

Type 731 Diaphragm Valves



pneumatically actuated

SERIES: Type 731

SIZES: 1/2" – 3/4"

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 731 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 3/4". 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 731 is part of the 700 Series of diaphragm valves. They feature interchangeable bodies, diaphragms and actuators. Only one actuator and diaphragm size for two valve sizes. Spare parts requirements are minimized. 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 1 actuator and diaphragm sizes for 2 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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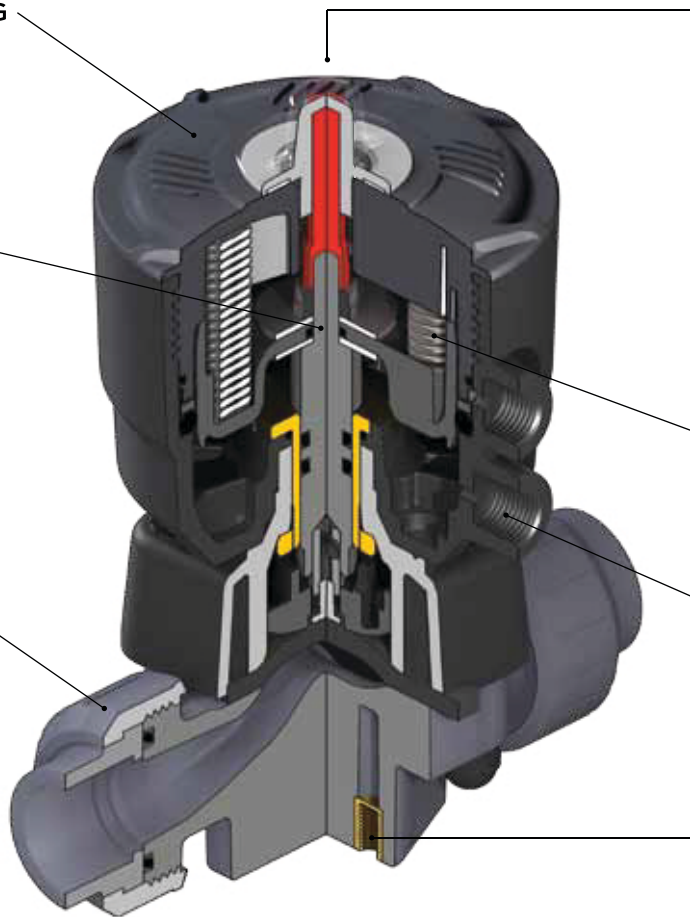
Type 731 Diaphragm Valves

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

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

True Union Body

- For easy replacement without modifying the piping
- Spigot 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

MINIMUM REQUIRED CONTROL PRESSURES PSI 100% ΔP

Model	Line Pressure										
	0	15	30	45	60	75	90	105	120	135	150
NC	71	69	68	66	65	63	62	60	59	57	56
NO	51	53	55	57	59	61	63	65	67	69	71

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).

