

# InKorr

This product is represented in Australia, New Zealand, and PNG by:

## InKorr Pty Ltd

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### Contact InKorr Pty Ltd for:



#### Heat Exchangers

- Shell & Tube Heat Exchangers
- Gasketed Plate Heat Exchangers
- Brazed Plate Heat Exchangers
- Crossflow Welded Plate Heat Exchangers
- Plate & Shell Heat Exchangers
- Non Metallic Heat Exchangers
- Corrugated Tube Heat Exchangers
- Spiral Heat Exchangers
- Air-Cooled Heat Exchangers



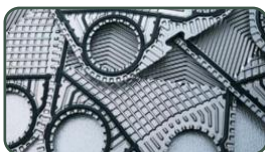
#### Vessels, Columns, and Equipment manufactured from:

- Exotic Alloys (Ta, Zr, Ti)
- Graphite and Silicon Carbide
- PTFE Lining



#### Plastic Lined Valves and Piping

- PTFE
- PVDF
- PP
- and many more!



#### Servicing and reburishment of heat exchangers!

- Plate cleaning
- NDE for crack testing
- Spare parts, both OEM and aftermarket

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# FLUOROPOLYMER LINED COMPOSITE PLASTIC DIAPHRAGM VALVE

High Performance and Creative Technology company



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# High Performance and Creative Technology company

## Standard Features

- PFA/ PVDF lined plastic diaphragm valves are used for corrosive, pure and ultrapure liquids, gases and vapours in chemical, pharmaceutical, food and industrial processes.
- Flanged end connections : ANSI 150lbs, JIS10k
- Rugged body and bonnet area of solid thermoplastic for maximum corrosion resistance.
- Weir design for excellent throttling.
- Bubble-tight sealing, even in applications such as slurries or suspended particles.
- Bonnet seals to protect internals from corrosive environments.
- Integrally molded bottom stand for simple yet firm panel mounting.
- Indicator at the top for indication of valve position

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## Lining Material

### PFA

Perfluoroalkoxy or PFA is a type of fluoropolymer with properties similar to polytetrafluoroethylene (PTFE). It differs from the PTFE resins in that it is melt-processable using conventional injection molding and screw extrusion techniques. PFA was invented by DuPont and is sold under the brandname Teflon® PFA, Teflon® is better known as the trade name for PTFE. Other brandnames for granules are Neoflon® PFA from Daikin or Hylton® PFA from Solvay Solexis. PFA is very similar in composition to the fluoropolymers PTFE and FEP (fluorinated ethylene-propylene). PFA and FEP both share PTFE's useful properties of low coefficient of friction and non-reactivity, but are more easily formable. PFA is softer than PTFE and melts at 305°C.

### PVDF

Polyvinylidene fluoride, or PVDF is a highly non-reactive and pure thermoplastic fluoropolymer. PVDF is a specialty plastic material in the fluoropolymer family; it is used generally in applications requiring the highest purity, strength, and resistance to solvents, acids, bases and heat and low smoke generation during a fire event. Compared to other fluoropolymers, it has an easier melt process because of its relatively low melting point of around 177°C. It has a low density (1,78) and low cost compared to the other fluoropolymers. It is available as piping products, sheet, tubing, films, plate and an insulator for premium wire. It can be injected, molded or welded and is commonly used in the chemical, semiconductor, medical and defense industries, as well as in lithium ion batteries. It is also available as a crosslinked closed cell foam, used increasingly in aviation and aerospace applications.

## Body Material

### PVC

Polyvinyl chloride, commonly abbreviated PVC, is a thermoplastic polymer. It is a vinyl polymer constructed of repeating vinyl groups (ethenyls) having one hydrogen replaced by chloride. Polyvinyl chloride is the third most widely produced plastic, after polyethylene and polypropylene. PVC is widely used in construction because it is cheap, durable, and easy to assemble. It can be made softer and more flexible by the addition of plasticizers, the most widely used being phthalates. In this form, it is used in clothing and upholstery, electrical cable insulation, inflatable products and many other applications in which it would originally have replaced rubber.

