



YOUR SOLUTION PARTNER IN
INDUSTRIAL
VALVE AUTOMATION...



FEP-PFA **LINED** BUTTERFLY VALVE LUG TYPE

Stainless Steel actuator
for **higher corrosive**
valves



Scan
For More Information



Mfg. & Mkt by:
aira Euro automation pvt. ltd.
INDIA

www.airaindia.com



UNIT : 1

UNIT : 2

UNIT : 3

About Us

*Clients are
why we exist!*

We welcome and thank you for referring our detailed catalogue.

aira is known all over continents as a manufacturer of quality products - Ball Valves, Butterfly Valves, Plug Valves, & Control On / Off Valves with Pneumatic Actuators for Pharma, Oil & Gas, Steel, Paper, Water, Chemical and all type of processing industries.

aira has walked through more than 3 decades, gaining valuable experience, offering equipment's in the products manufactured by OEMs in all spheres of engineering. **aira** products have gained reputations of consultants, and approvals of users, OEMs and other as a quality product.

aira has expanding business into foreign markets specially GCC, UAE, Asian & African countries. This is because increase its customer base and revenue, leading to overall growth and success. Now foreign users come to know and believe in the services provided by the **aira**. Along with the same, it also helps to reach a large number of users thereby leading to the increase their business.

Being an ISO 9001 BVQI certified company has put **aira** in fore front. Our motto is "Value the customer" and "Superior product", one among the best in the world.

Our Quality

- In-House full scale testing facility.
- Lean manufacturing practices
- Certified by : ISO 9001 : 2015 (BVQI LONDON), CE, ATEX, CIMFR, BIS, PESO, SIL 3, IBR
- API 609, API 6D

Our Commitment

- To understand customer's need first before proposing our products.
- To keep on providing competitive rate's by adapting to continuous process improvement, without compromising on quality.
- To provide continuous support to our customers and go beyond their expectations in terms of delivery and after sale services.

Our Manufacturing Facility

- In house R & D, manufacturing and testing facility is all located in a spread over three campuses at Ahmedabad, Gujarat, INDIA.

Network - Sales Office

- 60 Plus Branch Offices in different states in India.
- Sales office in the Bangladesh, Dubai, Kenya, Malaysia, Nepal, Qatar, Singapore, South Africa, Sri Lanka, Turkey, USA (Expanding).

CERTIFICATIONS



ISO 9001:2015



CE - Butterfly Valve



SIL 3 - Pneumatic Rotary Actuators



ISO 14001 : 2015



ISO 45001 : 2018



ISO 45001 : 2018



SIL 3 - Butterfly Valve



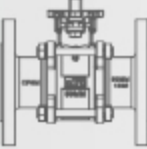
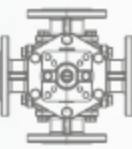
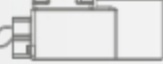
API - Ball Valve (6D)



API - Butterfly Valve (609)



Some of Our CERTIFICATIONS Approvals

QMS (Quality Management System) ISO 9001 : 2015	EMS (Environment Management System) ISO 14001 : 2015	OHSAS (Occupational Health & Safety Management System) ISO 45001 : 2018
PNEUMATIC ACTUATOR CE / ATEX / EXIDA SIL-3 / PROOF OF DESIGN 	SCOTCH & YOKE ACTUATOR CE / ATEX / SIL 3 	S. S. ACTUATOR CE / IEP ATEX 
BALL VALVES (Floating & Trunnion) FIRE SAFE TEST DESIGN / FUGITIVE EMISSIONS TEST as per ISO 15848-1 / CE / PED / API 6D / API 607 / EXIDA SIL-3 	BUTTERFLY VALVE (Concentric / Double & Triple Eccentric) FIRE SAFE TEST DESIGN / FUGITIVE EMISSIONS TEST as per ISO 15848-1 / CE PED / API 609 / EXIDA SIL-3 / IBR / PROOF OF DESIGN / FOOD GRADE / BIS / ISI 	MULTIPORT BALL VALVE FUGITIVE EMISSIONS TEST as per ISO 15848-1 / CE PED / EIL 
PLUG VALVE FUGITIVE EMISSIONS TEST as per ISO 15848-1 / IBR 	FLAMEPROOF SOLENOID COIL IEP ATEX / CE / CIMFR / IP 65 / IP 67 / IP 68 / BIS / PESO 	LIMIT SWITCH IEP ATEX / CE / CIMFR / IP 67 / BIS / PESO / EQDC IP 68 
IBR PISTON VALVE GLOBE CONTROL VALVE (CKD / CND) DISC CHECK VALVE (DCV) PRESSURE REDUCING VALVE (PRV) POP TYPE SAFETY VALVE BALL VALVE		POSITIONER ENCLOSURE CE / CIMFR / IP 67 / BIS / PESO



FEP / PFA LINED VALVE TORQUE & TESTING DETAILS

VALVE SIZE		TORQUE IN NM		
MM	INCH	PFA BALL VALVE	PFA PLUG VALVE	PFA & TECO BUTTERFLY VALVE
15	1/2"	10	14	----
20	3/4"	14	20	----
25	1"	20	38	----
40	1 1/2"	38	42	----
50	2"	42	87	15
65	2 1/2"	86	88	35
80	3"	128	210	40
100	4"	210	306	50
125	5"	----	----	55
150	6"	436	713	90
200	8"	470	----	115
250	10"	1537	----	200
300	12"	2865	----	350
350	14"	----	----	440
400	16"	----	----	676
450	18"	----	----	713
500	20"	----	----	----
600	24"	----	----	----

ACTUATOR SELECTION MULTIPLY THE ABOVE VALUES BY THE FOLLOWING FACTORS (F) TO GET THE ACTUATOR TORQUE.

