

GIE Diaphragm Valves and Actuators



GIE Inc.

Bulletin DV-08

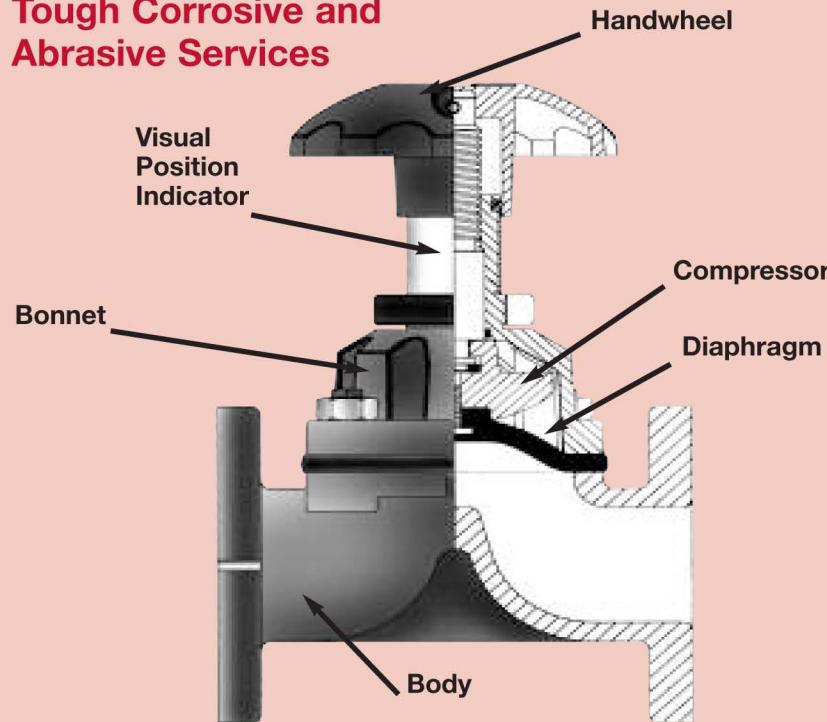
GIE Diaphragm Valves

GIE's broad line of diaphragm valves are widely applied throughout the chemical, food, paper, steel, mining, power, pharmaceutical, and other process industries wherever positive shut-off, non-contamination, or ease of maintenance is required.

Available with a wide range of manual and automatic actuators, these valves are available with **weir style** and **straightway** flow patterns. Sizes range from 1/2" thru 3" threaded or weld ends;

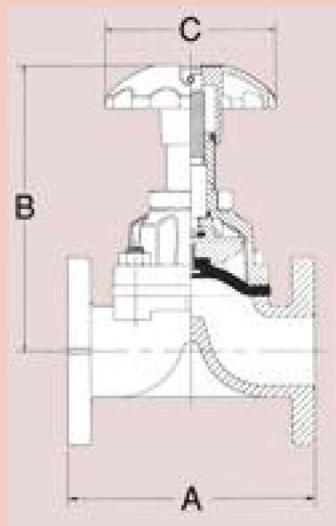
and 1/2" thru 12" flanged ends. Pressure ratings to 200 psi and temperatures to 340° F.

Choose the Economical and Versatile Weir Design for General Use or for Tough Corrosive and Abrasive Services



GIE's Diaphragm Valves Feature:

- Leaktight performance
- Complete isolation between the bonnet works and process fluid
- Packless stem
- Extremely easy maintenance
- Assured quality
- Unbroken flow
- Diaphragm over closure limiter
- Manual or automatic operators
- Low pressure loss
- Rugged design
- Position indicator
- O-Ring stem seals



SIZE (inches)	A FLANGED					B	C	FLANGED VALVE WEIGHT
	THREADED	UNLINED	RUBBER	GLASS	PLASTIC			
1/2	2 1/2	4	—	4 1/8	—	3 7/8	2 1/2	4#
1/2 A	—	5 1/2	5 3/4	5 5/8	5 3/4	5 1/8	3 1/4	7#
3/4	3 1/4	5 1/2	5 3/4	5 5/8	5 3/4	3 1/2	2 1/2	7#
1	4 1/4	5 1/2	5 3/4	5 5/8	5 3/4	5 1/8	3 1/4	7#
1 1/2	5 1/2	6 1/2	6 3/4	6 5/8	6 7/8	7 1/4	4 3/4	16#
2	6 1/2	7 1/2	7 3/4	7 5/8	7 7/8	8 1/4	4 3/4	22#
2 1/2	8	8 1/2	8 3/4	8 5/8	8 7/8	8 5/8	6 3/4	33#
3	10	10	10 1/4	10 1/8	10 1/4	12 1/8	8 1/2	48#
4	—	12 1/2	12 3/4	12 5/8	12 7/8	14 1/4	11	82#
6	—	16	16 3/8	16 1/8	16 3/8	16 3/4	14 1/2	150#
8	—	20 1/2	20 7/8	20 5/8	20 7/8	26	23	330#
10	—	25	25 3/8	25 1/8	25 3/8	30 1/4	27 1/2	500#
12	—	29 1/2	29 7/8	29 1/2	29 7/8	35	27 1/2	900#

Note: 1/2"A valve uses 1" Bonnet and Diaphragm.

