

Type 730 Diaphragm Valves



pneumatically actuated

SERIES: Type 730

SIZES: 1/2" – 4"

ENDS: True Union Socket, Threaded or ChemFlare™¹ Spigot² bodies with Plain, Socket, Threaded or Flanged ends

DIAPHRAGMS: EPDM³, FKM-B (Viton®) or PTFE

CONTROL FUNCTIONS: Normally Closed, Normally Open or Double Acting



Normally closed version shown with True Union body and position indicator

The Type 730 Pneumatically Actuated Diaphragm Valve features a plastic diaphragm actuator, either normally closed, normally open or double acting. This valve offers long cycling life, high pressure resistance and a size range 1/2" to 4". 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. This becomes an economical control valve when a positioner is added.

The Type 730 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.

features

Pressure rated to 150 psi

- Highest pressure ratings of 700 Series diaphragm valves

Solid Plastic Body and Actuator

- Light weight
- Corrosion resistant inside and out

Excellent for Sanitary Applications

- Self draining
- PVDF and unpigmented PP bodies are FDA approved for food applications
- Sanitary clamp end connections are available

Excellent Flow Control

- With a positioner, this is an inexpensive control valve
- Diaphragm type actuator provides smooth, sensitive operation

Modular Construction

- Only 5 actuator and diaphragm sizes for 9 valve sizes. Spare parts requirements are minimized.

Long Cycling Life

- Valve is designed for extremely long cycling life
- Actuator is essentially maintenance free

¹ For ChemFlare™ end connectors, consult JJ DOWNS INDUSTRIAL PLASTICS INC.

² PP and PVDF spigot ends have metric dimensions and will butt fuse directly to PP and PVDF piping systems.

³ Epoxy cured EPDM

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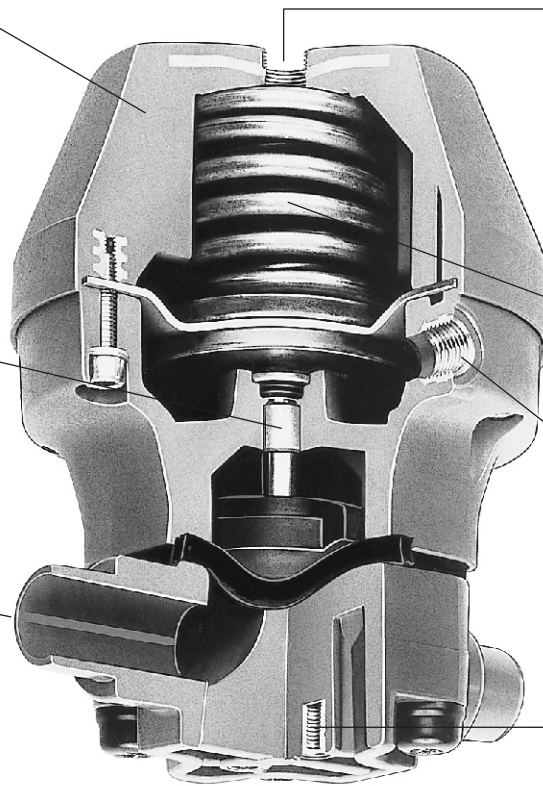
Type 730 Diaphragm Valves

Actuator Housing of PPG
(Glass reinforced PP)
Virtually unbreakable,
corrosion proof and
lightweight

**Polished SS Spindle and
Self-Lubricating Bearing**
provide extremely long
cycling life

Spigot Body

- For direct butt fusion to Chemline PP or PVDF metric pipe
- True Union or solid flanged bodies are also available



A Complete Range of Accessories are mounted using Threaded Insert:

- Position Indicator
- Travel Stop/Position Indicator
- Travel Stop/Position Indicator with manual override
- Positioners (pneumatic 3 to 15 psi or electro-pneumatic 4 to 20 mA)
- Limit Switches (mechanical or proximity)

Multi-coiled Nested Springs

- Allows for compact actuator
- Epoxy coated for corrosion resistance

Air Supply Ports

- Rp 1/4 threaded

Stainless Steel Threaded Inserts in valve base for fixing valve to support structures