SERVICE	FACTOR 'F'
RAW WATER	1.35
WET SERVICE	1.35
STEAM	1.25
GAS	1.40
SLURRY	1.80
VISCOUS LIQUID	2.00

TESTING AND TEST DURATION

PRESSURE TEST CHART

FEP / PFA LINED BALL VALVE, PLUG VALVE, BUTTERFLY VALVE, CONTROL VALVE, DIAPHRAGM VALVE			
Pressure Rating	Hydro Test Pressure		Pneumatic
	Body (Kg/cm ²)	Seat (Kg/cm ²)	
150#	10	7	7
300#	10	7	7

FEP / PFA LINED & TECO BUTTERFLY VALVE ONLY			
Pressure Rating	Hydro Test Pressure		Pneumatic
	Body (Kg/cm ²)	Seat (Kg/cm ²)	
PN 6 Upto 24"	10	7	7
PN 10 Upto 8"	16	10	7

FEP / PFA LINED BALL VALVE, PLUG VALVE, BUTTERFLY VALVE, CONTROL VALVE, DIAPHRAGM VALVE			
Pressure Rating	Hydro Test Pressure		Pneumatic
	Body (Kg/cm ²)	Seat (Kg/cm ²)	
PN 6 Upto 24"	10	7	7

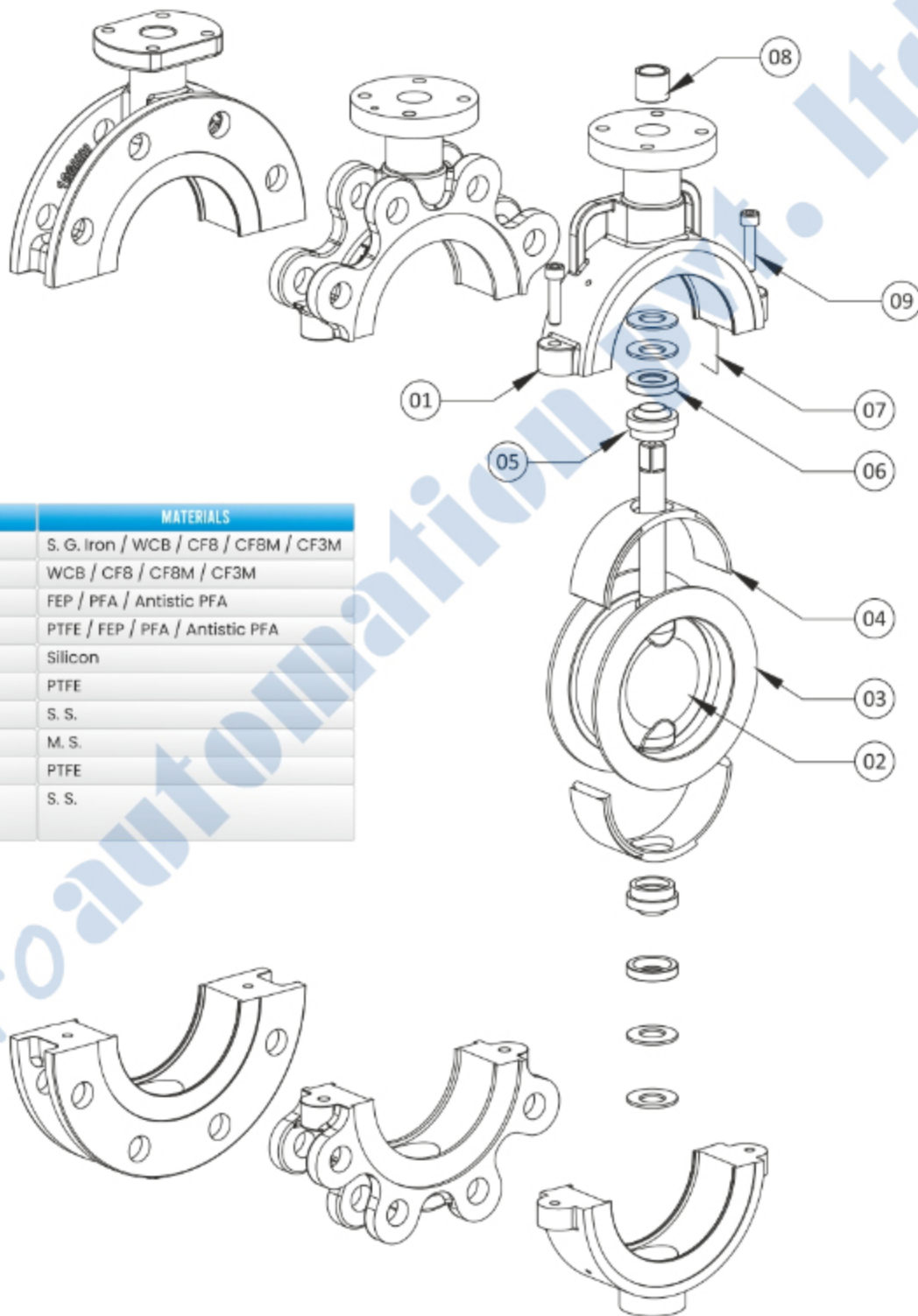
FEP / PFA LINED BALL VALVE, PLUG VALVE, BUTTERFLY VALVE, CONTROL VALVE, DIAPHRAGM VALVE

Test Duration In Seconds		
Valve Size	Body (Minutes-Seconds)	Seat (Minutes-Seconds)
2" & Smaller	0.25 - 15	0.25 - 15
2 1/2" to 6"	1 - 60	1 - 60
8" to 12"	2 - 120	2 - 120
14" & Larger	5 - 300	2 - 120

HYDRAULIC TESTING



FEP / PFA LINED BUTTERFLY VALVE EXPLODED VIEW



SR. NO.	DESCRIPTIONS	MATERIALS
1	Body 2 Pcs.	S. G. Iron / WCB / CF8 / CF8M / CF3M
2	Disc	WCB / CF8 / CF8M / CF3M
3	Lining Material	FEP / PFA / Antistic PFA
4	Seat	PTFE / FEP / PFA / Antistic PFA
5	Silicon Backing	Silicon
6	Thrush Bush PTFE	PTFE
7	Thrush Collar	S. S.
8	Spring Washer	M. S.
9	Gland Bush	PTFE
9	Body Fitting L. N. Cap Bolt	S. S.