Materials and Sizes for Weir Style Valves

Threaded or weld ends $\frac{1}{2}$ " through 3" / Flanged ends $\frac{1}{2}$ " through 12"

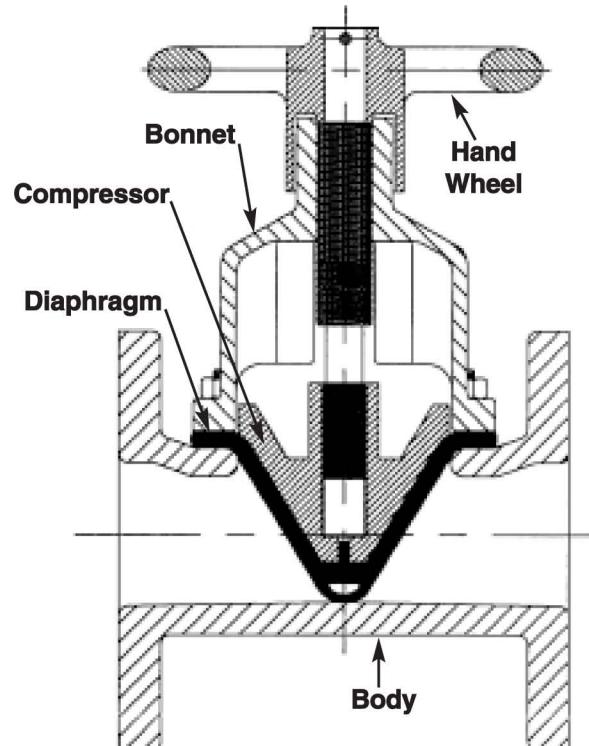
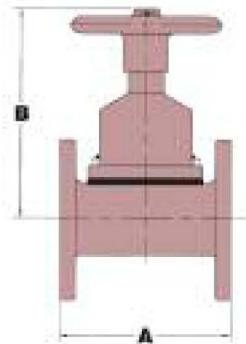
Size	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	4	6	8	10	12
Cast Iron lined with:												
Tefzel (ETFE)	X	X	X	X	X	X	X	X	X	X	X	X
PFA	X	X	X	X	X	X	X	X	X	X		
Kynar (PVDF)	X	X	X	X	X	X	X	X	X	X		
Halar (ECTFE)	X	X	X	X	X	X	X	X	X	X		
Glass	X	X	X	X	X	X	X	X	X	X	X	X
Polypropylene	X	X	X	X	X	X	X	X	X	X		
Hard Rubber	X	X	X	X	X	X	X	X	X	X	X	X
Soft Natural Rubber	X	X	X	X	X	X	X	X	X	X	X	X
Hypalon	X	X	X	X	X	X	X	X	X	X	X	X
Butyl	X	X	X	X	X	X	X	X	X	X	X	X
Neoprene	X	X	X	X	X	X	X	X	X	X	X	X
PVC	X	X	X	X	X	X	X	X	X	X	X	X
Ductile Iron lined with:												
Tefzel (ETFE)	X	X	X	X	X	X	X	X	X	X	X	X
PFA	X	X	X	X	X	X	X	X	X	X		
Kynar (PVDF)	X	X	X	X	X	X	X	X	X	X		
Halar (ECTFE)	X	X	X	X	X	X	X	X	X	X		
Glass	X	X	X	X	X	X	X	X	X	X	X	X
Polypropylene	X	X	X	X	X	X	X	X	X	X		
Hard Rubber	X	X	X	X	X	X	X	X	X	X	X	X
Soft Natural Rubber	X	X	X	X	X	X	X	X	X	X	X	X
Hypalon	X	X	X	X	X	X	X	X	X	X	X	X
Butyl	X	X	X	X	X	X	X	X	X	X	X	X
Neoprene	X	X	X	X	X	X	X	X	X	X	X	X
PVC	X	X	X	X	X	X	X	X	X	X	X	X
316 SS and Carbon Steel lined with:												
Tefzel (ETFE)	X	X	X	X	X	X	X	X	X	X	X	X
PFA	X	X	X	X	X	X	X	X	X	X		
Kynar (PVDF)	X	X	X	X	X	X	X	X	X	X		
Halar (ECTFE)	X	X	X	X	X	X	X	X	X	X		
Glass	X	X	X	X	X	X	X	X	X	X		
Polypropylene	X	X	X	X	X	X	X	X	X	X		
Screwed-End Valves (Unlined):												
Cast Iron	X	X	X	X	X	X	X					
Ductile Iron	X	X	X	X	X	X	X					
Carbon Steel*	X	X	X	X	X	X	X					
316 SS*	X	X	X	X	X	X	X					
Alloy 20*	X	X	X	X	X	X	X					
Polypropylene	X	X	X	X	X	X	X					
PVC	X	X	X	X	X	X	X					
Flanged-End Valves (Unlined):												
Cast Iron	X	X	X	X	X	X	X	X	X	X	X	X
Ductile Iron	X	X	X	X	X	X	X	X	X	X	X	X
Carbon Steel	X	X	X	X	X	X	X	X	X	X	X	X
316 SS	X	X	X	X	X	X	X	X	X	X	X	X
Alloy 20	X	X	X	X	X	X	X	X	X	X	X	X
Polypropylene	X	X	X	X	X							
PVC	X	X	X	X	X							