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

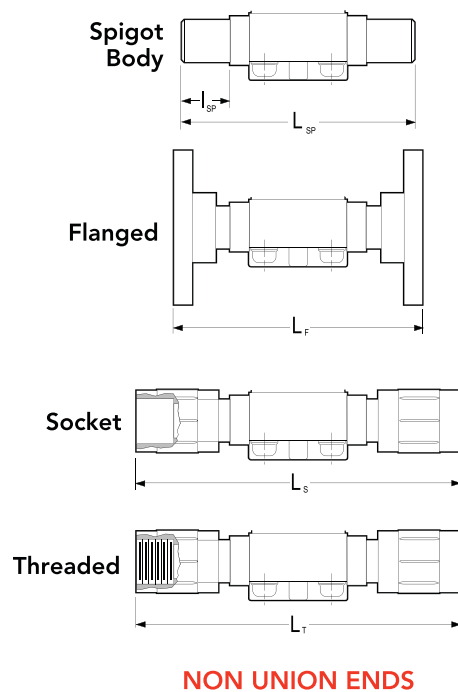
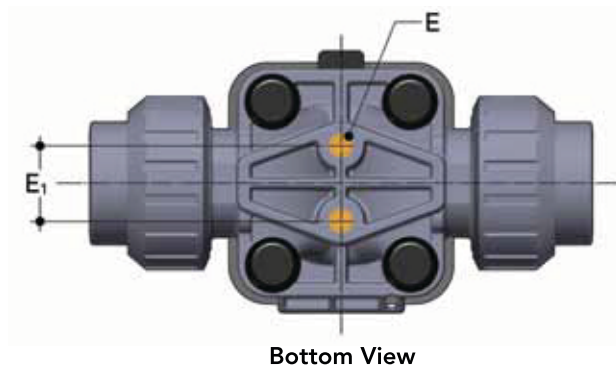
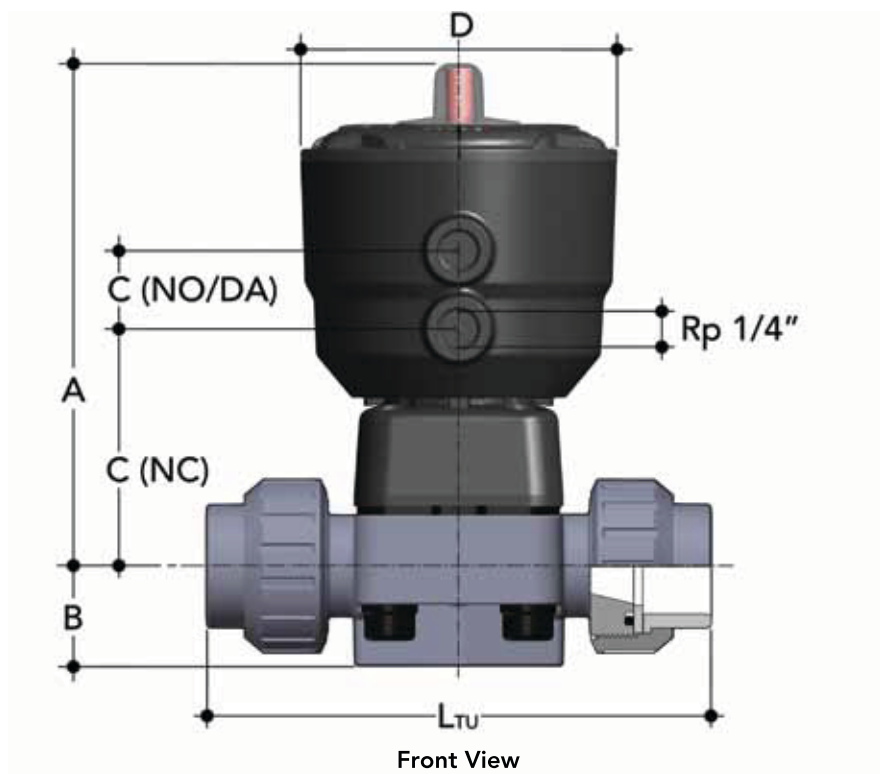
Temperature		PVC	PP	CPVC	PVDF
°C	°F				
0-27	32-80	150	150	150	150
35	95	110	110	140	150
45	113	60	75	110	130
60	140	25	60	90	120
80	176	-	20	50	95
100	212	-	15	15	75
120	248	-	-	-	45

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Type 731 Diaphragm Valves



DIMENSIONS INCHES

Size	A	B	C		D	E	E ₁	I _{SP}	AIR CONSUMPTION CUBIC INCHES		
			NC	NO/DA					NC	NO	DA
1/2"	5.8	1.0	2.6	3.5	3.8	M6	1.0	0.6	7.3	9.8	14.0
3/4"	5.9	1.2	2.7	3.7	3.8	M6	1.0	0.8	7.3	9.8	14.0