PRODUCT CODING

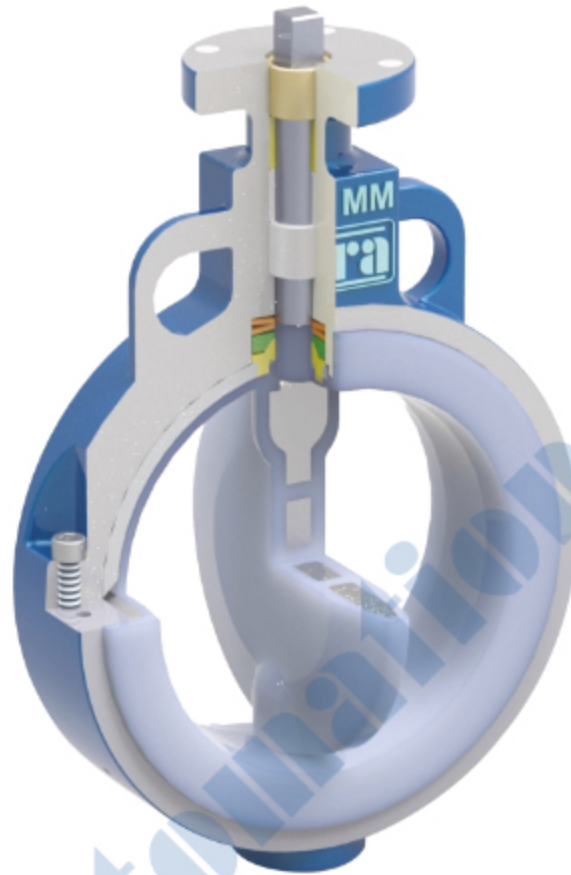
2 PIECE LINED BUTTERFLY VALVE

A	B	C	D	E	F	G	H	I	J
A SERIES KEM	B VALVE SIZE CODE	C END CONNECTION CODE	D MOC BODY CODE	E BODY SEAT CODE	F MOC DISC CODE	G DISC LINING CODE	H SPECIAL REQUIRED CODE	I MANUAL OVERRIDE CODE	J FUNCTION CODE
	40mm 40 50mm 50 65mm 65 80mm 80 100mm 100 125mm 125 150mm 150 200mm 200 250mm 250 300mm 300 350mm 350 400mm 400 500mm 500 600mm 600	WAFLER 150# W1 LUG 150# L1 DOUBLE FLANGE 150# D1	DUCTILE IRON S. G. IRON SG CAST STEEL WCB CS SS 304 CF8 M4 SS 316 CF8M M6 SS 316L CF3M M7	PTFE * FEP F PFA P	CAST STEEL WCB CS SS 304 CF8 M4 SS 316 CF8M M6 SS 316L CF3M M7	FEP F PFA P	ANTISTATIC DEVICE @ SPECIAL COATING @ OTHER @	NO * YES J	I. C. HAND LEVER I GEAR OPERATED E BEAR SHAFT B DOUBLE ACTING ACTUATOR D SINGLE ACTING ACTUATOR S

NOTES	
SYMBOL	INDICATION
@	Contact Factory
*	By Default, Do Not Mention

EXAMPLE-1	KEM 50W1M4M4FI	KEM VALVE SIZE 50MM WAFLER TYPE CF8 BODY PTFE SEAT & CF8 FEP LINING DISC HAND LEVER OPERATED
EXAMPLE-2	KEM 100L1CSFM7PJD	KEM VALVE SIZE 100MM LUG TYPE WCB BODY FEP SEAT & CF3M PFA LINING DISC M.O WITH D/A ACTUATOR OPERATED
EXAMPLE-3	KEM 150D1M6M6FB	KEM VALVE SIZE 150MM DOUBLE FLANGE TYPE CF8M BODY PTFE SEAT & CF8M FEP LINING DISC BARE SHAFT

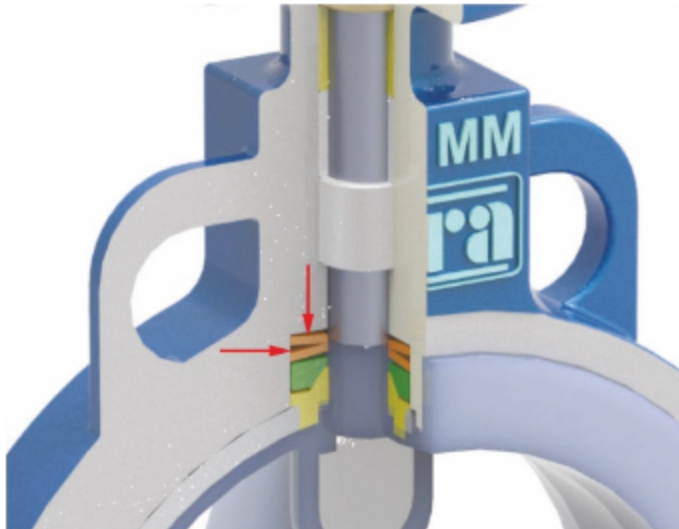
FEP / PFA LINED BUTTERFLY VALVE FEATURES



LINED BUTTERFLY VALVE DETAILS

- 1 - **UPPER STEM BUSHING** : An upper stem bushing, retainer by a stainless steel ring, is provide to absorb actuator side thrusts and is acetal as standard or PTFE as an option.
- 2 - **UPPER STEM SEAL** : Keeps environmental contaminants from entering the stem bore.
- 3 - **BODY** : Bodies are two piece wafer or lug style and are epoxy coated. All bodies meet full ASME Class 150 or DIN 3840 flange drilling requirements (24" body is double flanged).
- 4 - **BEARINGS** : PTFE impregnated steel bearings provided for the precision alignment of the upper and lower stem.
- 5 - **BLOWOUT PROOF STEM** : A shoulder is machined into the upper stem. The stem and the disc are pressed together during assembly creating a positive stem to disc connection.
- 6 - **PRIMARY SEAL** : The primary seal is achieved by an interference fit between the extra wide disc hubs and contoured seat.
- 7 - **SEAT DESIGN** : The unique seat geometry lowers seating unseating torque while reducing wear on the contacting parts.
- 3 - **SEAT ENERGIZER** : A resilient seat energizer extends completely around the seat, including the disc providing uniform force sufficient for bubble tight shut-off
- 4 - **DISC** : The encapsulated disc has 1/8" (3 mm) minimum thickness of virgin PTFE, FEP & PFA lined over stainless steel.

FEP / PFA LINED BUTTERFLY VALVE DETAILS



SEAL CAPSULE

The secondary seal is achieved using a seal capsule which fully isolates the valve body and stem from the line media. The seal capsule is made of a virgin PTFE enclosing the internal energizer. The capsule fits into grooves machined in the upper and lower disc hubs. When compressed between the disc and seat during assembly, the capsule becomes energized, exerting both upward and downward pressure in disc and seat surfaces.

BODY SEALS

Reinforced PTFE gaskets are placed between the body halves. These bidirectional seals eliminate contamination from external environmental conditions and potential leak paths from the line media.

ACCESSORIES

Tapped port can be provided in the body neck below the stem seal for fugitive emissions detection. Grounding cable is offered to protect against static charge build-up. The cable mounts to the valve body.



FEP / PFA LINED BUTTERFLY VALVE LUG TYPE



"aira" Offers FEP / PFA Lined valves are well suited for consistent performance requirements in highly corrosive applications Chlorine, Benzene, Sulphuric acid, Nitric acid, Phosphoric acid, Hydrochloric acid & Sea Water, Virgin grade resin & thick fluoropolymer linings provide for superior resistance to corrosive chemical effects, Absorption & Swelling.