### PPS

Polyphenylene sulfide (PPS) is an organic polymer consisting of aromatic rings linked with sulfides. Synthetic fiber and textiles derived from this polymer are known to resist chemical and thermal attack. PPS is used to make filter fabric for coal boilers, papermaking felts, electrical insulation, specialty membranes, gaskets, and packings. PPS is the precursor to a conducting polymer of the semi-flexible rod polymer family. The PPS, which is otherwise insulating, can be converted to the semiconducting form by oxidation or use of dopants. Polyphenylene sulfide is an engineering plastic, a high-performance thermoplastic.[2] PPS can be molded, extruded, or machined to high tolerances. In its pure solid form, it may be opaque white to light tan in color. Maximum service temperature is 218°C (424°F). PPS has not been found to dissolve in any solvent at temperatures below about 200°C (392°F).

### PP

Polypropylene (PP), also known as polypropene, is a thermoplastic polymer used in a wide variety of applications including packaging, textiles (e.g., ropes, thermal underwear and carpets), stationery, plastic parts and reusable containers of various types, laboratory equipment, loudspeakers, automotive components, and polymer banknotes. An addition polymer made from the monomer propylene, it is rugged and unusually resistant to many chemical solvents, bases and acids.

### PPA

Polyphthalamide (aka, PPA, High Performance Polyamide) is a thermoplastic synthetic resin of the polyamide (nylon) family that is used to replace metals in high temperature automotive applications, as the housing for high temperature electrical connectors and multiple other uses. It has found a degree of favor for use in cutlery. Cold Steel has advertised the glass fibre reinforced series as being stealthy (due to them not being detected by metal detectors and having no metallic reflections) and, being made of "Ivory" (a trade name), stronger than previous models made of "Zytel". As a member of the nylon family, it is asemi-crystalline material composed from a diacid and a diamine. However, the diacid portion contains at least 55% terephthalic acid (TPA) or isophthalic acid (IPA). TPA or IPA are aromatic components which serve to raise the melting point, glass transition temperature and generally improve chemical resistance vs. standard aliphatic nylon polymers.



Property	Unit	LINING		BODY			
		PFA	PVDF	U-PVC	PP+GF30%	PPS+GF40%	PPA+GF40%
Specific Gravity	-	2,14-2,16	1,75-1,78	1,3-1,45	0,9	1,66	1,56
Melting Point	°C	304	177	170	165	285	312
Tensile strength	MPa	33,3	40-52	60	30-35	210	260
Continuous service Temp	°C	260	150	60	90	200	185
Defection Temp at 1,8 MPa	°C	48	90	-	-	270	287

What is the difference between the each of fluoropolymer materials?

# Q

# A

In addition to PTFE, FEP and PFA there are other fluoropolymers such as THV, ETFE, ECTFE, CTFE, and PVDF. Although these materials are members of the same family, they have slightly different thermal and mechanical properties. PTFE and PFA have a slightly higher upper use temperature than FEP. FEP and PFA are clear (PTFE is translucent), and have better mechanical properties than PTFE. The other key differences are in the areas of chemical inertness, corrosion resistance, permeability, and FDA approval.



What is a diaphragm valve?

# Q

# A

A diaphragm valve is a control device that utilizes a flexible membrane to close, or shut, an opening. Pressure increase or decrease on either side of the diaphragm causes the valve to move its position. Often, these valves are used in industries like food processing, pharmaceutical manufacturing, mining, and pollution control, among others. They can be made from a variety of plastics and metals, depending on which application they will be used for.

# Fluoropolymer Lined Composite Plastic Diaphragm Valve Specifications

## HAND WHEEL PART



1

### Ergonomic Hand wheel design

High integrity hand wheel with ergonomic design assures comfortable, precise control