Normally Closed Version

MINIMUM REQUIRED CONTROL PRESSURES PSI 100% ΔP

Line Pressure	Valve Size/Control Function									
	1/2" - 1"		1-1/4" & 1-1/2"		2"		2-1/2" & 3"		4"	
	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
0	78	23	78	23	78	23	90	30	90	30
15	75	23	75	23	75	26	87	36	87	35
30	72	24	72	26	72	30	84	42	83	40
45	69	27	69	30	69	35	82	48	80	45
60	66	30	66	33	66	41	78	54	77	50
75	63	33	63	38	63	47	76	60	73	55
85	61	35	61	41	61	51	74	66	70	60
90	60	36	60	42	60	53	-	-	-	-
105	56	41	56	47	56	60	-	-	-	-
120	53	47	53	53	53	68	-	-	-	-
135	49	53	49	60	49	78	-	-	-	-
150	46	60	46	68	46	90	-	-	-	-

Minimum required control air pressures vary with line (pipe line) pressures. Above control pressures are for closure against 100% drop (ie. pressure on upstream side of closed valve only). Consult JJ DOWNS INDUSTRIAL PLASTICS INC. on applications requiring closure against downstream pressure.

Maximum recommended control pressure is 90 psi.

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

LINE PRESSURES VS. TEMPERATURE PSI

1/2" to 2" Sizes

Temperature		PVC	PP	CPVC	PVDF
°C	°F				
0-27	32-80	150	150	150	150
35	95	110	110	140	150
45	113	60	75	110	130
60	140	25	60	90	120
80	176	-	20	50	95
100	212	-	-	15	75

2-1/2" to 4" Sizes

Temperature		PVC	PP	CPVC	PVDF
°C	°F				
0-35	32-95	85	85	85	85
45	113	60	75	85	85
60	140	25	60	85	85
80	176	-	20	50	85
100	212	-	-	15	75

