

# 2-WAY SOLENOID VALVES

Normally Closed & Normally Open operation • For Air, Gas, water light Hydraulic Oil, Hot Water and Steam •  
1/4" TO 3/4" BSP/NPT



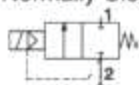
**FLOCON** two way servo operated solenoid valves have compact brass forged bodies and soft seating for complete tight shut off.

These valves are equipped with powerful solenoids that provide higher operating pressures and flow capacities than most comparable valves now available.

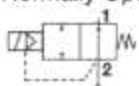
## SPECIFICATIONS :

### OPERATION :

A) Normally Closed : Valve opens when energised; closed when de-energised.



B) Normally Open: Valve closed when energised; open when de-energised.



### VALVE :

- 1) Servo operated with inlet fluid pressure.
- 2) Pipe connections suitable for 1/4", 3/8", 1/2" and 3/4" BSP / NPT.
- 3) Forged brass body.
- 4) Resilient or Teflon seating.

### SOLENOID :

- 1) General purpose solenoid enclosure NEMA TYPE 1
- 2) All solenoid parts made of 300 and 400 series stainless steel.
- 3) Continuous duty coil.
- 4) Class F insulation and moulded class B insulation
- 5) Standard Voltages : 24, 48, 110, 220, 440 V A-C.  
24, 48, 110, 220 V D-C.
- 6) Ambient: 5°C to 50°

**FREQUENCY OF OPERATION**  
650 Cycles per minute

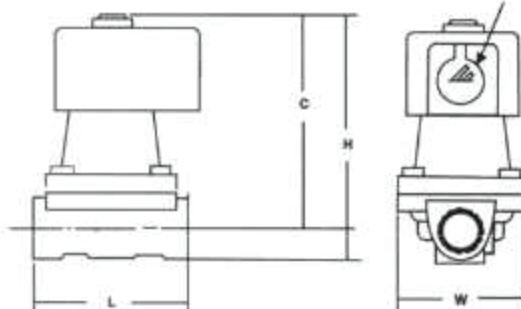
### FEATURES :

- Packless.
- Forged brass
- S.S. valve body
- Complete tight shut off.
- Compact size.
- Continuous duty moulded coil.
- Silent in operation.
- Full flow conditions.
- Solenoid capable of being turned 360°
- **FLOCON** Valves are made from quality materials and rigorously tested for leakage and performance. Each valve is subjected to twice the rated voltage plus 1,000 Volts at 50C/S for 60 seconds for Insulation Test.
- **FLOCON** valves are guaranteed for free replacement against any manufacturing defect.



### DIMENSIONS

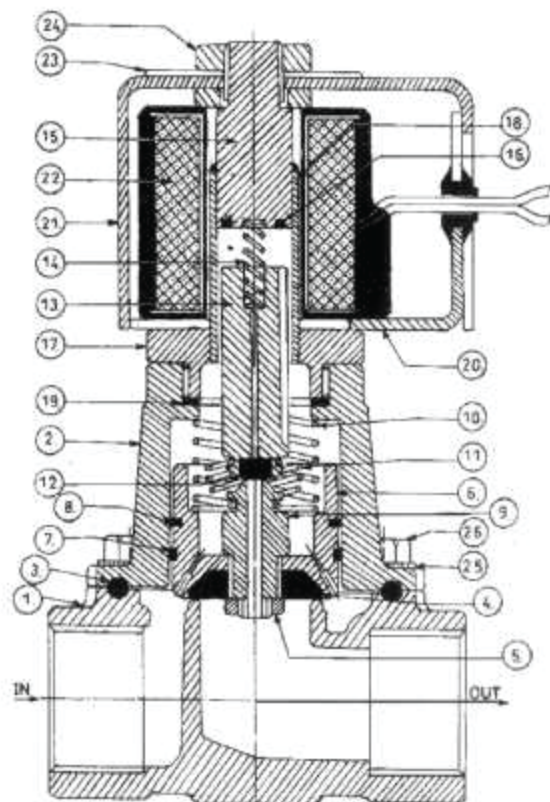
22 mm HOLE FOR  
1/2" CONDUIT CONN



TYPE	PIPE SIZE	L mm	W mm	C mm	H mm
FS 202	1/4"	70	58	110	125
FS 203	3/8"				
FS 204	1/2"				
FS 206	3/4"			115	133

VALVE TYPE	Pipe Size (inch)	Orifice size (inch)	Minimum Operating Pressure (KG/CM <sup>2</sup> )	Maximum Operating Pressure Differential (KG/CM <sup>2</sup> )				Safe Body Working Pressure (KG/CM <sup>2</sup> )	Flow Factor CV	Maximum Fluid Temperature °C		WATT RATING		VA - INFLUSH	VA - HOLDING
				AIR, GAS		WATER, OIL									
				AC	DC	AC	DC			Class B Coil	Class F Coil	AC	DC		
FS 202	1/4	1/2	0.3	14	8	9	7	20	1.8	95	150	12.5	13	60	24
FS 203	3/8	5/8	0.3	14	8	9	7	20	3	95	150	12.5	13	60	24
FS 204	1/2	5/8	0.3	14	8	9	7	20	4	95	150	12.5	13	60	24
FS 206	3/4	3/4	0.3	8	7	8	5	20	5	95	150	12.5	13	60	24





SR. NO.	NAME OF PART	PART NO.	MATERIAL	QTY.
1.	VALVE BODY	FS 20 X 01	BRASS (FORGED)	1
2.	BONNET	FS 20 X 02	BRASS (FORGED)	1
3.	'O' RING	FS 20 X 03	NEOPRENE	1
4.	DISC	FS 20 X 04	NEOPRENE/TEFLON	1
5.	DISC NUT	FS 20 X 05	S.S. 304	1
6.	PISTON	FS 20 X 06	BRASS	1
7.	RIDER RING	FS 20 X 07	TEFLON	1
8.	PISTON RING	FS 20 X 08	TEFLON	1
9.	SEAT	FS 20 X 09	S.S. 304	1
10.	PISTON SPRING	FS 20 X 10	S.S. 304	1
11.	PLUNGER SPRING	FS 20 X 11	S.S. 304	1
12.	PLUNGER SEAT	FS 20 X 12	NEOPRENE/TEFLON	1
13.	PLUNGER	FS 20 X 13	S. S. 410	1
14.	PLUNGER SPRING	FS 20 X 14	S. S. 304	1
15.	STOPPER	FS 20 X 15	S. S. 410	1
16.	SHADING RING	FS 20 X 16	COPPER	1
17.	TUBE NUT	FS 20 X 17	BRASS	1
18.	TUBE	FS 20 X 18	S. S. 304	1
19.	GASKET	FS 20 X 19	NEOPRENE/TEFLON	1
20.	BASE PLATE	FS 20 X 20	C.R.C.A.	1
21.	TOP COIL HOUSING	FS 20 X 21	C.R.C.A.	1
22.	COIL	FS 20 X 22	ENAMELLED C. W.	1
23.	NAME PLATE	FS 20 X 23	ALUMINIUM	1
24.	TOP NUT	FS 20 X 24	BRASS	1
25.	SPRING WASHER	FS 20 X 25	SPRING STEEL	1
26.	SCREWS WITH WASHERS	FS 20 X 26	ALLOY STEEL	4

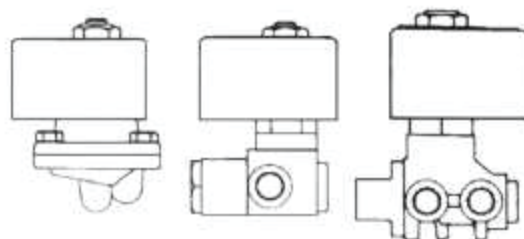
Insert Value type No. 2,3,4 or 6 in place of X for Pipe sizes 1/4", 3/8", 1/2" and 3/4" respectively.

#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### IMPORTANT :

Use Strainers with the valves. Use  
the valves only at pressure and  
voltage specified on the name plate.



#### NOTE :

In line with their policy of continuous product  
development, the manufacturer reserves the right  
to change specifications without notice.



ENGINEERS  
INDIA LIMITED



AGENCY APPROVALS FOR **FLOCON**® SOLENOID VALVES PRECISION INSTRUMENT CO. - MUM-41

ENGINEERS INDIA LIMITED	NEW DELHI	EIL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	CHANDABAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NAGPUR	CCE	FLAME PROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAME PROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY ADVISE SERVICE & LABOUR INSTITUTE	MUMBAI	DGFASLI	FLAME PROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-53



Where the Quality goes in before the Name comes on.



# HIGH PRESSURE

## 2 Way Solenoid Valves

2/2 way and Pilot operated piston type Solenoid Valve for Air, Water, Gas, Steam and Hot water application 1/2" & 3/4" BSP/NPT

**FLOCON®**

**SERIES**  
**FS 204 HP**  
**FS 206 HP**

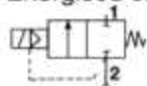
**FLOCON** 2 way pilot operated solenoid valves are for normally closed and normally open operation. FS200HP Valves are ideally used for handling Air, Water, Hot Water and Steam.