SIZE RANGE : 1.1/2" TO 24" (50 MM TO 600 MM)



With Aluminium Body With Stainless Steel Body
Actuator Actuator



MODEL : KEM-L

CE Approved SIL 3 Approved

VALVE SPECIFICATION	
Working Pressure	Upto 8 Kg/cm ²
Working Temperature	FEP : 180 °C PFA : 230 °C
Valve Rating	Flanged 150#
Spark Test	15 Kv DC to 40 Kv DC

TECHNICAL DETAILS

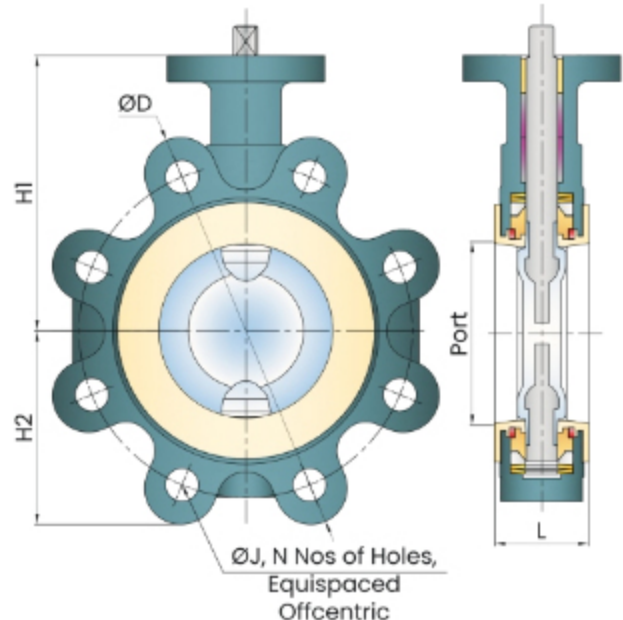
- Design and Manufacturer : API 609 Category A / BS - EN - 593
- Valve Face to Face Dimension : API 609 Category A
- Top Flange Drilling : ISO 5211
- Inspection & Testing : API 598 / BS EN 12266 Part - I
- Flange Standard Conformity : ASME B 16.5 Class 150#

DIMENSIONS :

Size Range	DIMENSIONS TABLE									WEIGHT APPROX.
Inch	MM	Port	L	H1	H2	ØD	ØJ	N	PCD	
1.1/2"	40	40	33.5	----	----	----	15.75	4	98.55	----
2"	50	51	43	100	67	104	19.05	4	120.7	2.92
2.1/2"	65	64	47	114	65	112	19.05	4	139.7	3.39
3"	80	81	47	119	81	130	19.05	4	152.4	4.86
4"	100	103	54	158	93	164	19.05	8	190.5	6.62
5"	125	128	56	168	120	180	22.23	8	215.9	9.70
6"	150	152	60	197	136	217	22.23	8	241.3	13.94
8"	200	204	64	220	168	270	22.23	8	298.5	19.83
10"	250	245	72	234	200	340	25.4	12	362.0	27.85
12"	300	295	82	270	245	374	25.4	12	431.8	38.23
14"	350	340	90	300	267	440	28.58	12	476.3	53.57
16"	400	387	104	331	291	493	28.58	16	539.8	101.23
18"	450	445	116	----	----	527	31.75	16	577.8	----
20"	500	487	130	----	----	580	31.75	20	635.0	----
24"	600	596	154	----	----	692	31.75	20	749.3	----

All Dimensions are in mm

Weight are bare shaft in Kgs.



CHEMICAL COMPATIBILITY TABLE

R = Resistant | A = Excellent - No effect | B = Good - Minor effect | IC = Fair - Moderate effect
U = Unsatisfactory | IX = Conflicting Data | - = No Data Available