"L" END DIMENSIONS INCHES

Size	Union				PVC/CPVC		PP/PVDF	WEIGHTS LB.		C _v VALUES
	Socket	Spigot	Socket ¹	Threaded ¹	Flanged ¹	Flanged ¹	Flanged ² "S"	Normally Closed	Normally Open & Double Acting	C _v
	L _{TU}	L _{SP}	L _S	L _T	L _F	L _F	L _{FS}			
1/2"	5.6	4.9	6.9	6.7	5.2	6.8	—	0.3	0.3	7.5
3/4"	6.6	5.7	8.1	7.5	6.0	7.6	5.9	0.4	0.4	17.5

¹ Fabricated Socket, Threaded and Flanged dimensions.

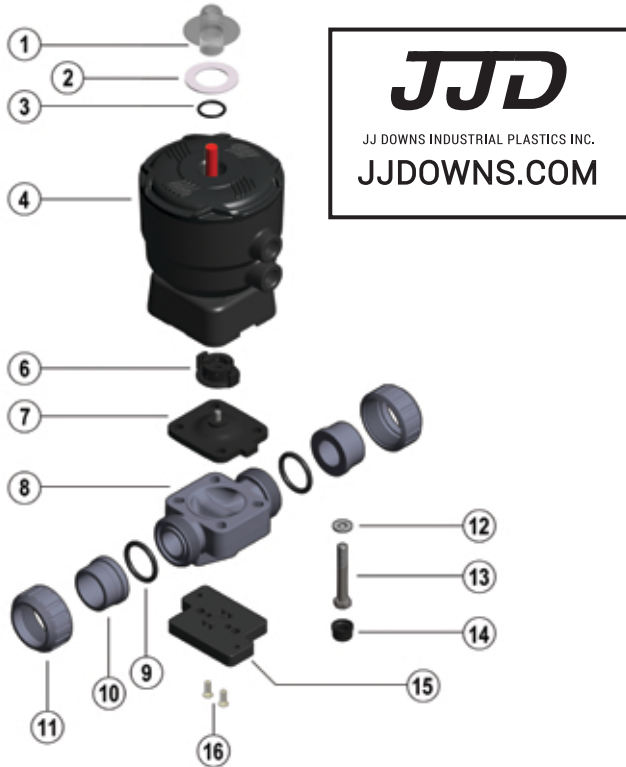
² Flanged "S" and L_{FS} = ITT Saunders plastic lined valve length.

Weights are for PVC Spigot valves.

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PARTS

▲ Recommended Spare Parts

No.	Part	Pcs.	Materials
1▲	Transparent Cap	1	PC
2	Customization Plate	1	PVC
3	Cap O-Ring	1	EPDM
4▲	Actuator	1	PP-GR
6	Compressor	1	IXEF
7▲	Diaphragm Seal	1	EPDM, FPM (Viton®), PTFE
8▲	Valve Body	1	PVC, CPVC PP, PVDF
9▲	Socket Seal O-Ring	2	EPDM, FPM
10▲	End Connector	2	PVC, CPVC PP, PVDF
11▲	Union Nut	2	PVC, CPVC PP, PVDF
12	Washer	4	Stainless Steel
13	Bolt	4	Stainless Steel
14	Protection Plug	4	PE
15	Distance Plate ¹	1	PP-GR
16	Screw ¹	2	Stainless Steel

¹Accessories

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

Example: Type 731 Pneumatically Actuated Diaphragm Valve, normally closed, 1/2" PVC body, EPDM diaphragm, socket ends.

¹PTFE one-piece diaphragm is supplied standard.

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:

- Y1200R 3–15 psi Pneumatic – a conventional all-mechanical positioner
- Y1000R 4–20 mA Electro-Pneumatic – an electronic positioner designed for vibration resistance, better control and easy calibration
- Y3300R 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

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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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