### APPLICATIONS:

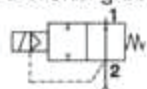
Pumps  
Spraying  
Laundry equipment  
Air dryers  
Water treatment  
Irrigation

### SPECIFICATIONS :

a) Normally Closed : Valve open when Energised closed when De-energised



b) Normally Open : Valve open when De-energised closed when Energised



### VALVE :

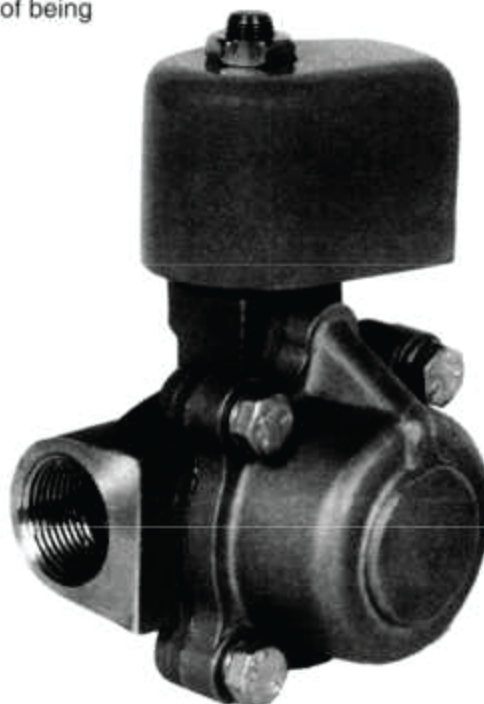
Body Material : Forged Brass, SS304, SS316  
Pipe Size : 1/2, 3/4, BSP/NPT  
Port Size : Full Port  
Seat : Neoprene/Teflon/Viton  
Operating Pressure : 0.3 to 30 kg/cm<sup>2</sup>  
Body rating : 40 kg/cm<sup>2</sup>  
C<sub>v</sub> : 1/2" - 4; 3/4" - 5

### SOLENOID :

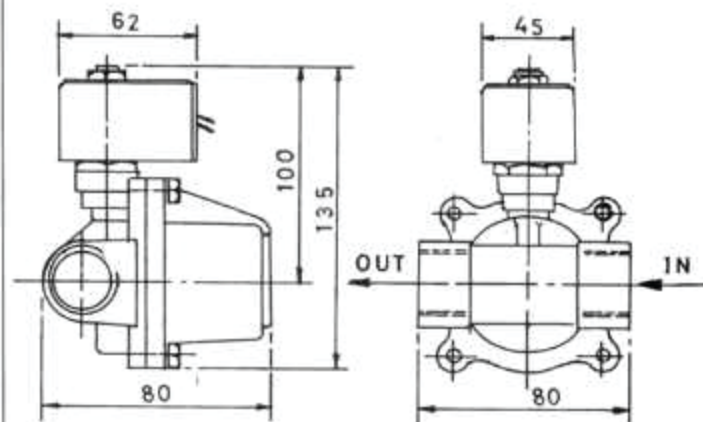
- General purpose enclosure type IP 20
- Dustproof IP 55
- Watertight IP 66/67
- Flame Proof as per IS 2148 group, I, IIA & IIB approved by CMRI Dhanbad.
- All Solenoid parts contact with fluid are made from 300 and 400 S. Steel.
- Continuous duty moulded coil class 'F' & 'H' insulation.
- Coil Voltage 24, 48, 110, 240, 440 volts AC 50 Hz  
12, 24, 48, 120, 230 volts DC.

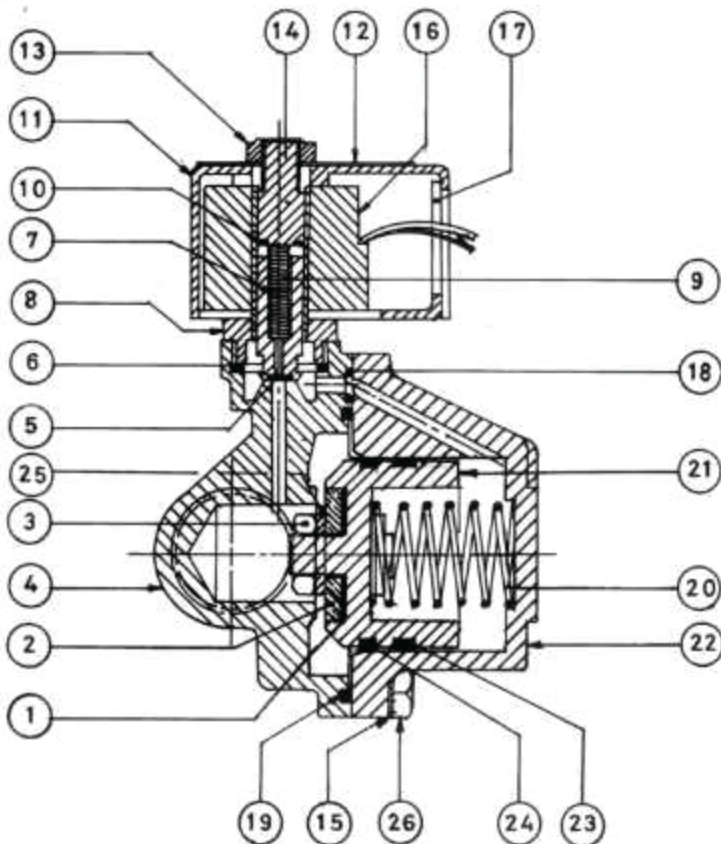
### FEATURES :

- Packless
- Forged brass body and bonnet
- Complete tight shut off
- Can be mounted in any position
- Solenoid capable of being turned 360°.



Dimension (in mm)



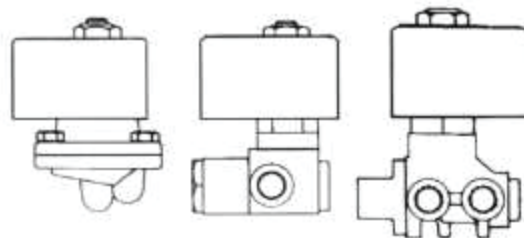


#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### IMPORTANT :

Use Strainers with the valves. Use  
the valves only at pressure and  
voltage specified on the name plate.



#### NOTE :

*In line with their policy of continuous product  
development, the manufacturer reserves the right  
to change specifications without notice.*

SR. NO.	NAME OF THE PART	PART NO.	MATERIAL	
1.	GASKET	FP - 2001	NEOPRENE	1
2.	SEAT	FP - 2002	TEFLON/NEOPRENE	1
3.	NUT	FP - 2003	S. STEEL	1
4.	BODY	FP - 2004	FORGED BRASS/SS	1
5.	PLUNGER SEAT	FP - 2005	NEOPRENE	1
6.	'O' RING	FP - 2006	NEOPRENE	1
7.	PLUNGER	FP - 2007	S. STEEL 430	1
8.	TUBE NUT	FP - 2008	S. STEEL	1
9.	PLUNGER SPRING	FP - 2009	S. STEEL	1
10.	SHADING COIL	FP - 2010	COPPER	1
11.	COIL HOUSING	FP - 2011	C R C A	1
12.	NAME PLATE	FP - 2012	ALUMINIUM	1
13.	TOP NUT	FP - 2013	BRASS	1
14.	STOPPER	FP - 2014	S. STEEL / 430	1
15.	SPRING WASHER	FP - 2015	C STEEL	1
16.	COIL	FP - 2016	E.C.W.	1
17.	'L' BRACKET	FP - 2017	C R C A	1
18.	'O' RING	FP - 2018	NEOPRENE / TEFLON	1
19.	'O' RING	FP - 2019	NEOPRENE / TEFLON	1
20.	SPRING	FP - 2020	S STEEL 304	1
21.	PISTON	FP - 2021	S. STEEL	1
22.	BONNET	FP - 2022	FORGED / BRASS/SS	1
23.	RIDER RING	FP - 2023	TEFLON	1
24.	PISTON RING	FP - 2024	TEFLON	1
25.	WASHER	FP - 2025	S STEEL	1
26.	SCREW	FP - 2026	C STEEL	1



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AGENCY APPROVALS FOR FLOCON<sup>®</sup> SOLENOID VALVES PRECISION INSTRUMENT CO. - MUM-43.

ENGINEERS INDIA LIMITED	NEW DELHI	EIL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	MAGPUR	CCE	FLAMEPROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAMEPROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY ADVISE SERVICE & LABOUR INSTITUTE	MUMBAI	DGFASLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-55



Where the Quality goes in before the Name comes on.



# HIGH PRESSURE

## 2 Way Solenoid Valves

Normally Closed, Normally Open for Air, Gas, Water,  
Light hydraulic oil and steam 1" & 2" BSP/NPT

**FLOCON®**

**SERIES**  
**FS 208 HP**  
**FS 2012 HP**

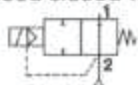
**FLOCON** 2 way pilot operated solenoid valves have compact, forged brass gunmetal cast bodies and soft seating for complete shut off. This compact and modern design concept permits trouble free operations on low wattage coils.

### SPECIFICATIONS :

a) Normally Closed : Valve open when energised closed when de Energised



b) Normally Open : Valve open when de Energised closed when Energised



### VALVE :

- Pilot Operated with Inlet fluid pressure
- Pipe connection 1" - 2" BSP/NPT
- Forged brass body/Cast Gunmetal / SS Body
- Resilient or teflon seating
- Orifice size - a) 1" 25MM  
b) 1 1/2" 32 MM  
c) 2" 40 MM
- Cv : 1" - 13  
1 1/2" - 22, 2" - 40
- Max AC fluid temperature 200°F and  
Operating pressure 10 to 300 PSI

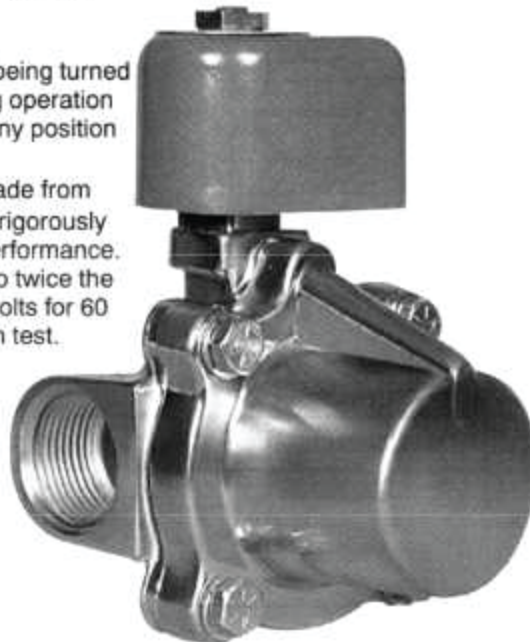
### SOLENOID :

- General purpose solenoid enclosure NEMA Type 1.
- Dustproof NEMA type 2 and watertight NEMA type 3R
- All Solenoid parts contact with fluid are made from 304 and 410 S. Steel
- Continuous duty moulded coil class 'F' insulation  
Std voltage 24, 48, 110, 220/440 AC  
24, 48, 120, 240 DC
- Ambient 5° to 50° C

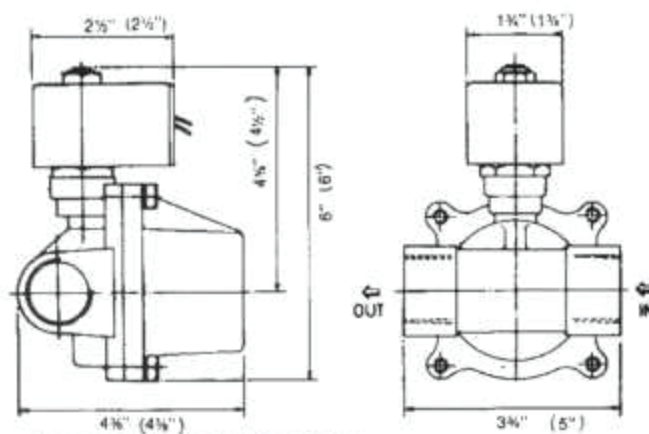
### FEATURES :