*Also Butt or Socket Weld

GIE Straightway

Diaphragm Valves in both Lined and Unlined Designs offer these benefits:

- Full straight through fluid flow
- Excellent for sludges, slurries or viscous fluids
- Flows in either direction
- Isolation of bonnet from fluid
- Easily cleaned with variety of pigs
- Simple in-line maintenance
- Diaphragm over closure limiter
- Consistently leaktight, even with solids in the line



SIZE IN INCHES	1/2	1	1 1/2	2	2 1/2	3	4	6	8	10	12
A UNLINED	4	5 1/2	6 1/2	7 1/2	8 1/2	10	12 1/2	16	20 1/2	25	29 1/2
RUBBER LINED	4 1/4	5 3/4	6 3/4	7 3/4	8 3/4	10 1/4	12 3/4	16 3/8	20 7/8	25 3/8	29 7/8
PLASTIC LINED	4 1/4	5 3/4	6 3/4	7 3/4	8 3/4	10 1/4	12 3/4	16 3/8	20 7/8	25 3/8	29 7/8
GLASS LINED	4 1/8	5 5/8	6 5/8	7 3/8	8 5/8	10 1/8	12 5/8	16 1/8	20 5/8	25 1/8	29 5/8
B	4 1/4	5 3/4	5 3/4	7 1/8	10 1/4	11 5/8	13 7/8	16 5/8	24	33	25
HANDWHEEL	2 1/2	3 1/4	3 1/4	6 1/2	4 3/4	9 1/2	12 7/8	14 1/2	19	23	27 1/2

Materials and Sizes for Straightway Valves

Flanged ends 1/2" through 12"

Size 1/2 1 1 1/2 2 2 1/2 3 4 6 8 10 12

Flanged-End Valves (Unlined):

Cast Iron
Ductile Iron

X X X X X X X X X X X

Cast Iron lined with:

Tefzel (ETFE)
Polypropylene
Glass
Hard Rubber
Soft Natural Rubber
Hypalon
Butyl
Neoprene
EPDM

X X X X X X X X X X X
X X X X X X X X X X X
X X X X X X X X X X X
X X X X X X X X X X X
X X X X X X X X X X X
X X X X X X X X X X X
X X X X X X X X X X X
X X X X X X X X X X X
X X X X X X X X X X X

Ductile Iron lined with:

Tefzel (ETFE)
Polypropylene
Glass
Hard Rubber
Soft Natural Rubber
Hypalon
Butyl
Neoprene
EPDM

X X X X X X X X X X X
X X X X X X X X X X X
X X X X X X X X X X X
X X X X X X X X X X X
X X X X X X X X X X X
X X X X X X X X X X X
X X X X X X X X X X X
X X X X X X X X X X X

Automatic Diaphragm Valves

Standard Actuator Features

Position indicator is standard on all actuators.

Diaphragm Cases

Rugged high pressure cast iron provided with bosses and pads to facilitate the mounting of accessories such as limit stops, position indicators, limit switches, valve positioners, emergency handwheels, etc.

Diaphragm Plates

Mild steel to withstand high air pressures without distortion or breakage.

Internal Seal Assembly

Provides longer stem guide, furnished with two "O" rings thereby preventing side-ways or lateral movement of sliding stem thus ensuring better alignment and closure.

