supply ports in-line with pipeline



Normally Closed (NC)

**PARTS**

▲ Recommended Spare Parts

No.	Part	Pcs.	Materials
1	Valve Body	1	PVC, CPVC, PP, PVDF
2▲	Process Diaphragm	1	EPDM, FKM-B (Viton®), PTFE
3	Compressor	1	PBTB <sup>1</sup>
5a	Upper O-Ring	1	Nitrile
5b	Lower O-Ring	1	Nitrile
6	Adaptor Assembly	1	Ixef <sup>2</sup>
8	Piston	1	Ixef <sup>2</sup>
9	Spring Set (a, b, c) <sup>3</sup>	1-3	Epoxy Coated Spring Steel
10	Indicator Cover <sup>4</sup>	1	Polycarbonate
12a	Hex Bolt	4	Cad. Plated Steel
12b	Washer	4	Cad. Plated Steel
13▲	Ring Retainer	1	Brass
14	Double Lip Ring	1	Nitrile
12a	Hex Bolt	4	Cad. Plated Steel
12b	Washer	4	Cad. Plated Steel
15a	Upper Actuator Housing	1	Ixef <sup>2</sup>
15b	Lower Actuator Housing	1	Ixef <sup>2</sup>
16	Indicator O-Ring <sup>4</sup>	1	Nitrile
17	Position Indicator <sup>4</sup>	1	Polypropylene
21	Spindle Bearing	1	PTFE/Aluminum

<sup>1</sup>PBTB = Polybutylene Terephthalate; <sup>2</sup>Ixef = Polyaramide; <sup>3</sup>1/2" to 1" has 2 springs, 1-1/4" to 1-1/2" has 3 springs; 2" has 2 springs. <sup>4</sup>Optional Indicator parts

**ACCESSORIES** Accessories are ordered separately from valves but are mounted to valve, adjusted and bench tested before shipping.

Accessory	Control Function	Item No.	Maximum Additional Height Allowance (in) <sup>5</sup>
Position Indicator	NC, NO, DA	700PI	1.6
Travel Stop	NC, NO, DA	700TS <sup>6</sup>	2.5
Travel Stop/Position Indicator	NC, NO, DA	700TP <sup>6</sup>	2.5
Travel Stop/Position Indicator Allen Key Manual Override	NC	700M <sup>6</sup>	4.6
1 Mechanical Limit Switch for open position only	NC, NO, DA	700LS	1.6
2 Mechanical Limit Switches in Waterproof Box	NC, NO, DA	700LSM <sup>6</sup>	4.2
2 Proximity Limit Switches in Waterproof Box	NC, NO, DA	700LSP <sup>6</sup>	4.2
Contact-Free Limit Switch	NC, NO, DA	700LSF <sup>6</sup>	3.1
3 – 15 PSI Positioner	NC, NO, DA	PO7YT1200L	4.3
4 – 20mA Positioner	NC, NO, DA	PO7YT1000L	4.7
3/2 Way NC Solenoid Nema 4 <sup>5</sup>	NC, NO	SOL7ASR <sup>6</sup>	0.5
4/2 Way Solenoid Nema 4 <sup>5</sup>	DA	SOL7ADA <sup>6</sup>	2.1
Handwheel Override	NC, NO, DA	700HW <sup>6</sup>	7.7

<sup>5</sup>Height allowance varies with valve size.

<sup>6</sup>Part number differs by valve type and size. See price list for details.

**ORDERING EXAMPLE**

Chemline Diaphragm Valves 750		NC	010	A	E	U
Control Function	<b>NC</b> – Normally Closed <b>NO</b> – Normally Open <b>DA</b> – Double Acting					
Size	<b>005</b> – 1/2" <b>007</b> – 3/4" <b>010</b> – 1" <b>012</b> – 1-1/4" <b>015</b> – 1-1/2" <b>020</b> – 2"					
Body Material	<b>A</b> – PVC <b>B</b> – PP <b>C</b> – CPVC <b>K</b> – PVDF					
Diaphragm	<b>E</b> – EPDM <b>B</b> – Nitrile <b>V</b> – FKM-B (Viton®) <b>P</b> – PTFE 1-piece <sup>1</sup> <b>P2</b> – PTFE 2-piece					
Ends	<b>Blank</b> – Spigot <b>S</b> – Socket <b>T</b> – Threaded <b>F</b> – Flanged <b>U</b> – True Union Socket <b>UT</b> – True Union Threaded <b>CF</b> – ChemFlare™					

**Example:** Chemline Type 750 Pneumatically Actuated Diaphragm Valve, Normally Closed, 1", PVC body, EPDM diaphragm, union socket ends.

<sup>1</sup>PTFE one-piece diaphragm is supplied standard.

## For all 700 series valves

*Accessories are supplied mounted to actuators and bench tested, or separately.*

### VISUAL POSITION INDICATOR

The PI Series universal position indicator consists of a red nylon indicator and clear polycarbonate cover and o-ring, for remote visual indication of open or closed valve/actuator position. Mounts on top of the actuator and modifiable for different sizes of actuators.