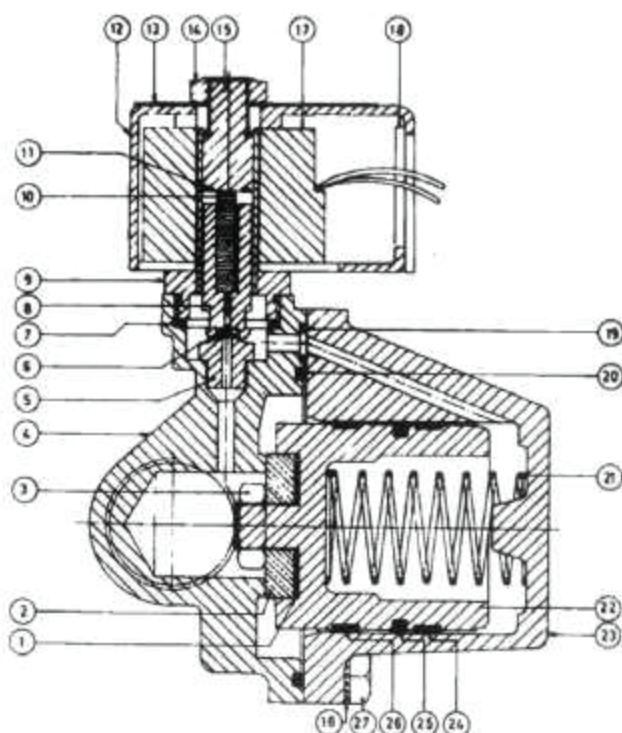
- Packless
- Forged brass body
- Complete tight shut off
- Compact Size
- Continuous duty moulded coil  
Silent in Operation
- Full flow conditions
- Solenoid capable of being turned 360° without affecting operation
- Can be mounted in any position

**FLOCON** Valves are made from quality materials and are rigorously tested for leakage and performance. Each valve is subjected to twice the rated voltage plus 1000 volts for 60 seconds for coil insulation test.



Dimension (in inches)





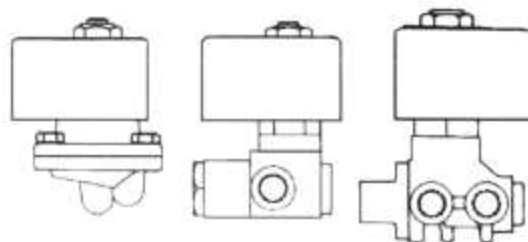
SR. NO.	NAME OF PART	PART NO.	MATERIAL	QTY.
1.	GASKET	FPH 2001	NEOPRENE	1
2.	SEAT	FPH 2002	TEFLON/NEOPRENE	1
3.	NUT	FPH 2003	C. STEEL	1
4.	BODY	FPH 2004	FORGED BRASS	1
5.	SEAT NUT	FPH 2005	S. STEEL	1
6.	PLUNGER SEAT	FPH 2006	NEOPRENE	1
7.	'O' RING	FPH 2007	NEOPRENE	1
8.	PLUNGER	FPH 2008	S. STEEL 410	1
9.	TUBE NUT	FPH 2009	BRASS	1
10.	PLUNGER SPRING	FPH 2010	S. STEEL	1
11.	SHADING COIL	FPH 2011	COPPER	1
12.	COIL HOUSING	FPH 2012	C. R. C. A.	1
13.	NAME PLATE	FPH 2013	ALUMINIUM	1
14.	TOP NUT	FPH 2014	BRASS	1
15.	STOPPER	FPH 2015	S. STEEL 410	1
16.	SPRING WASHER	FPH 2016	C. STEEL	4
17.	COIL	FPH 2017	E. C. W.	1
18.	'L' BRACKET	FPH 2018	C. R. C. A.	1
19.	'O' RING	FPH 2019	NEOPRENE	1
20.	'O' RING	FPH 2020	NEOPRENE	1
21.	SPRING	FPH 2021	S. STEEL 304	1
22.	PISTON	FPH 2022	BRASS	1
23.	BONNET	FPH 2023	FORGED BRASS	1
24.	RIDER RING	FPH 2024	TEFLON	1
25.	PISTON RING	FPH 2025	TEFLON	1
26.	RIDER RING	FPH 2026	TEFLON	1
27.	SCREW	FPH 2027	C. STEEL	4

### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

### IMPORTANT :

Use Strainers with the valves. Use  
the valves only at pressure and  
voltage specified on the name plate.



### NOTE :

In line with their policy of continuous product  
development, the manufacturer reserves the right  
to change specifications without notice.



AGENCY APPROVALS FOR «FLOCON» SOLENOID VALVES PRECISION INSTRUMENT CO. - MUMBAI

ENGINEERS INDIA LIMITED	NEW DELHI	EIL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
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INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
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BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAME PROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY ADVISE SERVICE & LABOUR INSTITUTE	MUMBAI	DGFASLI	FLAME PROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-55



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# 2 WAY SOLENOID VALVES



## NORMALLY CLOSED AND NORMALLY OPEN OPERATION FOR AIR, GAS, WATER LIGHT HYDRAULIC OIL

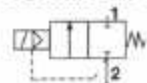
FS - 208	[ 1" BSP (F) ]
FS - 209	[ 1 1/4" BSP (F) ]
FS - 2010	[ 1 1/2" BSP (F) ]
FS - 2012	[ 2" BSP (F) ]

◀FLOCON▶ 2-way Servo Operated Solenoid Valves have cast Bronze bodies and Metal to Metal seating which gives complete tight shut off. These valves are equipped with powerful Solenoids that provide higher operating pressure and flow capacities than most comparable valves.

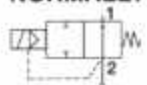
### SPECIFICATIONS :

#### OPERATION :

- a) **NORMALLY CLOSED** : Valve open when Energised  
Closed when De - Energised.



- b) **NORMALLY OPEN** : Valve Closed when energised;  
Open when De-energised.



#### VALVE :

- Servo operated with inlet fluid pressure.
- Pipe connections suitable for 1", 1 1/4", 1 1/2" and 2" BSP / NPT.
- Cast Bronze body.
- Metal to Metal seating.

#### SOLENOID :

- General purpose solenoid enclosure NEMA TYPE 4, IP20, IP40.
- Dust PProof, Watertight Solenoid Enclosure IP55, IP65.
- Flame Proof as per IS2148 of 1981 for Group, I IIA & IIB.
- Class F, Class H Insulation.
- Standard Voltages - 24, 48, 110, 220, 440 Volts 50 C/s AC.  
24, 48, 110, 220 VCD.
- Ambient - 5° to 50°C.

#### FEATURES :

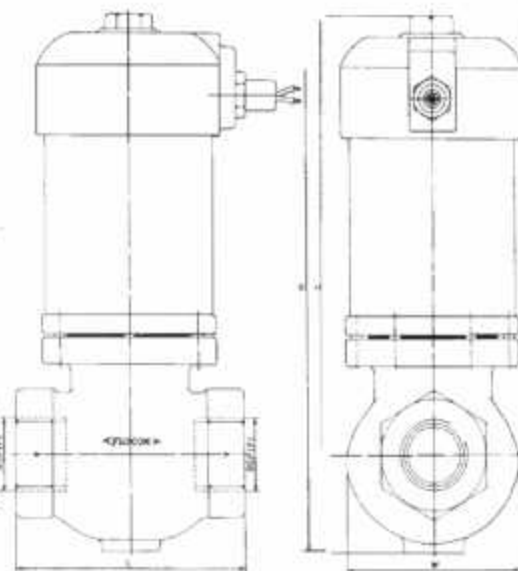
- Packless.
  - C Bronze body
  - Complete tight shut off.
  - Continuous duty moulded coil.
  - Silent in operation.
  - Solenoid capable of being turned 360°.
- NOTE :** Valves are manufactured for Steam Application upto 150°C.

◀FLOCON▶ Valves are made from quality materials and rigorously tested for leakage and performance. Each Valve is subjected to twice the rated voltage plus 1000 Volts at 50 c/s for 60 seconds for Insulation test.

◀FLOCON▶ Valves are guaranteed for free replacement against any manufacturing defect.

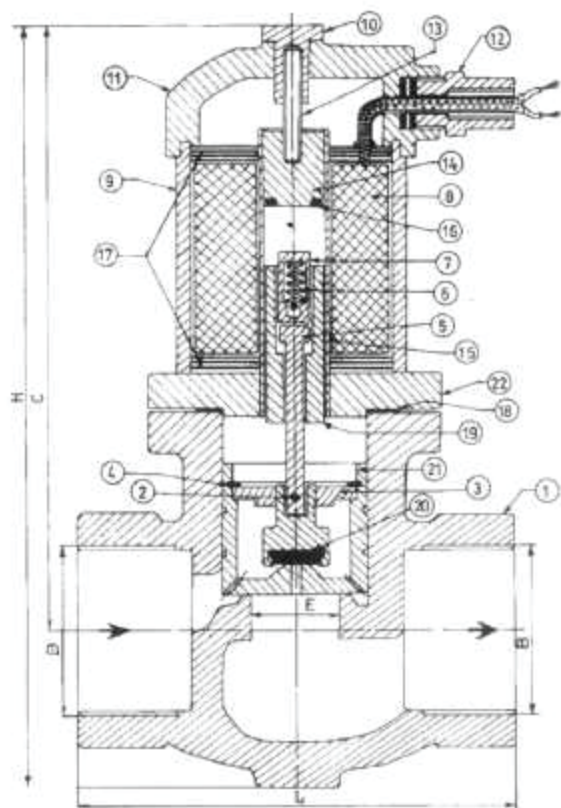


FS-200 SERIES



VALVE TYPE	PIPE - SIZE (INCH)	ORIFIC - SIZE INCH	Minimum Operating Pressure Differential (KG/CM <sup>2</sup> )	MAXIMUM OPERATING PRESSURE DIFFERENTIAL (KG/CM <sup>2</sup> )				SAFE BODY WORKING PRESSURE (KG/CM <sup>2</sup> )	FLOW FACTOR CV	MAXIMUM FLUID TEMPERATURE °C	WATT RATING		VA - INRUSH	VA - HOLDING
				AIR, GAS		WATER, OIL					AC	DC		
				AC	DC	AC	DC							
FS 208	1"	13/16"	0.5	10	9	10	9	15	7.5	150	25	25	70	50
FS 209	1 1/4"	1 1/8"	0.5	10	9	10	9	15	13	150	25	25	70	50
FS 210	1 1/2"	1 1/4"	0.5	10	9	10	9	15	13	150	25	25	70	50
FS 2012	2"	1 1/2"	0.5	10	9	10	9	15	17	150	25	25	70	50

TYPE	PIPE SIZE	L mm	W mm	C mm	H mm
FS 208	1"	106±1.5	71	184±3	222±3
FS 209	1 1/4"	131±2	87	200±3	248±3
FS 2010	1 1/2"	131±2	87	200±3	248±3
FS 2012	2"	180±2	101	214±3	268±3



#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### IMPORTANT :

Use Strainers with the valves. Use  
the valves only at pressure and  
voltage specified on the name plate.