Captive Handwheel

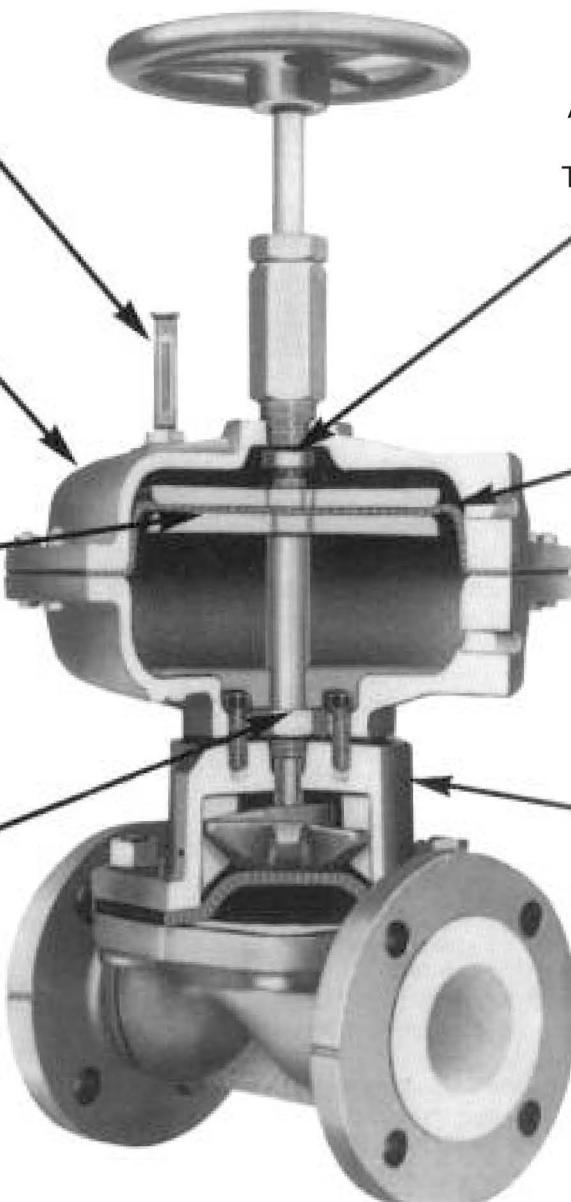
A positive stop is provided at the "valve open" position. This eliminates any possibility of the wheel and spindle becoming a projectile while being manually "backed off".

Acuator Diaphragm

Nylon reinforced neoprene molded in a unique way to provide long stroke and long life at air pressures up to 150 psig.

Bonnet

Rugged cast iron, flat top, designed especially for automatic valves, thus eliminating the need for adapter bushing with potentially weak "hour glass" profile.



Water as Operating Medium

When water instead of compressed air is to be used in the acuator, all cast iron and steel parts are galvanized and all bolts, nuts and screws are stainless steel.

Automatic Diaphragm Valves

Features of Series 630 Pneumatic Actuators



630-C

630-HRT

630-H

Actuator housing, bonnets and spring cases are made from ASTM 159-70, a high grade pressure type cast iron with 30,000 pounds per square inch tensile strength. Actuator diaphragms are specially reinforced with Nylon and are constructed to offer resistance to ballooning and other forms of deformation. As a result, substantially higher operating air pressures can be used to achieve valve closure than is permissible with competitive actuators of aluminum or pressed steel.

This higher air pressure capability, together with the unusually long stroke of **GIE** pneumatic actuators, makes it possible to use smaller actuators with a significant saving in both cost and space without short-stroking the valves.

To facilitate parts inventory and to lower maintenance costs, most components such as actuator diaphragms, seal assemblies, push-rods, etc., are interchangeable between the three modes of actuators, viz., spring open, spring closed and air to air.

To meet and present or future OSHA requirements, the powerful springs in the spring-closed actuator can be fully relaxed prior to dismantling for service. This exclusive feature prevents the spring case housing from becoming a deadly projectile during dismantling for service.

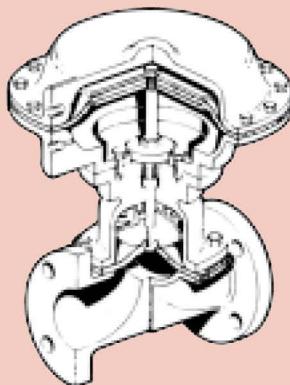
The totally enclosed and epoxy coated non-aluminum construction provides complete protection against the effects of caustic atmospheres and cleaning solutions.

A valve position indicator is included as standard equipment on all **GIE** pneumatic actuators to show the position of the valve in its stroke.