*No corrosion rate reported

CODE	PTFE	FEP	PFA	PVDF	HDPE	PP	CODE	PTFE	FEP	PFA	PVDF	HDPE	PP
Acetaldehyde	A	R	A	X	U	A	Diacetone Alchoh	A	R	A	A	R	R
Acetamide	A	R	A	C	R	A	Dibutyl Phthalate	R	R	R	U	U	R
Acetate Solvent	A	R	A	A	R	B	Dichlorobenzene	A	R	A	A	U	C
Acetic add 10%	A	R	A	C	R	B	Dichloroethane	A	R	A	A	R	X
Acetic Add, Glacial	A	R	A	B	R	A	Dichloroethylene	R	R	R	R	-	R
Acetone	A	R	A	U	R	A	Dichlorofluoromethane	R	R	R	-	-	-
Acetonitrile	R	R	-	R	-	R	Diesel Fuel	A	R	A	A	R	A
Acetophenone	R	R	R	R	U	R	Diethanolamine	R	R	R	U	-	R
Acetyl Chloride	A	R	A	R	U	U	Diethyl Amine	X	R	X	X	U	A
Acetylene	R	R	R	R	-	R	Diethyl Ether	A	R	A	R	U	R
Acrylonitrile	A	R	A	A	R	A	Diethyl Phthalate	R	-	R	-	-	-
Adipic Acid	A	R	A	A	R	B	Diethylene Glycol	A	R	A	A	R	A
Aldrin (1 oz./gal.)	-	-	-	-	-	-	Dimethyl Aniline	A	R	A	A	-	X
Allyl Alcohol	R	R	R	R	R	R	Dimethyl Ether	R	R	R	-	-	-
Allyl Chloride	R	R	R	R	R	R	Dimethyl Formamide	X	R	X	U	R	A
Ammonium Acetate	A	R	A	R	-	A	Dimethyl Phthalate	R	R	R	R	-	R
Ammonium Oxalate 10%	R	R	R	-	-	R	Dimethyl Sulfoxide	R	R	R	U	R	R
Amyl Acetate	A	R	A	A	R	X	Dinitrotoluene	R	-	R	-	-	-
Amyl Alcohol	A	R	A	A	R	B	Diocetyl PHTHALATE	R	R	R	R	U	U
Amyl Chloride	R	R	R	U	U	U	DIOXANE	R	R	R	U	U	R
Aniline	A	R	A	A	R	X	Diphenyl	A	R	A	-	-	U
Aniline Hydrochloride	A	R	A	A	U	X	Diphenyl Oxide	A	-	A	B	-	U
Antifreeze	-	-	-	-	-	U	Esters (general)	R	R	R	R	-	-
Asoclor 1248	A	R	A	-	U	U	Ethane	A	-	A	A	-	U
Asphalt	A	R	A	A	R	B	Ethanolamine	A	R	A	X	-	X
Benzaldehyde	A	R	A	A	U	X	Ethers (genera)	A	-	A	R	U	U
Benzene	A	R	A	A	U	X	Ethyl Acetate	A	R	A	X	R	A
Benzo Sulfonic Acid 10%	R	R	R	R	R	R	Ethyl Alcohol	A	R	A	R	R	A
Benzyl Alcohol	A	R	A	A	U	A	Ethyl Benzene	R	R	R	R	U	U
Benzolic	A	R	A	A	B	R	Ethyl Benzozate	A	-	A	U	U	B
Benzol	A	R	A	A	U	U	Ethyl Chloride	R	R	R	R	U	U
Benzonitrile	A	R	A	-	A	-	Ethyl Ether	A	R	A	R	U	U
Benzyl	R	R	R	R	-	C	Ethyl Sulfate	A	-	A	-	-	-
Bromobenzene	R	R	R	R	-	U	Ethylene Bromide	A	R	A	A	U	U
Butadiene	A	R	A	A	U	U	Ethylene Chloride	A	R	A	A	R	X
Butane	A	R	A	A	U	U	EthyleneChlorohydrin	A	R	A	A	U	X
Butyl Alcohol	A	R	A	A	B	R	Ethylene Diamine	A	R	A	B	-	R
n-Butyl Amine	A	R	A	X	U	U	Ethylene DiBromide	R	R	R	R	-	R
Butyl Ether	A	R	A	A	-	-	Ethylene Glycol	A	R	A	A	R	A
Butyl Phenol	R	R	R	R	-	U	Ethylene Oxide	A	R	A	A	R	U
Butyl Phthalate	R	R	R	R	-	R	Formaldehyde 100%	A	-	A	A	-	C
Butylacetate	A	R	A	B	R	X	Formaldehyde 37%	A	R	A	A	R	A
Butyric Acid	R	R	R	A	U	R	Formic Acid 5%	R	R	R	R	R	R
Carbon Tetrachloride	R	R	R	R	U	U	Fuel Oils	B	R	B	B	R	A
Carbonic Acid	A	R	A	A	R	A	Gasoline (high-aromatic)	B	-	B	A	-	A
Chloroacetic Acid	A	R	A	A	U	C	Gasoline (LEADED)	A	R	A	A	U	X
Chlorobenzene	B	R	B	A	U	U	Gasoline (unleaded)	A	R	A	A	U	X
Chlorobromomethane	A	-	A	-	-	A	Glycolic Acid	A	R	A	B	R	A
Chlordane (1/4lb./gal.)	R	-	R	-	-	-	Heptane	A	R	A	A	R	C
Chloroethane	A	R	A	A	R	X	Hexachloroethane	R	-	R	-	-	-
chloroform	A	R	A	A	U	X	Hexamine	R	R	R	-	-	-
Chloronaphthalene	-	-	-	-	-	-	HeXane	A	R	A	A	U	B
Chlorophenol 5% (aq.)	R	R	R	R	-	-	Hexyl Alcohol	A	-	A	-	-	-
Citric Acid	A	R	A	A	A	A	Hydraulic Oil (petro.)	A	-	A	A	-	U
Cresol	R	R	R	R	U	U	Hydraulic Oil (synthetic)	A	-	A	A	-	U
Cresylic Acid 50%	R	R	R	R	R	X	Hydrazine	C	-	C	A	U	C
Crude Oil	U	R	U	U	U	R	Hydrogen Peroxide (dilute)	R	R	R	R	R	R
Cyclohexane	A	R	A	R	R	U	Hydroquinone	A	R	A	R	-	A
Cyclohexanone	A	R	A	R	U	U	Hydroxyacetic Acid 70%	A	-	A	A	-	-
DDT5%	-	-	-	-	-	-	IodoForm	C	R	C	C	-	R
Detergents (general)	A	R	A	A	R	A	Isobutyl Alcohol	A	-	A	-	-	A

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R = Resistant I A = Excellent - No effect I B = Good - Minor effect IC = Fair - Moderate effect