#### NOTE :

*In line with their policy of continuous product  
development, the manufacturer reserves the right  
to change specifications without notice.*

No.	PART DESCRIPTION	MATERIAL	PART No.	QTY.
1.	MAIN BODY	C. BRONZE	FS-200-101	1
2.	RIVET	COPPER	FS-200-102	1
3.	PISTON RING	BRASS	FS-200-103	1
4.	CIRCLIP	C. STEEL	FS-200-104	1
5.	BRASS PIN	BRASS	FS-200-105	1
6.	SPRING	S. STEEL	FS-200-106	1
7.	RETAINER	BRASS	FS-200-107	1
8.	COIL	E. COPPER	FS-200-108	1
9.	COIL - HOUSING	C. R. C. A.	FS-200-109	1
10.	TOP NUT	BRASS	FS-200-110	1
11.	CAP	ALUMINIUM	FS-200-111	1
12.	TAIL - END	ALUMINIUM	FS-200-112	1
13.	SCREW	C. STEEL	FS-200-113	1
14.	STOPPER	SS-430	FS-200-114	1
15.	TUBE	SS-304	FS-200-115	1
16.	SHADING RING	COPPER	FS-200-116	1
17.	LAMINATION	SIL-STEEL	FS-200-117	1
18.	GASKET	ASBESTOS	FS-200-118	1
19.	PLUNGER	SS-430	FS-200-119	1
20.	PISTON - SEAT	NEOP / VITON	FS-200-120	1
21.	PISTON	BRASS / S.S.	FS-200-121	1
22.	FLANGE	C. BRONZE	FS-200-122	1



ENGINEERS  
INDIA LIMITED

IS 2148



AGENCY APPROVALS FOR FLOCON® SOLENOID VALVES PRECISION INSTRUMENT CO. - MUM-13.

ENGINEERS INDIA LIMITED	NEW DELHI	EIL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NAGPUR	CCE	FLAMEPROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAMEPROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY			
ADVICE SERVICE & LABOUR INSTITUTE	MUMBAI	DGFASLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-55



Where the Quality goes in before the Name comes on.



# DIAPHRAGM OPERATED 2-WAY SOLENOID VALVES

Normally Closed & Normally Open

For Air, Gas, Water and Light Hydraulic Oil 1/4" TO 2" BSP/NPT

**FLOCON**

SERIES  
**FSD 200**

**FLOCON** 2 Way diaphragm operated packless valves are for normally closed and normally open operation. These valves are ideally used for handling light oils and fluids upto 300 s.s.u. viscosity

NO MINIMUM OPERATING PRESSURE REQUIRED

Special valves available for

- dry air-gas
- continuous cycling
- exceptionally long life
- heavy duty operation
- clickless and quiet (no A-C hum operation).

## APPLICATIONS :

These 2 way valves are extensively used in

- Oil furnaces,
- Compressors
- Pumps
- Laundry
- Water treatment plants.

## SPECIFICATIONS

### OPERATIONS :-

Two types are available :

- Normally Closed : Valves closed when de-energized, open when energized
- Normally Open : Valves closed when energized, open when de-energized.

### VALVE :

- Body material • Forged brass • Cast gunmetal
- Stainless Steel (300 series) Aluminium • Pipe sizes : 1/4" to 2" BSP / NPT • Seats and discs : Neoprene or Teflon • Operation Pressure : 0 to 10 kg/cm<sup>2</sup>

### SOLENOID :

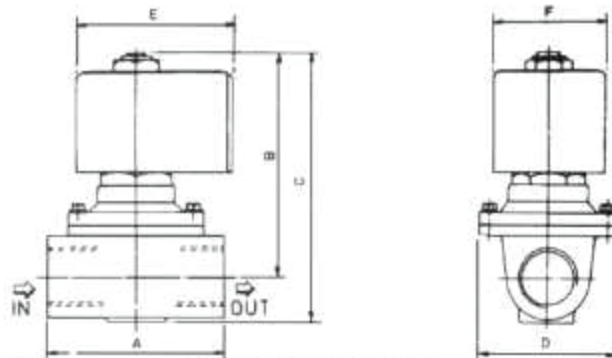
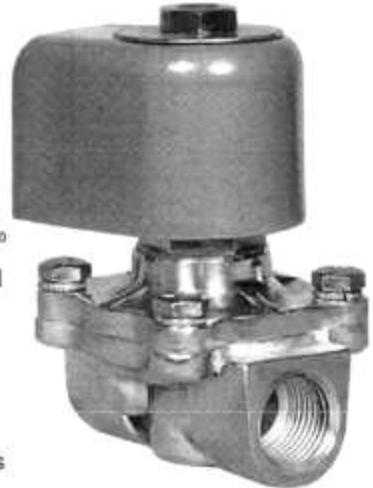
- General purpose enclosure NEMA type 1
- Watertight and dustproof NEMA type 2 & 3R
- All solenoid parts in contact with media are made of 300 and 400 series stainless steel.
- Continuous duty moulded coil.
- Class F insulation
- Fluid temperature 95°C.
- Electrical Voltages  
24,48,110,220,440 Volts 50 C/S  
12,24,48,110,220 Volts DC.

### FEATURES :

1. Packless
2. Forged brass body
3. Complete tight shut off
4. Silent in operation
5. Continuous duty moulded Coils
6. Can be mounted in any position
7. Solenoid capable of being turned 360°

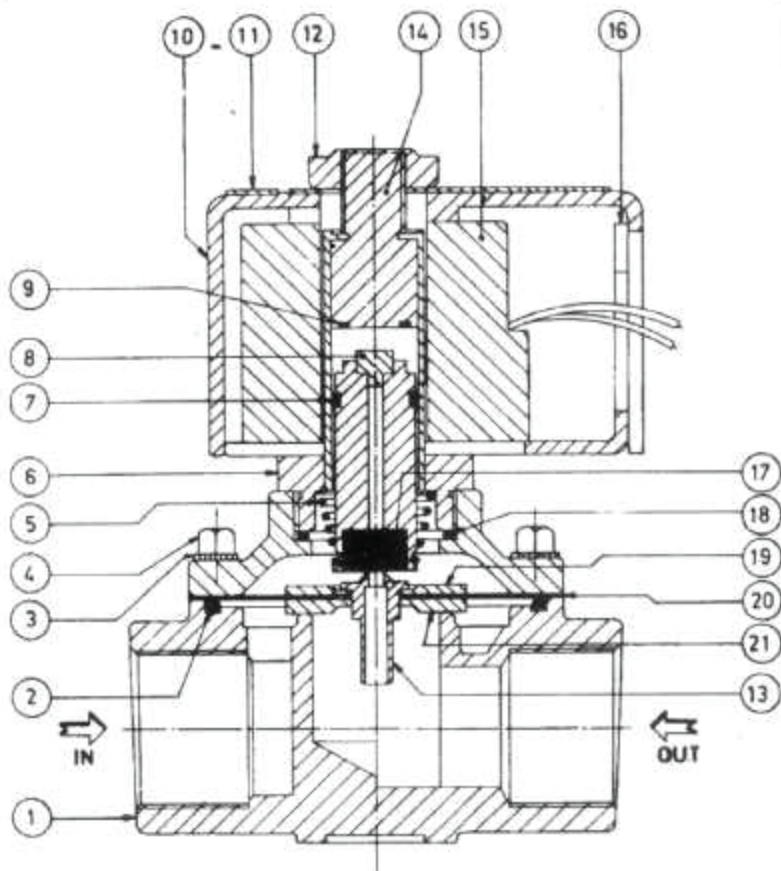
Installation : A/C Valves can be mounted in any position but DC Valves must be mounted with Solenoid vertical upright.

**FLOCON** Valves are made from quality materials and are rigorously tested for leakage and performance. Each valve is subjected to twice the rated voltage plus 1,000 volts at 50 c/s for 60 seconds for insulation test.



Mounting dimension in MM							
Type	Size	A	B	C	D	E	F
FSD 202	1/4"	70	85	100	58	62	45
FSD 203	1/8"	70	85	100	58	62	45
FSD 204	1/2"	70	85	100	58	62	45
FSD 206	1/4"	70	90	107	58	62	45
FSD 208	1"	95	115	150	95	62	45
FSD 2010	1 1/2"	125	115	150	100	62	45
FSD 2012	2"	150	120	150	100	62	45

VALVE	Pipe (inch)	Orifice (inch)	Maximum Operating Pressure Differential (KG/CM <sup>2</sup> )		Safe Body Working Pressure (KG/CM <sup>2</sup> )	Flow Factor CV	Maximum A.C. Fluid Temperature °C	WATT RATING		VA - INHIBIT	VA - HOLDING
			AIR, GAS	WATER, LIGHT OIL				AC	DC		
			AC	DC							
FSD 202	1/4"	1/8"	10	8	20	1.2	95	17	15	60	24
FSD 203	1/8"	1/16"	10	8	20	3	95	17	15	60	24
FSD 204	1/2"	1/4"	10	8	20	4	95	17	15	60	24
FSD 205	1/4"	1/8"	10	8	20	5	95	17	15	60	24
FSD 208	1"	1"	10	8	20	13	95	17	15	60	24
FSD 2010	1 1/2"	1 1/4"	10	8	20	22.5	95	17	15	60	24
FSD 2012	2"	1 1/2"	10	8	20	40	95	17	15	60	24