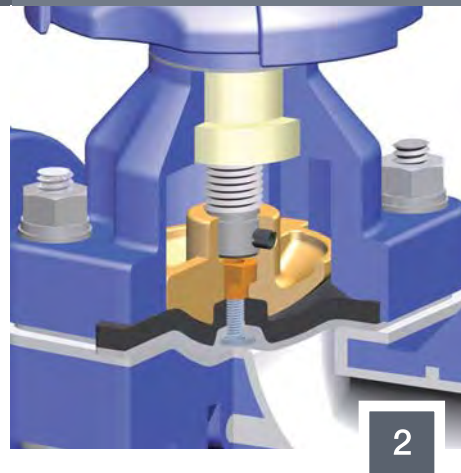
### Position indicator

Provides visual indication of valve position

### Indicator cap

Protect the bonnet internals from atmospheric conditions

## BONNET PART



2

### Bonnet isolation

Working parts are isolated from the process fluid

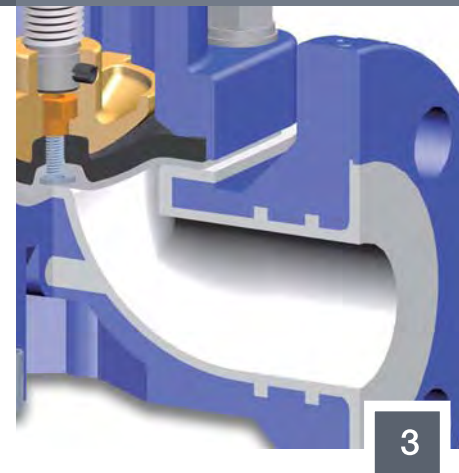
### Advanced bonnet design

It gives extra support to the diaphragm to maintain effective sealing

### Floating nut

It prevents point loading of M-PTFE diaphragm, increasing cycle life.

## BODY PART



3

### Plastic body with PFA(PVDF) lining

### Wide choice of body materials

Available in PPS(GF40%), PPA(GF40%), PP(GF30%), U-PVC

### Two type of Body face to face dimensions

ANSI 150lbs, JIS 10K

### Flanged end connections

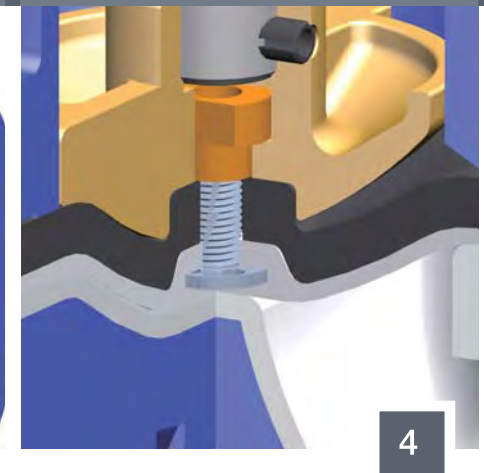
ANSI 150lbs, JIS 10K

### Available in Nominal sizes

1/2" ~ 4" (15A ~ 100A)