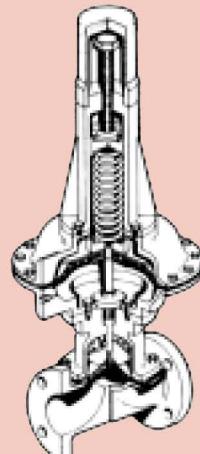
A complete and detailed record is on file at the factory on every valve manufactured during the years since 1950. Keyed to the serial number which appears on the data plate attached to the valve bonnet, this file provides a means of speedily obtaining any information required on every valve we have produced.

Pneumatic Actuators

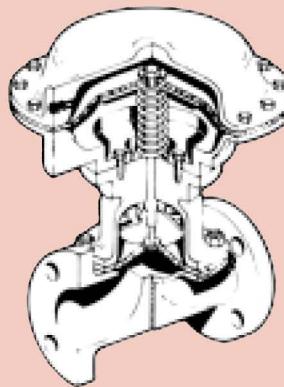
These air operators offer a cost-effective solution to a wide range of actuation situations. They are compactly designed to save space and can be mounted in any position. The actuator body is rugged cast iron, with aluminum optional, and when repair is necessary, only a few maintenance parts need to be replaced



Air To Open
Air To Close



Spring To Close
Air To Open



Spring To Open
Air To Close

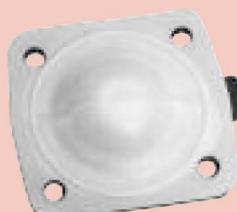
A Wide Variety of Linings & Diaphragms Means Valves Tailored to Your Exact Process Requirements

One of the more important features of the **GIE** family of Diaphragm Valves is the vast combination of materials available in body liner and diaphragms.



Linings

- Tefzel (ETFE)
- PFA
- Kynar (PVDF)
- Halar (ECTFE)
- Polypropylene
- Glass
- Hard Rubber
- Soft Rubber
- Butyl
- Neoprene
- Hypalon
- PVC



Diaphragms

- Teflon (PTFE)
- Viton
- Hypalon
- EPDM
- Neoprene
- Butyl
- Natural Rubber
- Buna N (Nitrile)

Tefzel, Teflon, Hypalon, and Viton are Dupont trademarks.

Kynar is a trademark of ELF ATO Chem.

Halar is a trademark of Ausimont USA.

Ordering Information

Topworks

Body

Diaphragm
Size

W F D Z 2 2 3 T 1 . 5

Type

W = Weir
S = Straightway

End Connection

F = Flanged
T = Threaded
B = Butt Weld
S = Socket Weld

Body Material

S = Cast Steel
C = Cast Iron
D = Ductile Iron
P = Polypropylene
V = PVC
6 = 316SS
2 = Alloy 20

Lining

Z = Tefzel (ETFE)	H = Hard Rubber
A = PFA	N = Neoprene
K = Kynar (PVDF)	Y = Butyl
E = Halar (ECTFE)	R = Nat. Rubber
P = Polypropylene	Q = Hypalon
S = Glass	V = PVC
X = Unlined	

Size

.50	= 1/2"	4.0	= 4"
.75	= 3/4"	5.0	= 5"
1.0	= 1"	6.0	= 6"
1.5	= 1 1/2"	8.0	= 8"
2.0	= 2"	10.	= 10"
2.5	= 2 1/2"	12.	= 12"
3.0	= 3"		

Diaphragm

3T = Teflon faced EPDM	3N = Neoprene
4T = Teflon with EPDM	3Q = Hypalon
backing (2 piece)	3R = Natural Rubber
5T = Teflon with Viton	3V = Viton
backing (2 piece)	3Y = Butyl
3B = Buna N (Nitrile)	WM = White EPDM
3M = EPDM	WY = White Butyl

Manual

22 = Indicator
2T = Travel Stop
2C = Chain Op.
2L = Lockable
2S = Sealed

Air Operated

80 = Double Acting
81 = Double Acting
w/Handwheel
82 = Normally Closed
83 = Normally Closed
w/Handwheel
84 = Normally Open
85 = Normally Open
w/Handwheel

GIE, Inc.

2434 Darnell Drive

Spring Valley, Ohio 45370

Ph. (937) 862-9500 Fax (937) 862-9501

Toll Free (888) 2 GET GIE

Website www.gieinc.com

E-mail sales@gieinc.com

Distributed Locally By:

2434 DARNELL DRIVE
SPRING VALLEY, OHIO 45370
Toll Free: 1-888-2-GET-GIE
Fax: 937-862-9501
Email: sales@gieinc.com
Website: www.gieinc.com