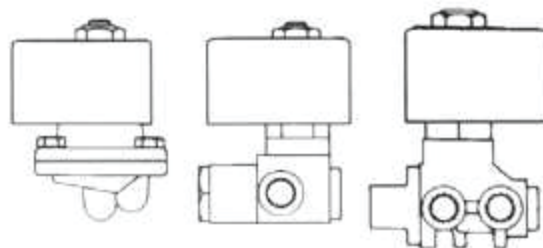
SR. NO.	NAME OF THE PART	PART NO.	MATERIAL	
1.	BODY	FSD - 2001	BRASS	1
2.	DIAPHRAGM	FSD - 2002	NEOPRENE	1
3.	SPRING WASHER	FSD - 2003	C. STEEL	4
4.	SCREW	FSD - 2004	C. STEEL	4
5.	PLUNGER SPRING	FSD - 2005	S S 304	1
6.	TUBE NUT ASSLY	FSD - 2006	S. S. 304/BRASS	1
7.	PLUNGER	FSD - 2007	S S 410	1
8.	RETAINER	FSD - 2008	TEFLON	1
9.	SHADING COIL	FSD - 2009	COPPER	1
10.	COIL HOUSING	FSD - 2010	C. R.C.A.	1
11.	NAME PLATE	FSD - 2011	ALUMINIUM	1
12.	TOP NUT	FSD - 2012	BRASS	1
13.	SEAT NUT	FSD - 2013	S. S. 304	1
14.	STOPPER	FSD - 2014	S. S. 410	1
15.	COIL	FSD - 2015	E.C.W.	1
16.	'L' BRACKET	FSD - 2016	C.R.C.A.	1
17.	PLUNGER SEAT	FSD - 2017	NEOPRENE	1
18.	O RING	FSD - 2018	NEOPRENE	1
19.	DIAPHRAGM PLATE	FSD - 2019	S S 304	1
20.	DIAPHRAGM	FSD - 2020	NEOPRENE	1
21.	DISC	FSD - 2021	NEOPRENE	1

#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### IMPORTANT :

Use Strainers with the valves. Use  
the valves only at pressure and  
voltage specified on the name plate.



#### NOTE :

In line with their policy of continous product  
development, the manufacturer reserves the right  
to change specifications without notice.



IS 2148



AGENCY APPROVALS FOR FLOCON® SOLENOID VALVES PRECISION INSTRUMENT CO. - MUM-43

ENGINEERS INDIA LIMITED	NEW DELHI	ERL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NAGPUR	CCE	FLAMEPROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAMEPROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY ADVISE SERVICE & LABOUR INSTITUTE	MUMBAI	DGFASLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-55



Where the Quality goes in before the Name comes on.



# 2 - WAY SOLENOID VALVES

**NORMALLY CLOSED / NORMALLY OPEN  
FOR AIR, GAS, WATER, HYDRAULIC OIL, STEAM**

**FLOCON**

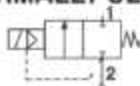
FSD - 208	[	1"	BSP (F)	]
FSD - 209	[	1 1/4"	BSP (F)	]
FSD - 2010	[	1 1/2"	BSP (F)	]
FSD - 2012	[	2"	BSP (F)	]

◀FLOCON▶ 2-Way diaphragm Operated Solenoid Valves have forged Brass bodies and soft resilient seating which gives complete tight shut off. These valves are equipped with powerful Solenoids that provide higher operating pressure and flow capacities than most comparable valves.

## SPECIFICATION :

### OPERATION :

- a) **NORMALLY CLOSED :** Valve open when Energised  
Closed when De - Energised.



- b) **NORMALLY OPEN :** Valve closed when Energised  
Open when De - Energised.



### VALVE :

1. Diaphragm operated with inlet Fluid Pilot Pressure.
2. Pipe connections suitable for 1", 1 1/4", 1 1/2", 2" BSP (F) / NPT (F).
3. Forged Brass Body material upto 1 1/2" & C Bronze Body for 2".
4. Soft resilient seating.

### SOLENOID :

1. General purpose Solenoid Enclosure Nema type 4, IP20, IP40.
2. Dust Proof, Watertight Solenoid Enclosure IP55, IP65.
3. Flame Proof as per IS2148 of 1981 for Group, I, IIA & IIB.
4. Class F, Class H Insulation.
5. Standard Voltages - 24, 48, 110, 220, 440 Volts 50 C/s AC.  
24, 48, 110, 220 VDC.
6. Ambient - 5° to 50°C.

### FEATURES :

1. Packless
2. Forged Brass / C. Bronze Body
3. Complete tight shut off.
4. Continuous duty moulded coil.
5. Silent in operation.
6. Solenoid capable of being turned 360°.

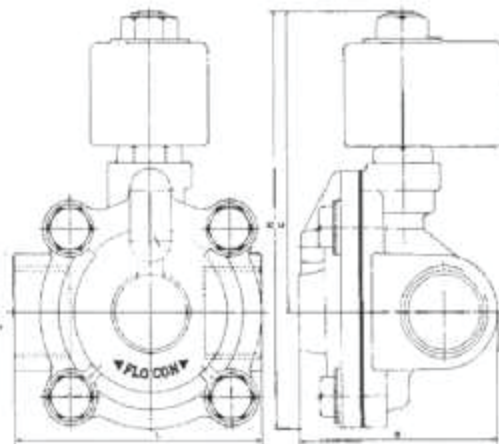
**NOTE :** Valves are manufactured for steam application upto 150°C Max.

◀FLOCON▶ Valves are made from quality materials and rigorously tested for leakage and performance. Each Valve is subjected to twice the rated voltage plus 1000 Volts at 50 c/s for seconds for insulation test.

◀FLOCON▶ Valves are guaranteed for free replacement against any manufacturing defect.

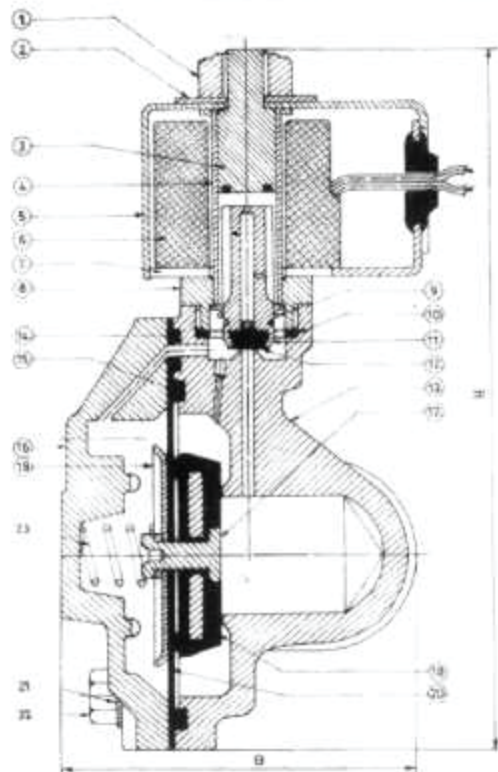


**FSD - 200 SERIES**



VALVE TYPE	PIPE - SIZE (INCH)	ORIFIC - SIZE INCH	Minimum Operating Pressure Differential (KG/CM <sup>2</sup> )	MAXIMUM OPERATING PRESSURE DIFFERENTIAL (KG/CM <sup>2</sup> )				SAFE BODY WORKING PRESSURE (KG/CM <sup>2</sup> )	FLOW FACTOR CV	MAXIMUM FLUID TEMPERATURE °C	WATT RATING		VA - INRUSH	VA - HOLDING
				AIR, GAS WATER, OIL							AC	DC		
FSD 208	1"	1"	0.3	10	9	10	9	15	13	80	17	15	60	24
FSD 209	1¼"	1¼"	0.3	10	9	10	9	15	22.5	80	17	15	60	24
FSD 2010	1½"	1¼"	0.3	10	9	10	9	15	22.5	80	17	15	60	24
FSD 2012	2"	1½"	0.3	10	9	10	9	15	40	80	17	15	60	24

TYPE	PIPE SIZE	B mm	C mm	H mm	L mm
FSD 208	1"	75±2	108±2	150±2	95±2
FSD 209	1 1/4"	90±2	112±2	155±2	125±2
FSD 2010	1 1/2"	90±2	112±2	155±2	125±2
FSD 2012	2"	112±2	112±2	170±2	155±2



### ORDERING INFORMATION :

We must have Type, Pipe size operating Pressure, Operating Voltage and Media handled.

### IMPORTANT :

Use Strainers with the valves. Use the valves only at pressure and voltage specified on the name plate.

### NOTE :

In line with their policy of continuous product development, the manufacturer reserves the right to change specifications without notice.

No.	PART DESCRIPTION	MATERIAL	PART No.	QTY.
1.	TOP NUT	BRASS	FSD-2001	1
2.	NAME PLATE	ALUMINIUM	FSD-2002	1
3.	STOPPER	S. S. - 430	FSD-2003	1
4.	S. S. TUBE	S. S. - 304	FSD-2004	1
5.	COIL HOUSING	C. R. C. A.	FSD-2005	1
6.	COIL	ENAMELLED-CU	FSD-2006	1
7.	L. BRACKET	C. R. C. A.	FSD-2007	1
8.	BRASS NUT	BRASS	FSD-2008	1
9.	SPRING	S. S. - 304	FSD-2009	1
10.	GASKET	TEFLON	FSD-2010	1
11.	PLUNGER	S. S. - 430	FSD-2011	1
12.	SEAT	NEOPRENE	FSD-2012	1
13.	BODY	F. BRASS/G. METAL	FSD-2013	1
14.	O-RING	NEOPRENE	FSD-2014	1
15.	GASKET	NEOPREN	FSD-2015	1
16.	DIAPHRAGM COVER	F. BRASS/G. METAL	FSD-2016	1
17.	RIVET	S. S. - 304	FSD-2017	1
18.	RUBBER DISC	NEOPRENE	FSD-2018	1
19.	DIAPHRAGM PLATE	S. S. - 304	FSD-2019	1
20.	DIAPHRAGM	NEOPRENE	FSD-2020	1
21.	SPRING WASHER	SPRING STEEL	FSD-2021	4
22.	BOLTS	C. STEEL PLATED	FSD-2022	4
23.	SPRING	S. S. - 304	FSD-2023	1



ENGINEERS  
INDIA LIMITED

IS 2148



AGENCY APPROVALS FOR **FLOCON** SOLENOID VALVES PRECISION INSTRUMENT CO., - MUM-43.

ENGINEERS INDIA LIMITED	NEW DELHI	EIL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NAGPUR	CCE	FLAMEPROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAMEPROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY ADVICE SERVICE & LABOUR INSTITUTE	MUMBAI	DGFASLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-55



Where the Quality goes in before the Name comes on.