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*No corrosion rate reported

CODE	PTFE	FEP	PFA	PVDF	HDPE	PP	CODE	PTFE	FEP	PFA	PVDF	HDPE	PP
Isooctane	A	----	A	A	B	A	Acetamide	A	R	A	C	R	A
Isopropyl Acetate	A	R	A	X	R	B	Acetate Solvent	A	R	A	A	R	B
Isopropyl Alcohol	A	R	A	R	R	A	Acetic Add 10%	A	R	A	C	R	B
Isopropyl Ether	A	R	A	X	----	X	Acetic Add, Glacial	A	R	A	B	R	A
Isotane	----	----	----	A	----	U	Acetone	A	R	A	U	R	A
J et Fuel JP-4, JP-5	A	R	A	A	----	A	Acetonitrile	R	R	R	R	----	R
Kerosene	A	R	A	A	R	R	Acetophenone	R	R	R	R	U	R
Lacquer Thinners	A	----	A	----	----	U	Acetyl Chloride	A	R	A	R	U	U
Lacquers	A	----	A	U	----	U	Acetylene	R	R	R	R	----	R
Lactic Acid	A	R	A	B	----	B	Acrylonitrile	A	R	A	A	R	A
Lead Acetate	A	R	A	A	R	A	Adipic Acid	A	R	A	A	R	B
Linoleic Acid	A	R	A	A	U	B	Aldrin (1 oz./gal.)	----	----	----	----	----	----
Maleic Acid	A	R	A	A	R	R	Allyl Alcohol	R	R	R	R	R	R
Malic Acid	A	R	A	A	R	A	Allyl Chloride	R	R	R	R	R	R
Melamine	A	----	A	----	----	A	Ammonium Acetate	A	R	A	R	----	A
Methane	A	R	A	A	----	A	Ammonium Oxalate 10%	R	R	R	----	----	R
Methyl Acetate	A	R	A	B	R	X	Amyl Acetate	A	R	A	A	R	X
Methyl Acetone	A	----	A	U	----	----	Amyl Alcohol	A	R	A	A	R	B
Methyl Acrylate	----	----	----	B	----	U	Amyl Chloride	R	R	R	U	U	U
Methyl Alcohol	A	R	A	A	R	A	Aniline	A	R	A	A	R	X
Methyl Alcohol 10%	A	----	A	A	B	A	Aniline Hydrochloride	A	R	A	A	U	X
Methyl Amide	A	----	A	C	----	A	Antifreeze	----	----	----	----	----	U
Methyl Bromide	A	R	A	A	R	X	Aroclor 1248	A	R	A	----	U	U
Methyl Butyl Ketone	----	----	----	U	U	U	Asphalt	A	R	A	A	R	B
Methyl Chloride	A	R	A	A	U	U	Benzaldehyde	A	R	A	A	U	X
Methyl Chloroform	R	R	R	R	----	U	Benzene	A	R	A	A	U	X
Methyl Dichloride	----	----	----	U	----	U	Benzo Sulfonic Acid 10%	R	R	R	R	R	R
Methyl Ethyl Ketone	A	R	A	U	U	B	Benzyl Alcohol	A	R	A	A	U	A
Methyl Isopropyl Ketone	R	----	A	----	----	----	Benzoic Acid	A	R	A	A	B	R
Methyl Methacrylate	A	R	R	B	----	X	Benzol	A	R	A	A	U	U
Methyl Pentanone	A	R	A	X	R	R	Benzonitrile	A	R	A	----	A	----
Methylene Chloride	A	R	A	B	U	B	Benzyl Chloride	R	R	R	R	----	C
Monochloroacetic Acid	A	----	A	B	U	----	Bromobenzene	R	R	R	R	----	U
Monoethanolamine	A	R	A	U	----	B	Butadiene	A	R	A	A	U	U
Motor Oil	A	R	A	B	U	U	Butane	A	R	A	A	U	U
Napthalene	A	R	A	A	U	R	Butyl Alcohol	A	R	A	A	B	R
Nitro benzene	A	R	A	A	U	B	n-Butyl Amine	A	R	A	X	U	U
Nitromethane	A	R	A	A	----	R	Butyl Ether	A	R	A	A	----	----
Nitrophenol	R	----	R	----	----	----	Butyl Phenol	R	R	R	R	----	U
Octane	R	R	R	R	R	R	Butyl Phthalate	R	R	R	R	----	R
Octyl Alcohol	----	----	----	----	----	----	Butylacetate	A	R	A	B	R	X
Oleic Acid	A	R	A	A	U	B	Butyric Acid	R	R	R	A	U	R
Oxalic Acid 5%	R	R	R	R	R	R	Carbon Tetrachloride	R	R	R	R	U	U
Palmitic Acid 10%	A	R	A	A	R	B	Carbonic Acid	A	R	A	A	R	A
Pentachlorophenol	R	----	R	----	----	----	Chloroacetic Acid	A	R	A	A	U	C
Pentane	A	----	A	A	----	U	Chlorobenzene	B	R	B	A	U	U
Petroleum	A	R	A	A	U	B	Chlorobromomethane	A	----	A	----	----	A
Phenol 10%	A	R	A	A	R	B	Chlordane (114 lb./gal.)	R	----	R	----	----	----
Phthalic Acid	A	R	A	A	----	A	Chloroethane	A	R	A	A	R	X
Phthalic Anhydride	A	R	A	A	----	U	Chloroform	A	R	A	A	U	X
Picric Acid	A	R	A	A	U	A	Chloronaphthalene	----	----	----	----	----	----
Propyl Alcohol	A	R	A	A	R	A	Chlorophenol 5% (aq.)	R	R	R	R	----	----
Propylene	A	----	A	----	----	----	Citric Acid	A	R	A	A	A	A
Propylene Glycol	A	R	A	A	A	A	Cresol	R	R	R	R	U	U
Propylene Oxide	R	R	R	U	U	R	Cresylic Acid 50%	R	R	R	R	R	X
Pyridine	A	R	A	U	U	A	Crude Oil	U	R	U	U	U	R
Sodium Acetate	A	R	A	A	A	A	Cyclohexane	A	R	A	R	R	U
Sodium Benzoate	A	R	A	A	A	A	Cyclohexanone	A	R	A	R	U	U
Sodium Hypochlorite 20%	R	R	R	R	R	R	DDT5%	----	----	----	----	----	----
Stearic Acid	A	R	A	A	A	A	Detergents (general)	A	R	A	A	R	A
Acetaldehyde	A	R	A	X	X	A	Diacetone Alcohol	A	R	A	A	R	C

CHEMICAL COMPATIBILITY TABLE

R = Resistant I A = Excellent - No effect I B = Good - Minor effect IC = Fair - Moderate effect