### Bottom stand for easy support

## DIAPHRAGMS PART



4

### Molded closed 2-Piece design Diaphragms

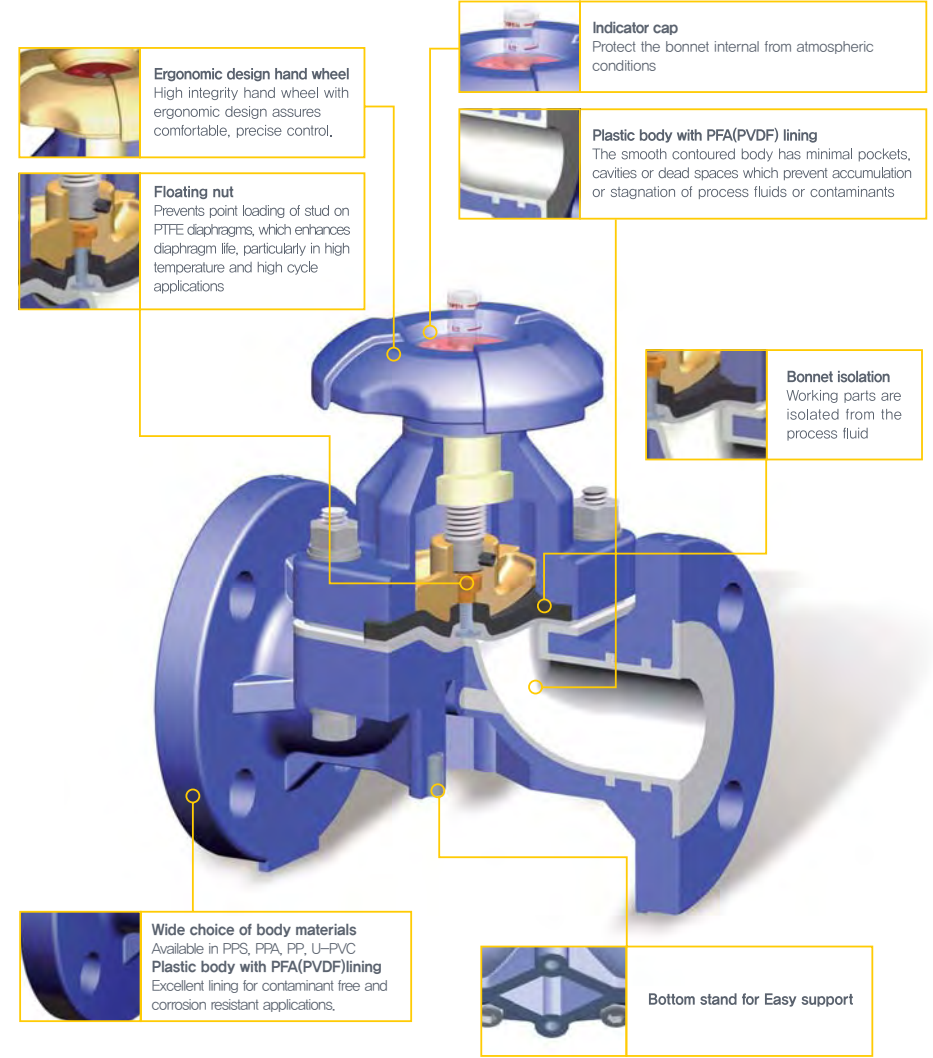
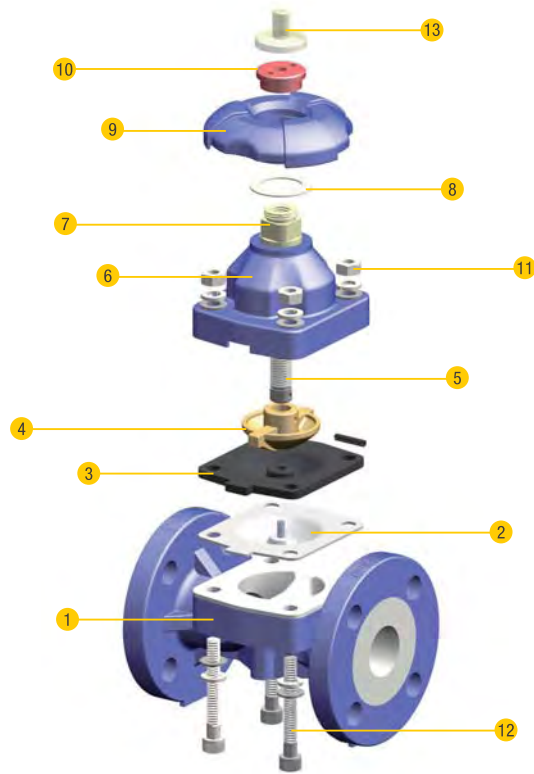
M-PTFE diaphragm, with PVDF gas barrier EPDM cushion rubber Diaphragms are molded closed to reduce required closing forces, give longer life and provide bubble tight closure without stretching or distortion

# Material of Parts

# Features

PFA/PVDF lined plastic diaphragm valves are used for corrosive, pure and ultrapure liquids, gases and vapours in chemical, pharmaceutical, food and industrial processes.

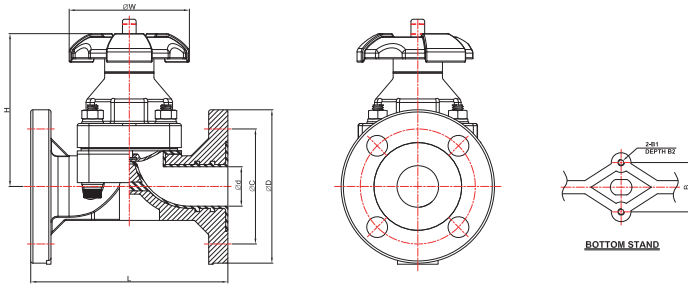
ITEM No.	DESCRIPTION	MATERIAL			
1	BODY	PPS + GF40% with PFA (PVDF)	PPA + GF40% with PFA (PVDF)	PP + GF30% with PFA (PVDF)	U-PVC with PFA (PVDF)
2	DIAPHRAGM	M-PTFE, PTFE (with PVDF gas barrier)			
3	CUSHION RUBBER	EPDM, VITON			
4	COMPRESSOR	PPS + GF40%			
5	SPINDLE	SUS 304, Carbon steel			
6	BONNET	PPS + GF40%, PPA + GF40%, PP + GF30%, PVC			
7	SPINDLE BUSH	POM, BRASS			
8	HANDLE GASKET	PTFE			
9	HAND WHEEL	PPS + GF40%, PPA + GF40%, PP + GF30%, PVC			
10	HAND WHEEL CAP	POM			
11	NUT, SPRING WASHER	SUS 304			
12	WRENCH BOLT	SUS 304			
13	INDICATOR CAP	PC			