## 2 WAY DIAPHRAGM OPERATED SOLENOID VALVES.



**Normally Closed and Normally Open Operation. For Air, Gas, Water, Light Hydraulic Oil, Hot Water. 2 1/2" & 4" BSP/NPT**

**FSD 2014  
FSD 2016**

**FLOCON** 2-Way Diaphragm type pilot operated Solenoid Valves are for normally closed and normally open operation. FSD 2014 & FSD 2016 Solenoid Valves are ideally used for handling Light oils & fluids upto 300 S.S.U. Viscosity. No minimum operating pressure is required.

### APPLICATION :

FSD 2014 & 2016 Solenoid Valves are used in

- Pumps
- Spraying
- Cooling
- Air dryers
- Pollution controls
- Laundry equipment
- Irrigation
- Compressors
- Water treatment
- Dish washers

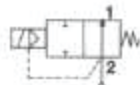
### SPECIFICATION :

Operation-Two Types are available

- a) Normally closed : Valve open when energised  
closed when de-energised.



- B) Normally open : Valve open when de-energised,  
Closed when energised.



### VALVE :

- Body material - cast Gunmetal, Cast Aluminium
- Pipe size - 2 1/2" & 3" BSP/NPT (F)
- Port size - 2 1/2" (13/4") 3" (3")
- Cv Flow factor - 2 1/2" - 45  
3" - 75  
4" - 100
- Seat and diaphragm - Neoprene Standard. Teflon, Viton seats are available for specific requirement.
- Operating pressure - 0 to 10 Kg/cm<sup>2</sup>
- Body rating - 25 Kg/cm<sup>2</sup>



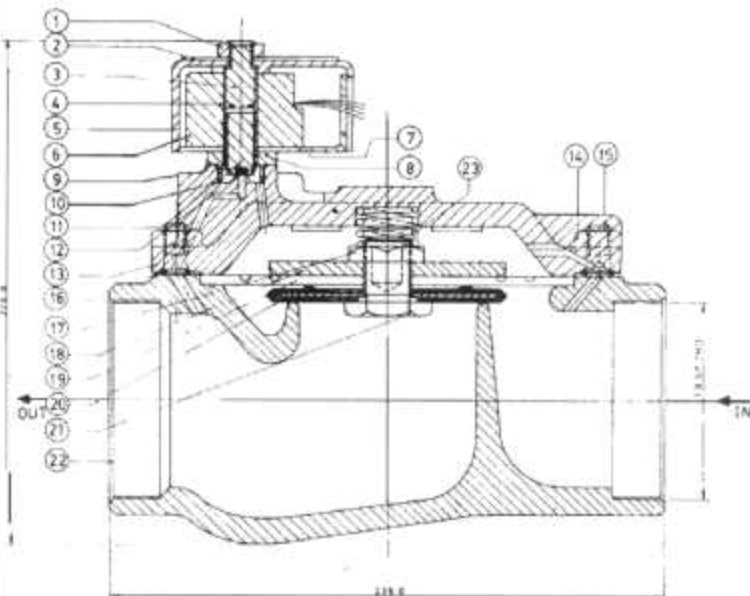
### SOLENOID

- General purpose proof Nema Type 1
- Water tight & Dust Proof Nema 2 & 3R Explosion Proof as per I S 2148 Group I, Ila & I Ib
- Approved and certificate by CMRS/Dhanbad.
- All Solenoid parts in contact with fluid media are made of 300 & 400 series Stainless steel
- Continuous duty moulded coil
- Coil insulation class-F
- Fluid Temperature upto 80°C
- Coil Voltages :  
24,48,110,230,440 Volts 50C/S , Ac  
12,24,48,110,230 Volts DC.

### FEATURES :

- Packless
- Gun Metal Valve body & Cover
- Complete tight shut off
- Silent in operation
- Continuous dudty moulded coils
- Can be mounted in any position
- Solenoid capable of being turned 360°

**FLOCON** Valves are made from quality materials and are rigorously tested for leakage and performance. Each valve is subjected to twice the rated voltage plus 1,000 Volts at 50C/S, for insulation test.



#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### IMPORTANT :

Use Strainers with the valves. Use the  
valves only at pressure and voltage  
specified on the name plate.

#### NOTE :

*In line with their policy of continuous product  
development, the manufacturer reserves the right  
to change specifications without notice.*

S. NO.	NAME OF THE PART	PART NO.	MATERIAL	QTY.
1.	TOP NUT	FSD 20161	BRASS	1
2.	NAME PLATE	FSD 20162	ALUMINIUM	1
3.	STOPPER	FSD 20163	S. S. 410	1
4.	S. S. tube	FSD 20164	S. S. 304	1
5.	COIL HOUSING	FSD 20165	C.R.C.A.	1
6.	COIL	FSD 20166	ENAMELLED COPPER WIRE	1
7.	L. BRACKET	FSD 20167	C.R.C.A.	1
8.	BRASS NUT	FSD 20168	BRASS	1
9.	SPRING	FSD 20169	S.S.304	1
10.	GASKET	FSD 20170	TEFLON	1
11.	PLUNGER	FSD 20171	S. S. 410	1
12.	SEAT	FSD 20172	NEOPRENE	1
13.	COVER	FSD 20173	G. M.	1
14.	HEX NUT	FSD 20174	CR. STEEL	8
15.	STUD	FSD 20175	CR. STEEL	8
16.	'O' RING	FSD 20176	NEOPRENE	2
17.	HEX NUT	FSD 20177	BRASS	1
18.	DIAPHRAGM PLATE	FSD 20178	BRONZE	1
19.	DIAPHRAGM	FSD 20179	NEOPRENE	1
20.	DIAPHRAGM DISC	FSD 20180	NEOPRENE	1
21.	HEX BOLT	FSD 20181	BRASS	1
22.	MAIN BODY	FSD 20182	G. M.	1
23.	SPRING	FSD 20183	S.S.	1



IS 2148



AGENCY APPROVALS FOR FLOCON<sup>®</sup> SOLENOID VALVES - PRECISION INSTRUMENT CO. - MUM-B.

ENGINEERS INDIA LIMITED	NEW DELHI	EIL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NAGPUR	CCE	FLAMEPROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAMEPROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY			
ADVISE SERVICE & LABOUR INSTITUTE	MUMBAI	DGFASLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-55



Where the Quality goes in before the Name comes on.



# 2 - WAY SOLENOID VALVES

**ASA 150 RF Flanged End**  
**Normally Open and Closed Operation**  
**For Air, Water, Gas, Light Oil 1/2" to 4"**



**FLOCON** Two Way Diaphragm Type Pilot Operated Solenoid Valves are for normally open and normally closed operation. FSD 200 F Series Valves are ideally used for handling Air, Gas, Water and Light Oil up to 300 SSU viscosity.

**FLOCON** Valves are made from quality materials and are rigorously tested for leakage and performance. Each valve is subjected to twice, the rated voltage plus 1,000 Volts at 50/S for insulation test.

## SIZE & END CONNECTION :

1/2" to 1" Bar Stock bodies, from 1 1/2" to 4" casted bodies. Flanged Std ASA 150 RF-Optional-other standards.

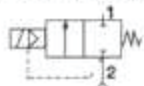
## APPLICATION :

Textile processing machinery-sugar machinery, Pumps, Irrigation, Water treatment, Pollution controls and wherever dependable ON-OFF type control is required, NOT SUITABLE FOR STEAM DUTY.

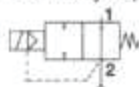
## SPECIFICATIONS :

### OPERATION :

A) Normally Closed : Valve opens when Solenoid is energised & closes when Solenoid is de-energised.



B) Normally Open: Valve opens when Solenoid is de-energised & closes when Solenoid is energised.



## SOLENOID :

- 1) General purpose enclosure NEMA type 1, IP20. Water tight and dust proof NEMA 2 & 3 R, IP55, IP56, IP67.
- 2) Explosion proof as per IS 2148 group I, IIA, IIB, approved and certified by CMRS, Dhanbad.
- 3) All solenoid parts in contact with fluid media are made of series 300 & 400 stainless steel.
- 4) Continuous duty moulded coils Class 'F', 'H'.
- 5) Fluid temperature up to 80°C
- 6) Coil Voltage : 24,48,120,240,440 Volts 50 C/S AC.  
12,24,48,120,240,DC.

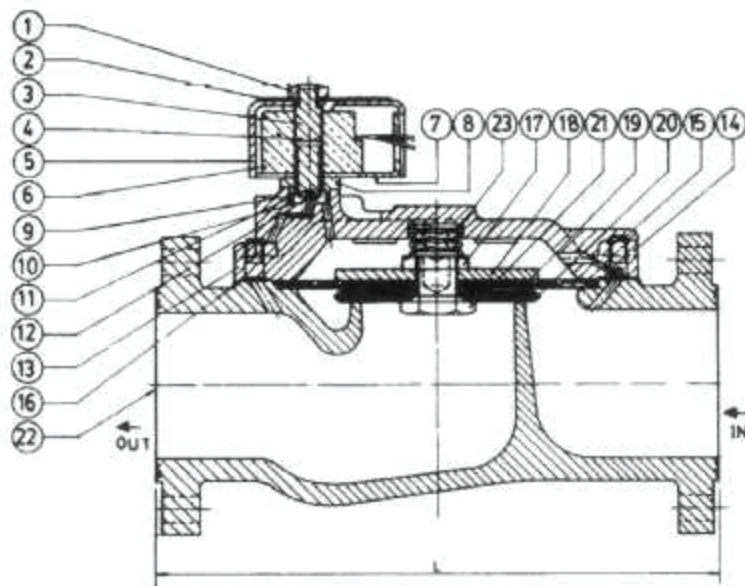
## FEATURES :

- Packless
- Cast Iron Body & Cover
- Complete tight shut off.
- Solenoid capable of being turned 360°



Valve size	Orifice Size MM	CV Flow Factor	Minimum Opt. Pr. Kg/cm <sup>2</sup>	Max Opt. pr. KG/cm <sup>2</sup>		VA Inrush	VA Holding	Watt Rating
				Air	Oil			
1/2"	15	4	0.3	10	8	60	24	17
3/4"	20	6	0.3	10	8	60	24	17
1"	25	13	0.3	10	8	60	24	17
1 1/2"	40	22.5	0.3	10	8	60	24	17
2"	50	43	0.3	10	8	60	24	17
2 1/2"	65	65	0.5	7	7	60	24	17
3"	80	100	0.5	7	7	60	24	17
4"	90	130	0.5	7	7	60	24	17