U = Unsatisfactory IX = Conflicting Data I- = No Data Available

*No corrosion rate reported

CODE	PTFE	FEP	PFA	PVDF	HDPE	PP	CODE	PTFE	FEP	PFA	PVDF	HDPE	PP
Dibutylphthalate	R	R	R	U	U	R	sopropyl Acetate	A	R	A	X	R	B
Dichlorobenzene	A	R	A	A	U	-	sopropyl Alcohol	A	R	A	R	R	A
Dichloroethane	A	R	A	A	R	X	sopropyl Ether	A	R	A	X	R	X
Dichloroethylene	R	R	R	R	-	R	solane	-	-	-	A	-	U
Dichlorofluoromethane	R	R	R	-	-	-	Jet Fuel Jp-4, Jp-5	A	R	A	A	-	A
Diesel Fuel	A	R	A	A	R	A	Kerosene	A	R	A	A	R	R
Diethanolamine	R	R	R	U	-	R	Lacquer Thinners	A	-	A	-	-	U
Diethyl Amine	X	R	X	X	U	A	Lacquers	A	-	A	U	-	U
Diethyl Ether	A	R	A	R	U	R	Lactic Acid	A	R	A	B	-	B
Diethyl Phtha Late	R	-	R	-	-	-	Lead Acetate	A	R	A	A	R	A
Diethylene Glycol	A	R	A	A	R	A	Linoleic Acid	A	R	A	A	U	B
Dimethyl Aniline	A	R	A	A	-	X	Maleic Acid	A	R	A	A	R	R
Dimethyl Ether	R	R	R	-	-	-	Malicacid	A	R	A	A	R	A
Dimethyl Formamide	X	R	X	U	R	A	Melamine	A	-	A	-	-	A
Dimethyl Phthalate	R	R	R	R	-	R	Methane	A	R	A	A	-	A
Dimethyl Sulfoxide	R	R	R	U	R	R	Methyl Acetate	A	R	A	B	R	X
Dinitrotoluene	R	-	R	-	-	-	Methyl Acetone	A	-	A	U	-	-
Diocetyl Phthalate	R	R	R	R	U	U	Methyl Acylate	-	-	-	B	-	U
Dioxane	R	R	R	U	U	R	Methyl Alcohol	A	R	A	A	R	A
Diphenyl	A	R	A	-	-	U	Methyl Alcohol 10%	A	-	A	A	B	A
Diphenyl Oxide	A	-	A	B	-	U	Methyl Amide	A	-	A	C	-	A
Esters (general)	R	R	R	R	-	-	Methyl Bromide	A	R	A	A	R	X
Ethane	A	-	A	A	-	U	Methyl Butyl Ketone	-	-	-	U	U	U
Ethanolamine	A	R	A	X	-	X	Methyl Chloride	A	R	A	A	U	U
Ethers (general)	A	-	A	R	U	U	Methyl Chloroform	R	R	R	R	-	U
Ethyl Acetate	A	R	A	X	R	A	Methyl Dichloride	-	-	-	U	-	U
Ethyl Alcohol	A	R	A	R	R	A	Methyl Ethyl Ketone	A	R	A	U	U	B
Ethyl Benzene	R	R	R	R	U	U	Methyl Isopropyl Ketone	A	-	A	-	-	-
Ethyl Benzoate	A	-	A	U	U	B	Methyl Methacrylate	R	R	R	B	-	X
Ethyl Chloride	R	R	R	R	U	U	Methyl Pentanone	A	R	A	X	R	R
Ethyl Ether	A	R	A	R	U	U	Methylene Chloride	A	R	A	B	U	B
Ethyl Sulfate	A	-	A	-	-	-	Monochloroacetic Acid	A	-	A	B	U	-
Ethylene	A	R	A	A	U	U	Monoethanolamine	A	R	A	U	-	B
Ethylene Chloride	A	R	A	A	R	X	M-orbil	A	R	A	B	U	U
ETHYLENE Chlorohydrin	A	R	A	A	U	X	Napthalene	A	R	A	A	U	R
Ethylene Diamine	A	R	A	B	-	R	Nitrobenzene	A	R	A	A	U	B
Ethylene Dibromide	R	R	R	R	-	R	Nitromethane	A	R	A	A	-	R
Ethylene Glycol	A	R	A	A	R	A	Nitrophenol	R	-	R	-	-	-
Ethylene Oxide	A	R	A	A	R	U	Octane	R	R	R	R	R	R
Formaldehyde 100%	A	-	A	A	-	C	Octyl Alcohol	-	-	-	-	-	-
Formaldehyde 37%	A	R	A	A	R	A	Oleic Acid	R	R	A	A	U	B
Formic Acid 5%	R	R	R	R	R	R	Oxalic Acid 5%	R	R	R	R	R	R
Fuel Oils	B	R	B	B	R	A	Palmitic Acid 10%	A	R	A	A	R	B
Gasoline (High-Aromatic)	B	-	B	A	-	A	Pentachlorophenol	R	-	R	-	-	-
Gasoline (leaded)	A	R	A	A	U	X	Pentane	A	-	A	A	-	U
Gasoline (unleaded)	A	R	A	A	U	X	Petroleum	A	R	A	A	U	B
Glycolic Acid	A	R	A	B	R	A	Phenol 10%	A	R	A	A	R	B
Heptane	A	R	A	A	R	C	Phthalic Acid	A	R	A	A	-	A
Hexachloroethane	R	-	R	-	-	-	Phthalic Anhydride	A	R	A	A	-	U
Hexamine	R	R	R	-	-	-	Picric Acid	A	R	A	A	U	A
Hexane	A	R	A	A	U	B	Propyl Alcohol	A	R	A	A	R	A
Hexyl Alcohol	A	-	A	-	-	-	Propylene	A	-	A	-	-	-
Hydraulic Oil (petro.)	A	-	A	A	-	U	Propylene Glycol	A	R	A	A	R	A
Hydraulic Oil (Synthetic)	A	-	A	A	-	U	Propylene Oxide	R	R	R	U	R	R
Hydrazine	C	-	C	A	U	C	Pyridine	A	R	A	U	R	A
Hydrogen Peroxide(dilute)	R	R	R	R	R	R	Sodium Acetate	A	R	A	A	R	A
Hydroquinone	A	R	A	R	-	A	Sodium Benzoate	A	R	A	A	R	A
Hydroxyacetic Acid 70%	A	-	A	A	-	-	Sodium Hypochlorite 20%	R	R	R	R	R	R
Iodoform	C	R	C	C	-	R	Stearic Acid	A	R	A	A	R	A
Isobutyl Alcohol	A	-	A	-	-	A							
Isooctane	A	-	A	A	B	A							

Pneumatic - Pneumatic & Electro Pneumatic ROTARY Valve Positioner

	ELECTRO - PNEUMATIC	Input Signal : 4 ~ 20 mA DC Supply Air Pressure : 20 ~ 100 psi Max. (7.0 Kg/cm ²) Standard Stroke : 10 ~ 80 mm Air Pipe Connection : 1/4" NPT Ambient Temperature : -20 °C to 70 °C Degree of Protection : IP 65 Out-put Characteristics : Rotary Conduit Connection : 1/2" NPT Body Material : Aluminium Die Cast
	PNEUMATIC - PNEUMATIC	Model : APP-1200-RDN

Pneumatic - Pneumatic & Electro Pneumatic LINEAR Valve Positioner

	ELECTRO - PNEUMATIC	Input Signal : 3 ~ 15 (0.2 ~ 1.0 Kg/cm ²) Supply Air Pressure : 100 psi Max. (7.0 Kg/cm ²) Standard Stroke : 10 ~ 80 mm Air Pipe Connection : 1/4" NPT Ambient Temperature : -20 °C to 70 °C Degree of Protection : IP 65 Out-put Characteristics : Linear Conduit Connection : 1/2" NPT Body Material : Aluminium Die Cast
	PNEUMATIC - PNEUMATIC	Model : APP-1200-LSN

SMART Positioner LINEAR

	Model : IP 6000 Series Body : Aluminium Set Point : 4 ~ 20 mA DC Signal : Ambient Temperature : Normal Version : -20 °C ~ 70 °C Optional Version : -40 °C ~ 70 °C
	Supply Pressure : 0.14 ~ 0.7 MPa Flow : 55L/min (Sup=0.14MPa)



Weatherproof MICRO Limit Switch Box

	Model : MMLS-BX-WP-01-A MMLS-BX-WP-01-B MMLS-BX-WP-01-C Switch : Honeywell ZM / NJ2-V3-N / NBB-V3-Z4 Type : 1 NO + 1 NC / 2 Switch Enclosure Protection : IP 67 Ambient Temp. : -20 °C to 80 °C Conduit Entry : 1/2" - NPT Terminal : 8 Point Mounting : Namur VDI / VDE3845 / ISO 5211 Material : Aluminium Die Cast
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Flameproof Limit Switch Box

	Model : MLS-BX-FLP-01-A / MLS-BX-FLP-01-B MLS-BX-FLP-01-C / MLS-BX-FLP-01-D Switch : Honeywell V15 / Honeywell V15 PCB Type / NCB2-V3-NO / NJ2-V3-N / NBB-V3-Z4 / NBB3-V3-Z4 Type : 1 NO + 1 NC / 2 NO + 2 NC / 2 Switch Enclosure Temp. : IP 68 -20 °C to 80 °C Conduit Entry : 1/2" - NPT Terminal : 8 Point Mounting : Namur VDI / VDE3845 / ISO 5211 Material : Aluminium Die Cast
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Flameproof Limit Switch Box STAINLESS STEEL 304 / 316