# Dimensions Diaphragm Valve

▶ Available size : 1/2" ~ 4" (15A ~ 100A) ▶ Flange rating : ANSI 150lbs JIS 10K

Nominal size	Ød	L		ØD		ØC		Øw	H	B	B1	B2	Ref.
		ANSI 150	JIS 10K	ANSI 150	JIS 10K	ANSI 150	JIS 10K						
1/2 (15A)	15	108	110	89	95	60,5	70	85	85	25	M5	13	A
3/4 (20A)	20	149	120	98,5	100	69,9	75	85	85	25	M5	13	B
1 (25A)	25	149	130	108	125	79,4	90	85	95	25	M5	13	C
1 1/2 (40A)	38	178	180	127	140	98,6	105	111	140	45	M6	15	D
2 (50A)	50	202	210	152	155	120,7	120	125	156,5	45	M8	15	E
2 1/2 (65A)	65	-	250	178	175	140	140	220	190	85	M8	20	F
3 (80A)	80	263,5	280	190,5	185	152,4	150	220	200	100	M10	28	G
4 (100A)	100	328,5	340	229	210	192,5	175	260	240	120	M10	28	H



## Ordering information

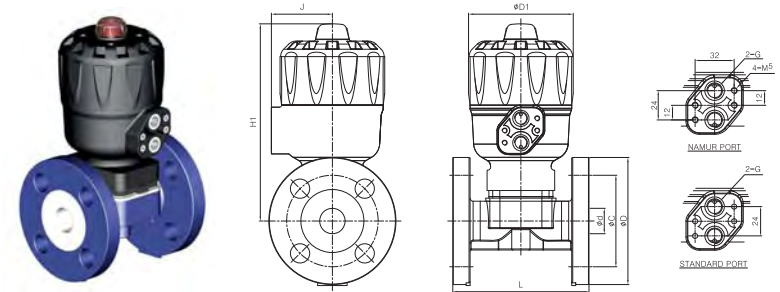
Connection	Ref.	Valve type	Ref.	Operating	Ref.	Valve body materials	Ref.
JIS 10K	J	Plastic diaphragm valve	PD	Manual	M	PFA + PPS GF 40%	PS
ANSI 150lbs	A	Plastic Ball valve	PB	Actuator	A	PFA + PPA GF 40%	PA
						PFA + PP GF 30%	PP
						PFA + U-PVC	PV
Control function		Ref.	Diaphragm material		Ref.		
Fail closed	FC		M-PTFE / EPDM		PE		
Fail opened	FO		M-PTFE / VITON		PV		

Order example	J	PD	M	D	PS	PE	-
Connections	J						
Valve type		PD					
Operating			M				
Nominal size				D			
Valve body material					PS		
Diaphragm material						PE	
Control function							-

# Dimensions Auto Diaphragm Valve

DIMENSIONS

Nominal size	Ød	L		ØD		ØC		ØD1	H1	J	G
		ANSI 150	JIS 10K	ANSI 150	JIS 10K	ANSI 150	JIS 10K				
1/2 (15A)	15	108	110	89	95	60,5	70	103	190	60	1/4
3/4 (20A)	20	149	120	98,5	100	69,9	75	103	190	60	1/4
1 (25A)	25	149	130	108	125	79,4	90	103	193	60	1/4
1 1/2 (40A)	38	178	180	127	140	98,6	105	155	280	86	1/4
2 (50A)	50	202	210	152	155	120,7	120	155	290	86	1/4
2 1/2 (65A)	65	-	250	178	175	140	140	155	295	86	1/4
3 (80A)	80	263,5	280	190,5	185	152,4	150	260	400	155	1/4
4 (100A)	100	328,5	340	229	210	192,5	175	260	410	155	1/4



## FEATURES

- NC / NO / Bi-Directional
- Can be easily converted from NC to NO / Single to Double acting
- Operator with threaded / NAMUR ports
- Technical data

Orifice	DN 15-100
Body materials	PPA + GF40%
	PPS + GF40%
	PP + GF30%
Diaphragm material	U-PVC
Actuator material	M-PTFE/EPDM, M-PTFE/VITON
Pilot air ports	Stainless steel
Ambient temperature	
Actuator size < 100mm	+5°C to +140°C
Actuator size 100-125mm	+5°C to +90°C
Actuator size ≥ 175mm	-10°C to +50°C
Control medium	Neutral gases
Pilot pressure max.	max. 7 bar