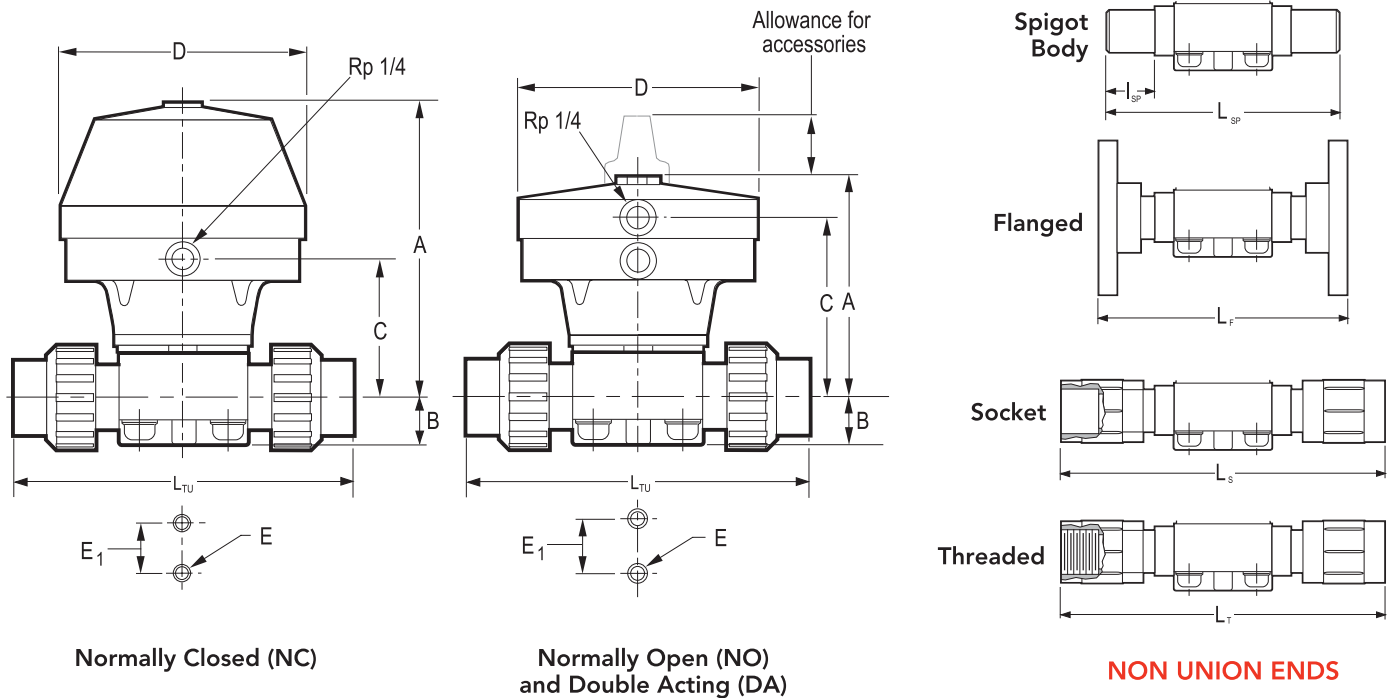




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Type 730 Diaphragm Valves



DIMENSIONS INCHES AIR CONSUMPTION CUBIC INCHES

Size	A		B	C		D	E	E ₁	I _{SP}	AIR CONSUMPTION CUBIC INCHES		
	NC	NO/DA		NC	NO/DA					NC	NO	DA
1/2"	5.8	4.8	1.0	2.6	4.7	5.0	M6	1.0	0.9	9.8	7.9	15.8
3/4"	5.8	4.8	1.0	2.6	4.7	5.0	M6	1.0	1.1	9.8	7.9	15.8
1"	5.8	4.8	1.0	2.6	4.7	5.0	M6	1.0	1.2	9.8	7.9	15.8
1-1/4"	7.9	6.3	1.6	4.0	5.2	6.1	M8	1.8	1.3	22.0	17.1	34.2
1-1/2"	7.9	6.3	1.6	4.0	5.2	6.1	M8	1.8	1.4	22.0	17.1	34.2
2"	9.9	7.9	1.6	4.9	6.1	8.2	M8	1.8	1.5	70.1	30.5	61.0
2-1/2"	13.1	10.2	2.2	7.3	7.5	10.2	M12	3.9	1.7	128.1	134.3	268.6
3"	13.1	10.2	2.2	7.3	7.5	10.2	M12	3.9	2.0	128.1	134.3	268.6
4"	16.2	14.6	2.5	10.5	11.4	10.2	M22	4.7	2.3	128.1	134.3	268.6

"L" END DIMENSIONS INCHES WEIGHTS LB. Cv VALUES

Size	Union				PVC/CPVC		PP/PVDF	Normally Closed	Normally Open & Double Acting	C _v
	Socket	Spigot	Socket ¹	Threaded ¹	Flanged ¹	Flanged ¹	Flanged "S" ²			
	L _{TU}	L _{SP}	L _S	L _T	L _F	L _F	L _{FS}			
1/2"	6.4	5.5	7.5	7.3	5.8	7.4	—	4.1	2.9	6.5
3/4"	6.6	5.7	8.1	7.5	6.0	7.6	5.9	4.1	2.9	9.6
1"	7.1	6.1	8.6	8.3	6.3	8.0	5.9	4.1	2.9	12.
1-1/4"	8.1	6.9	9.5	9.1	7.2	8.8	6.4	8.8	6.2	21.
1-1/2"	9.2	7.6	10.8	10.8	8.1	9.5	6.9	8.8	6.2	29.
2"	10.8	8.9	12.2	11.2	9.4	10.8	7.9	15.3	10.1	54.
2-1/2"	—	11.2	15.1	14.7	11.8	13.1	—	35.2	22.0	91.
3"	17.6 ³	11.8	16.0	15.7	12.6	14.9	10.4	37.4	24.2	140.
4"	—	13.5	18.5	17.4	13.9	16.6	—	53.9	35.6	220.

¹ Fabricated Socket, Threaded and Flanged dimensions.

² Flanged "S" and L_{FS} = ITT Saunders plastic lined valve length.

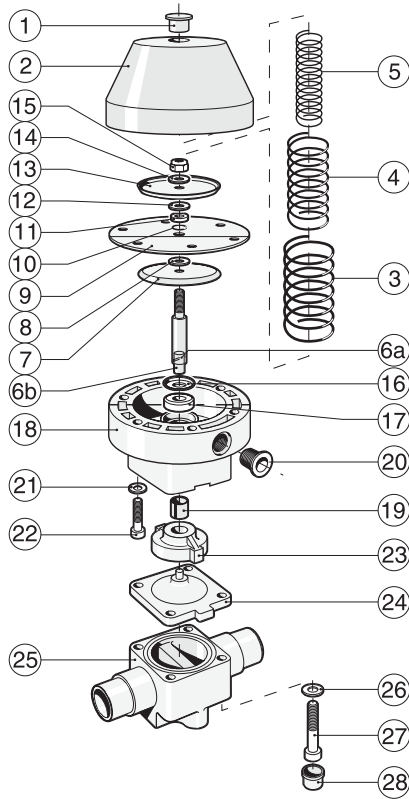
³ 3" Union socket body is fabricated using a spigot body.