	Model : LS4-BX-FLP-01-A / LS6-BX-FLP-01-A LS4-BX-FLP-01-B / LS6-BX-FLP-01-B LS4-BX-FLP-01-C / LS6-BX-FLP-01-C LS4-BX-FLP-01-D / LS6-BX-FLP-01-D Switch : Honeywell V15 / Honeywell V15 PCB Type / NCB2-V3-NO / NJ2-V3-N / NBB-V3-Z4 / NBB3-V3-Z4 Type : 1 NO + 1 NC / 2 NO + 2 NC / 2 Switch Enclosure Temp. : IP 67 -20 °C to 80 °C Conduit Entry : 1/2" - NPT Terminal : 8 Point Mounting : Namur VDI / VDE3845 / ISO 5211 Material : ASTM A351 Gr. CF8 / CF8M / CF3M
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Weatherproof Limit Switch Box (Big Box)

	Model : MLS-BX-01-A / MLS-BX-01-B MLS-BX-01-C / MLS-BX-01-D Switch : Honeywell V15 / NJ2-V3-N / NBB-V3-Z4 / NCB2-V3-NO Type : 1 NO + 1 NC / 2 NO + 2 NC / 2 Switch Enclosure Temperature : IP 67 -20 °C to 80 °C Conduit Entry : 1/2" - NPT Terminal : 8 Point Mounting : Namur VDI / VDE3845 / ISO 5211 Material : Aluminium Die Cast
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Weatherproof Limit Switch Box STAINLESS STEEL 304 / 316

	Model : MLS4-BX-01-A / MLS4-BX-01-B MLS4-BX-01-C / MLS4-BX-01-D Switch : Honeywell V15 / NJ2-V3-N / NBB-V3-Z4 / NCB2-V3-NO Type : 1 NO + 1 NC / 2 NO + 2 NC / 2 Switch Enclosure Temperature : IP 67 -20 °C to 80 °C Conduit Entry : 1/2" - NPT Terminal : 8 Point Mounting : Namur VDI / VDE3845 / ISO 5211 Material : ASTM A351 Gr. CF8 / CF8M / CF3M
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3/2 Way Namur Direct Acting Solenoid Valve



Model	: NAM-SA-32
Coil Voltage	: All Std. Voltage Available
Frequency	: 50 - 60 Hz
Connection Type	: 1/4" (NPT)
Conduit	: PF 1/2"
Coil Insulation Grade	: Class "F"
Ambient Temp.	: -20 °C ~ 70 °C
MOC	: Aluminium
Seals	: NBR (Viton On Request)
Working Pressure	: Upto 0 to 10 Kg/cm ²

5/2 Way Convertible Poppet Type SINGLE & DOUBLE Namur Solenoid Valve



Model	: OTX-ALU-52 / 20TX-ALU-52
Coil Voltage	: All Std. Voltage Available
Frequency	: 50 - 60 Hz
Connection Type	: 1/4" (NPT)
Conduit	: PF 1/2"
Coil Insulation Grade	: Class "F"
Ambient Temp.	: -20 °C ~ 70 °C
MOC	: Aluminium
Seals	: NBR (Viton On Request)
Working Pressure	: Upto 2.5 to 10 Kg/cm ²

3/2 Way Internal Pilot Operated STAINLESS STEEL 316 Single Namur Solenoid Valve



Model	: MPT-S6-32
Coil Voltage	: All Std. Voltage Available
Frequency	: 50 - 60 Hz
Connection Type	: 1/4" (NPT)
Conduit	: PF 1/2"
Coil Insulation Grade	: Class "F" & "H"
Ambient Temp.	: -20 °C ~ 70 °C
MOC	: ASTM A351 Gr. CF8M
Seals	: NBR (Viton On Request)
Working Pressure	: Upto 2.5 to 10 Kg/cm ²

5/2 Way Poppet Type STAINLESS STEEL 316 Single Namur Solenoid Valve



Model	: OTX-S6-52
Coil Voltage	: All Std. Voltage Available
Frequency	: 50 - 60 Hz
Connection Type	: 1/4" (NPT)
Conduit	: PF 1/2"
Coil Insulation Grade	: Class "F" & "H"
Ambient Temp.	: -20 °C ~ 70 °C
MOC	: ASTM A351 Gr. CF8M
Seals	: NBR (Viton On Request)
Working Pressure	: Upto 2.5 to 10 Kg/cm ²

3/2 Way Midget Type Direct Acting Solenoid Valve



Model	: DMV
Size	: 1/4"
Body	: CFB / CF8M / Brass / S.S 304
Orific	: 2
Pressure	: 7 Kg / cm ²
Temp.	: Upto -5 to 80 °C max.
Coil Rating	: Continuous Rated
Coil Insulation	: "F" Class & "H" Class For Flameproof
Media	: Air & Gas
Voltage	: 12V, 24V, 48V, 110V, 230V, AC/DC

3/2 Way Midget Type Direct Acting Solenoid Valve



Model	: MDV
Size	: 1/4"
Body	: CFB / CF8M / Brass / S.S 304
Orific	: 2
Pressure	: 7 Kg / cm ²
Temp.	: Upto -5 to 80 °C max.
Coil Rating	: Continuous Rated
Coil Insulation	: "F" Class & "H" Class For Flameproof
Media	: Air & Gas
Voltage	: 12V, 24V, 48V, 110V, 230V, AC/DC

Filter + Regulator Air Combination



Model	: 4FQ / 8 FQ / FRJ / AFRS4
Air Connection	: 1/4"
Max. Supply Pressure	: 4FQ: 0.5 to 4 Kg / cm ² 8FQ: 0.5 to 8 Kg / cm ² FRJ: 1 to 9 Kg / cm ²
Gauge Connection	: 1/8"
Ambient Temp.	: -20 °C ~ 70 °C
Mini Filtering Size	: 5 Micron
Material	: Aluminium Pressure Die Cast / CFB / CF8M

Single & Double Air Lock Valve



Model Single	: SALV
Model Double	: DALV
Size	: 1/4" to 3/4"
MOC	: Aluminium
Seals	: NBR
Supply Pressure	: 10 Bar
Output Pressure	: 7 Bar
Temperature	: -20 °C ~ 70 °C

Air Volume Booster



Model	: VLB
Size	: 1/4" to 1"
MOC	: Aluminium
Seals	: NBR
Supply Pressure	: 10 Bar
Output Pressure	: 7 Bar
Temperature	: -20 °C ~ 70 °C

Manual Override Clutch Type (MO)



Model	: AMO
Torque	: 200 Nm to 10000 Nm
Body	: Aluminium Pressure Die Cast / S. G. Iron
Lever Wheel	: Stainless Steel
Hand Wheel	: S.S. / M.S. (Fabricated)



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