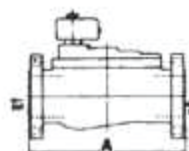
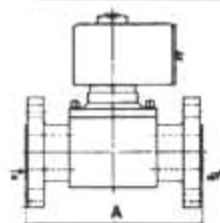
SR. NO.	NAME OF PART	PART NO.	MATERIAL	QTY.
1	TOP NUT	FSD 20161	BRASS	1
2	NAME PLATE	FSD 20162	ALUMINIUM	1
3	STOPPER	FSD 20163	S. S. - 410	1
4	S. S. TUBE	FSD 20164	S. S. - 304	1
5	COIL HOUSING	FSD 20165	C. R. C. A.	1
6	COIL	FSD 20166	ENAMELLED COPPER WIRE	1
7	L. BRACKET	FSD 20167	C. R. C. A.	1
8	BRASS NUT	FSD 20168	BRASS	1
9	SPRING	FSD 20169	S. S. 304	1
10	GASKET	FSD 20170	TEFLON	1
11	PLUNGER	FSD 20171	S. S. 410	1
12	SEAT	FSD 20172	NEOPRENE	1
13	COVER	FSD 20173	G.M. / C.I.	1
14	HEX NUT	FSD 20174	C. STEEL	8
15	STUD	FSD 20175	C. STEEL	8
16	'O' RING	FSD 20176	NEOPRENE	2
17	HEX NUT	FSD 20177	BRASS	1
18	DIAPHRAGM PLATE	FSD 20178	BRONZE/BRASS	1
19	DIAPHRAGM	FSD 20179	NEOPRENE	1
20	DIAPHRAGM DISC	FSD 20180	NEOPRENE/NITRILE	1
21	HEX BOLT	FSD 20181	BRASS	1
22	MAIN BODY	FSD 20182	G.M. / C.I.	1
23	SPRING	FSD 20183	S. S.	1

#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### IMPORTANT :

Use Strainers with the valves. Use  
the valves only at pressure and  
voltage specified on the name plate.



#### FLANGE FACE TO FACE DISTANCE

SIZE	A WIDTH MM	SIZE	A WIDTH MM
1/2"	125 <sup>+3</sup>	2"	203 <sup>+3</sup>
3/4"	130 <sup>+3</sup>	2 1/2"	305 <sup>+3</sup>
1"	154 <sup>+3</sup>	3"	310 <sup>+3</sup>
1 1/2"	170 <sup>+3</sup>	4"	355 <sup>+3</sup>

#### NOTE :

In line with their policy of continous product  
development, the manufacturer reserves the  
right to change specifications without notice.



18 2148



AGENCY APPROVALS FOR FLOCON<sup>®</sup> SOLENOID VALVES PRECISION INSTRUMENT CO. MUMBAI

ENGINEERS INDIA LIMITED	NEW DELHI	EIL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-45 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NASIPUR	CCE	FLAMEPROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAMEPROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY			
ADVISE SERVICE & LABOUR INSTITUTE	MUMBAI	DSFASLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELFC LIMITED	MUMBAI	GENELFC	IP-55



Where the Quality goes in before the Name comes on.



# FLOCON SOLENOID VALVES FOR DUST COLLECTOR SERVICE

$1\frac{1}{2}$ ",  $3\frac{3}{4}$ ", 1",  $1\frac{1}{2}$ " BSP/NPT



SERIES  
**FSDA 200**

◀FLOCON▶ Aluminium cast 2 way valves are high flow, diaphragm operated angle body specially designed for reverse jet type dust collectors. The designs have a springless construction with only one moving part, high flow long life and fast opening combine to offer a superior design for the dust collector systems. The high speed operation not only saves the compressed air but it provides the kind of shock wave necessary to free the dust from filter bags.

## OPERATION :

Pulse valve is either operated by internal Solenoid Operator or remote pilot solenoid valve. When the pilot solenoid valve is energised, the air trapped above the diaphragm is quickly exhausted through the pilot solenoid valve causing very fast opening of the main valve. When the pilot solenoid valve is de-energised air supplied through the bleed hole is trapped above the diaphragm, causing to close the valve.

## CONSTRUCTION :

The Valve body and cover is made out of aluminium alloy castings. The diaphragm and sealing components are made of nitrile rubber. Pipe connection suitable for  $1\frac{1}{2}$ ",  $3\frac{3}{4}$ ", 1" and  $1\frac{1}{2}$ " BSP(F)/NPT(F). Operating pressure 1 to 10kg/cm<sup>2</sup>.

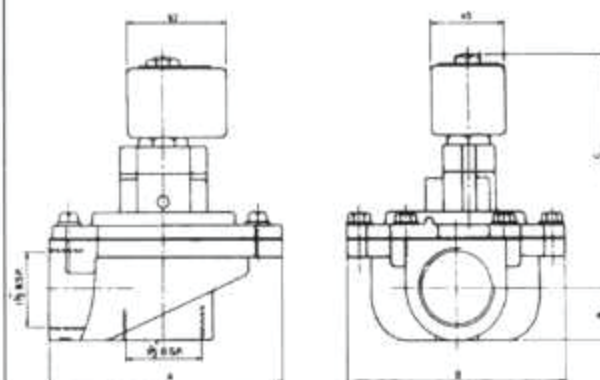
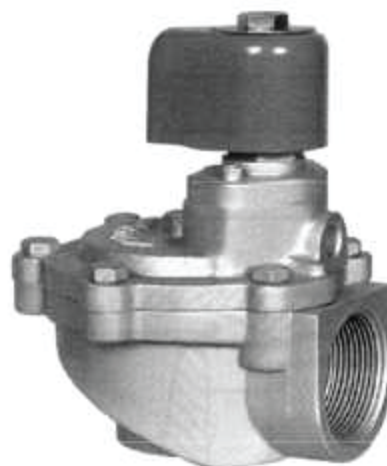
## SOLENOID :

- General purpose solenoid Nema type 1, IP20.  
Water tight and dust proof Nema 2 & 3 R, IP55, IP56, IP66, IP67.
- Explosion proof as per IS 2148 group I, IIA, IIB approved and certified by C M R S, Dhanbad.
- All solenoid parts coming in contact with fluid media are made of series 300 and 400 stainless steel.
- Continuous duty moulded coil for class 'F' & 'H' insulation.
- Fluid temperature up to 80°C.
- Coil voltage : 24, 48, 110, 240, 440 Volts 50 C/S AC  
12, 24, 48, 110, 220 DC.

## INSTALLATION:

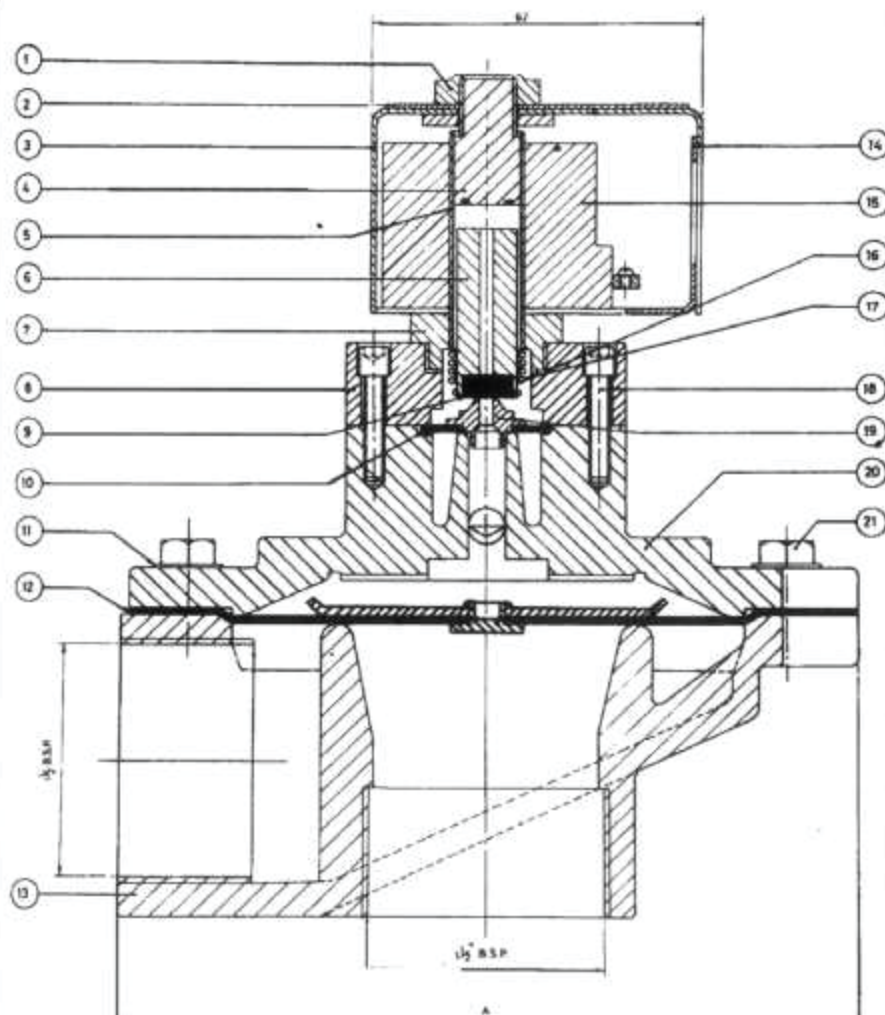
Valves are mountable in any position without effecting their operation, but as a general practice, we recommend to fit the valve keeping solenoid upright and above the header tank. This prevents scale and water entering the valve. The valves are provided with normal BSP female threads.

◀FLOCON▶ VALVES ARE MADE FROM QUALITY MATERIALS AND ARE RIGOROUSLY TESTED FOR LEAKAGE AND PERFORMANCE. EACH VALVE IS SUBJECTED TO TWICE THE RATED VOLTAGE PLUS 1,000 VOLTS AT 50c/s FOR 60 SECONDS FOR INSULATION TEST.