Weights are for PVC Spigot valves.

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Type 730 Diaphragm Valves



PARTS

▲ Recommended Spare Parts

No.	Part	Pcs.	Materials
1a	Plug	1	PP
1b	O-Ring (NO & DA Only)	1	Nitrile
2	Upper Actuator Housing	1	PPG
3	Outer Spring ¹	1	Epoxy Coated Spring Steel
4	Middle Spring ¹	1	
5	Inner Spring ¹	1	
6	Spindle Assembly	1	Stainless Steel
7	Diaphragm Support Plate	1	Cad. Plated Steel
8	Washer	1	Nitrile
9▲	Control Diaphragm	1	Fabric Reinforced Neoprene
10	O-Ring ²	1	Nitrile
11	Spacer Ring ²	1	Cad. Plated Steel
12	Washer	1	Nitrile
13	Spring Support Plate	1	Cad. Plated Steel

¹ Springs 3 to 5 are for normally closed control function. Normally open actuator has a different single spring below diaphragm support plate.

PARTS

▲ Recommended Spare Parts

No.	Part	Pcs.	Materials
14	Washer	1	Cad. Plated Steel
15	Lock Nut	1	Cad. Plated Steel
16	Spring Washer	1	Mild Steel
17	Quad Ring	1	Nitrile
18	Lower Actuator Housing	1	PPG
19	Spindle Bearing	1	PTFE/Aluminum
20	Plug	1	Polyethylene
21	Washer	6 ³	304 SS
22	Socket Head Bolt	6 ³	304 SS
23	Compressor	1	PBTP
24▲	Process Diaphragm	1	EPDM, FKM-B (Viton®), PTFE
25	Valve Body	1	PVC, CPVC, PP, PVDF
26	Washer	4 ⁴	304 SS
27	Hex Bolt	4 ⁴	304 SS
28	Bolt Cap	4 ⁴	PE

² Not supplied in 1/2" to 1" valves.

³ Quantity 12 for 2-1/2" to 4" valves.

⁴ Quantity 8 for 2-1/2" and 3", 12 for 4" valves.

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) ⁵
Position Indicator	NC, NO, DA	700PI	1.6
Travel Stop	NC, NO, DA	700TS ⁶	2.5
Travel Stop/Position Indicator	NC, NO, DA	700TP ⁶	2.5
Travel Stop/Position Indicator Allen Key Manual Override	NC	700M ⁶	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 ⁶	4.2
2 Proximity Limit Switches in Waterproof Box	NC, NO, DA	700LSP ⁶	4.2
Contact-Free Limit Switch	NC, NO, DA	700LSF ⁶	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 ⁵	NC, NO	SOL7ASR ⁶	0.5
4/2 Way Solenoid Nema 4 ⁵	DA	SOL7ADA ⁶	2.1
Handwheel Override	NC, NO, DA	700HW ⁶	7.7

⁵Height allowance varies with valve size.

⁶Part number differs by valve type and size. See price list for details.

ORDERING EXAMPLE

Diaphragm Valves		730	NC	010	A	E	U
Control Function		NC – Normally Closed NO – Normally Open DA – Double Acting					
Size		005 – 1/2" 007 – 3/4" 012 – 1-1/4" 015 – 1-1/2" 025 – 2-1/2" 030 – 3"	010 – 1" 020 – 2" 040 – 4"				
Body Material		A – PVC B – PP	C – CPVC	K – PVDF			
Diaphragm		E – EPDM B – Nitrile	V – FKM-B (Viton®) P2 – PTFE two-piece ¹				
Ends		Blank – Spigot S – Socket	T – Threaded	F – Flanged			
		FS – Flanged to ITT Saunders end to end		U – Union Socket		CF – ChemFlare™	

Example: Type 730 Pneumatically Actuated Diaphragm Valve, normally closed, 1" PVC body, EPDM diaphragm, socket ends.

¹PTFE one-piece diaphragm is supplied standard.

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700 Series Accessories

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



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700 Series Accessories

for all 700 series valves

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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 ... includes an air filter/regulator with all positioners mounted to actuators.

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



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700 Series Accessories

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

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