**Visual Position Indicator**

### MECHANICAL TRAVEL STOP

The TS Series mechanical travel stop is a solid threaded stainless steel insert that fits into top of the actuator, with hex lock nut to prevent it from moving with use or vibration. Adjustable by threading into the actuator to limits movement in the open direction but allows full closed position. Available with clear polycarbonate cover and o-ring for use on normally-open actuators.



**Mechanical Travel Stop**

### TRAVEL STOP/VISUAL POSITION INDICATOR

The TP Series travel stop/visual position indicator is a mechanical travel stop with a spring-loaded visual position indicator running through its center. Provides positive visual feedback of actuator/valve position. Comes with hex lock nut to prevent it from moving with use or vibration. Available with clear polycarbonate cover and o-ring for use on normally-open actuators.



**Travel Stop/Position Indicator**

### TRAVEL STOP/VISUAL POSITION INDICATOR/MANUAL OVERRIDE

The MO/MC Series Manual Override adds to the travel stop/position indicator combination to allow manual valve/actuator operation of actuated valves in case supply pressure fails. The unit is mounted on top of the actuator, in the same manner as other options and links to the control diaphragm, but allows manual operation by turning the threaded center spindle by means of the accompanying Allen key handle. Construction is outer threaded stainless steel insert and center position indicator/override with a clear polycarbonate cover and o-ring for use on normally-open actuators.



**Travel Stop/Visual Position Indicator/Manual Override**



## for all 700 series valves

Accessories are supplied mounted to actuators and bench tested, or separately.

### SOLENOID VALVES

Pilot solenoid valves control air supply air in and out of pneumatic actuators to open and close the valve and are electrically actuated. They are usually but not always mounted directly to the actuator. SOL Series Solenoid Valves are CSA/UL approved and designed for multi-million cycle life. These mount flush to 700-Series pneumatic actuators. They are robust, reliable and corrosion resistant, offering high air flows and fast response. The valve functions as 3/2 way (for spring return actuators) and a second solenoid is added for 5/2 way (for double acting actuators). A screw type manual override is standard. Construction is brass body, nitrile seals, nickel plated ports and screws, and epoxy encapsulated coil. The electrical connection is a 3-pin DIN plug with 1/2" NPT for conduit connection. Grommet (cable gripper) and LED grommet (glows to indicate power) version plugs are also available. Versions are available in different voltages, also in intrinsically safe and explosion proof designs.



Solenoid Valves

### POSITIONERS

Valve positioners control actuator-valve position, responding to a signal from a process controller, usually electronic (most often 4–20mA) or sometimes pneumatic (3–15 psi). YT Series positioners are easy to mount directly to 700 Series linear actuators. They have epoxy coated aluminum enclosures and are also available in 316 stainless steel. All available models are attractively priced:

- **YT1200R 3–15 psi Pneumatic** – a conventional all-mechanical positioner
- **YT1300R 4–20 mA Electro-Pneumatic** – an electronic positioner designed for vibration resistance, better control and easy calibration
- **YT2300 4–20 mA Smart** – a fully digital positioner with intelligent functions like auto calibration, PID control, also theoretical and user defined characterized output. Options include alarms (switch or relay output), 4–20 mA transmitter for position feedback and HART digital communication protocol.



Positioners

### AIR FILTER/REGULATOR

A filter/regulator is required to protect pneumatic equipment with small orifices from clogging due to debris and to protect from corrosion or fouling due to excess oil or condensed water in the air supply. Chemline includes an air filter/regulator with all positioners mounted to actuators. Chemline recommends they also be supplied with all pilot solenoid valves. The F/R-A is a one-piece air filter/regulator and pressure gauge with a GRP plastic body, polycarbonate filter bowl and polyethylene filter element. The filter bowl has a manual drain valve.



Air Filter Regulator

### HANDWHEEL OPERATOR AND BRACKET

The HW Series handwheel for manual override operation of actuator/valve without mechanical travel stop. Stainless steel threaded insert, center operating spindle and lag mechanism allows switching from manual to powered operation without declutching. Side-pin position indicator allows use without manually operating the actuator/valve too far and damaging the assembly.



Handwheel Operator & Bracket

## for all 700 series valves

*Accessories are supplied mounted to actuators and bench tested, or separately.*

### LIMIT SWITCHES

The LS Series Limit Switch Boxes are CSA/UL approved for On and/or Off valve position feedback. They are compact and robust, featuring quick-setting switch cams, polycarbonate cap, high visibility position indicator beacon and a quick-access cover. Dual 1/2" NPT conduit entries and a 6-position terminal strip in the 2-position mechanical/proximity models allow for wiring of a solenoid valve through the box.

- **700LS Single-Position Mechanical Switch** – open position feedback only
- **700LS Dual-Position Mechanical Switch** – single-pole double-throw switches rated for multi million cycles
- **700LS Dual-Position Proximity Switch** – for intrinsically safe applications
- **700LSP Dual-Position AS-i Switch** – built-in solenoid, M12 AS-i connector and air connector to the actuator
- **700LSF Dual-Position Programmable Proximity Switch** – for easy set-up and operation



**700LS Single-Position Mechanical Limit Switch**



**700LS Dual-Position Mechanical Limit Switch**



**700LS Dual-Position Proximity Limit Switch**



**700LSF Dual-Position Programmable Proximity Switch**



**700LS Dual-Position AS-i Limit Switch**