Type	Dimension			
	A	B	C	D
FSDA 206 - 20m	90	22	110	75
FSDA 208 - 25m	90	22	110	75
FSDA 2010 - 40m	136	30	235	134

TYPE	PIPE SIZE	ORIFICE IN MM	OPERATING PRESSURE KG/CM <sup>2</sup>		SAFE BODY WORKING PRESSURE KG/CM <sup>2</sup>	MAXIMUM AC FLUID TEMP. (°C)
			MIN.	MAX.		
FSDA 204	$\frac{1}{2}$ "	20	0.6	10	15	80
FSDA 206	$\frac{3}{4}$ "	20	0.6	10	15	80
FSDA 208	1"	25	0.6	10	15	80
FSDA 2010	$1\frac{1}{2}$ "	50	0.6	8.5	12	80



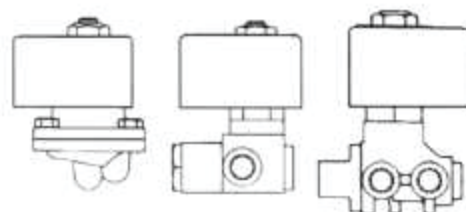
SR. NO.	NAME OF PART	PART NO.	MATERIAL	QTY.
1.	TOP NUT	FSDA 2001	BRASS	1
2.	NAME PLATE	FSDA 2002	ALUMINIUM	1
3.	COIL HOUSING	FSDA 2003	C.R.C.A	1
4.	STOPPER	FSDA 2004	S. S. 410	1
5.	S. S. TUBE	FSDA 2005	S. S. 304	1
6.	PLUNGER	FSDA 2006	S.S. 410	1
7.	BRASS BUT (TUBE)	FSDA 2007	BRASS	1
8.	BONET	FSDA 2008	ALUMINIUM	1
9.	SEAT (PLUNGER)	FSDA 2009	NEOPRENE	1
10.	PILOT DIAPHRAGM	FSDA 20010	NEOPRENE	1
11.	SPRING WASHER	FSDA 20011	C. STEEL	6
12.	MAIN DIAPHRAGM	FSDA 20012	NEOPRENE	1
13.	MAIN BODY	FSDA 20013	ALUMINIUM	1
14.	'L' BRACKET	FSDA 20014	C. R.C.A.	1
15.	COIL	FSDA 20015	E.C.W.	1
16.	GASKET	FSDA 20016	TEFLON	1
17.	SPRING	FSDA 20017	S.S.304	1
18.	ALLEN SCREW	FSDA 20018	C. STEEL	2
19.	DIAPHRAGM RIVET	FSDA 20019	NEOPRENE	1
20.	COVER	FSDA 20020	ALUMINIUM	1
21.	HEX SCREW	FSDA 20021	C. STEEL	6

#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### IMPORTANT :

Use Strainers with the valves. Use  
the valves only at pressure and  
voltage specified on the name plate.



#### NOTE :

In line with their policy of continuous product  
development, the manufacturer reserves the  
right to change specifications without notice.



AGENCY APPROVALS FOR FLOCON<sup>®</sup> SOLENOID VALVES PRECISION INSTRUMENT CO. (MUMBAI)

ENGINEERS INDIA LIMITED	NEW DELHI	ERL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NAGPUR	CCE	FLAMEPROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAMEPROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY			
ADVICE SERVICE & LABOUR INSTITUTE	MUMBAI	DSFLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-55



Where the Quality goes in before the Name comes on.



# 2 Way Solenoid Valves

## Low Pressure Service

### Normally Closed and Normally Open Operation

#### For Air, Gas, Steam And Liquids. 1/4" TO 3/4" BSP/NPT

**FLOCON®**

**SERIES  
FD 200**

**FLOCON** valves are direct lift solenoid operated valves. They are available in forged brass bodies, having soft seating for tight shut off on low pressure services. They are mainly used for gas pilot control on industrial power boilers and low pressure air, gas control or gas fired ovens and furnaces. These valves are also used in vacuum holding, automatic dispensing and other low pressure applications.

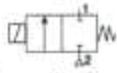
#### IMPORTANT :

NO MINIMUM OPERATING PRESSURE REQUIRED.

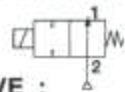
#### SPECIFICATIONS :

##### OPERATION :

a) Normally Closed : Open when energised;  
closed when de-energised.



b) Normally Open : Closed when energised;  
open when de-energised.



##### VALVE :

- 1) Forged brass / SS Valve body
- 2) Resilient seating for tight shut off.
- 3) Pipe connections suitable for 1/4", 3/8", 1/2" and 3/4" BSP / NPT.
- 3) Operating pressure from 0 Kg/cm<sup>2</sup> to 1 kg/cm<sup>2</sup>.

##### SOLENOID :

- 1) General purpose solenoid enclosure NEMA TYPE 1
- 2) All solenoid part in contact with fluid are made of 300 and 400 series stainless steel.
- 3) Continuous duty moulded coil.
- 4) Coil Voltages : 24, 48, 110, 220, 440 V A-C.  
24, 48, 110 220 V.D-C.

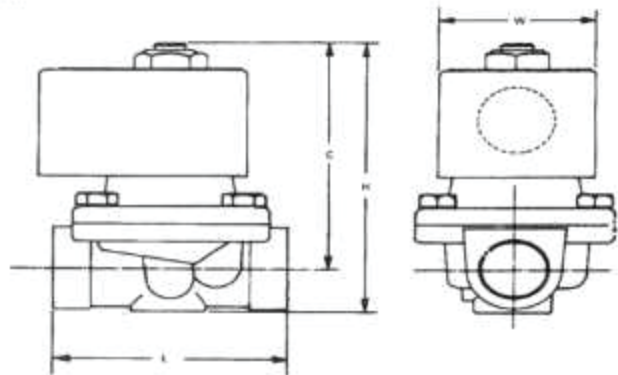
Inrush VA 60.

Holding VA 24

Watts 12.5

Ambient : 5°C to 50°C.

**FREQUENCY OF OPERATION**  
650 Cycles per minute

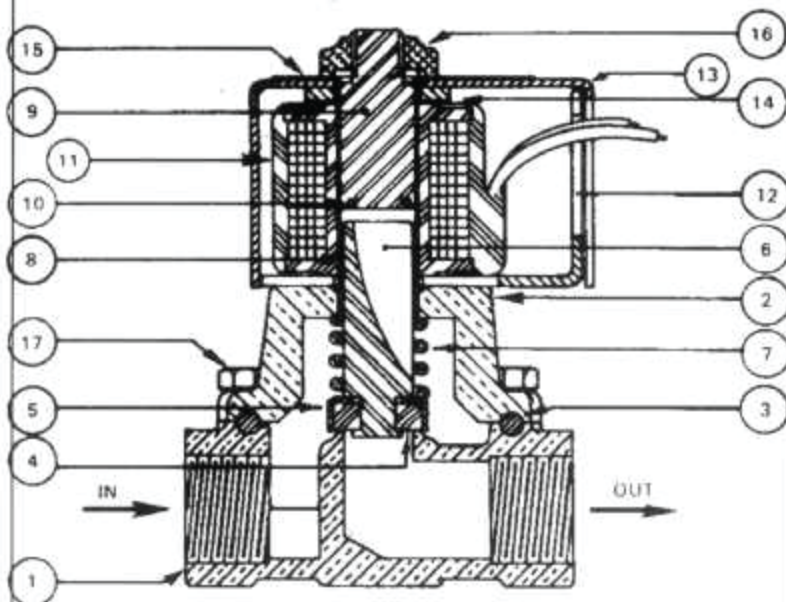


TYPE	PIPE SIZE	L mm	W mm	C mm	H mm
FD 202	1/4"	70	46	75	90
FD 203	3/8"				
FD 204	1/2"				
FD 206	3/4"			80	98

#### FEATURES :

- Direct operated • No minimum operating pressure required.
- Packless • Forged brass body • S. S. Valve Body.
- Continuous duty moulded coil • Complete tight shut off.
- Silent in operation • Solenoid capable of being turned 360°
- Can be mounted in any position without affecting performance.
- Can be mounted directly on pipe • Compact size.
- **FLOCON** valves are made from quality materials and rigorously tested for leakage and performance. Each valve is subjected to twice the rated voltage plus 1,000 Volts at 50C/S for 60 seconds for Insulation Test.
- **FLOCON** Valves are guaranteed for free replacement against any Manufacturing defect.

Valve Type	Pipe Size (inch)	Office Size (inch)	Maximum Operating Pressure Differential (in Kg/cm <sup>2</sup> )				Safe Body Working Pressure (Kg/cm <sup>2</sup> )	Maximum AC Fluid Temp. °C.	Cv Flow Factor	Watt Rating		VA-Inrush	VA-Holding	Class of coil insulation
			Air Gas		Water Light Oil					AC	DC			
			AC	DC	AC	DC								
FD 202	1/4	5/16	1	0.25	1	0.25	20	95	1.5	12.5	13	60	24	B
FD 203	3/8	3/8	1	0.25	1	0.25	20	95	1.8	12.5	13	60	24	B
FD 204	1/2	7/16	1	0.5	1	0.5	20	95	2.8	12.5	13	60	24	B
FD 206	3/4	3/4	0.15	0.07	0.15	0.07	20	95	5	12.5	13	60	24	B

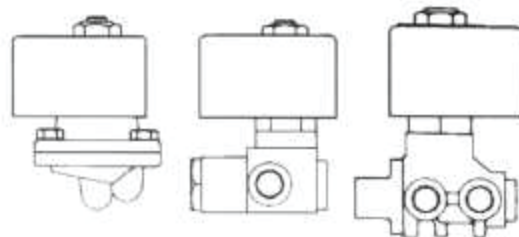


#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### IMPORTANT :

Use Strainers with the valves. Use  
the valves only at pressure and  
voltage specified on the name plate.



#### NOTE :

*In line with their policy of continuous product development, the manufacturer reserves the right to change specifications without notice.*

SR. NO.	NAME OF THE PART	PART NO.	MATERIAL	QTY.
1.	VALVE BODY	FD 20 X 01	F. BRASS	1
2.	BONNET	FD 20 X 02	F. BRASS	1
3.	'O' RING	FD 20 X 03	NEOPRENE	1
4.	SEAT	FD 20 X 04	NEOPRENE	1
5.	SEAT CAP	FD 20 X 05	BRASS	1
6.	PLUNGER	FD 20 X 06	S.S. 410	1
7.	PLUNGER SPRING	FD 20 X 07	S.S. 304	1
8.	TUBE	FD 20 X 08	S.S. 304	1
9.	STOPPER	FD 20 X 09	S. S. 410	1
10.	SHADING RING	FD 20 X 10	COPPER	1
11.	COIL	FD 20 X 11	ENAMELLED C. W.	1
12.	BASE PLATE	FD 20 X 12	C. R. C. A.	1
13.	TOP COIL HOUSING	FD 20 X 13	C. R. C. A	1
14.	SPRING WASHER	FD 20 X 14	SP STEEL	1
15.	NAME PLATE	FD 20 X 15	ALUMINIUM	1
16.	TOP NUT	FD 20 X 16	ALUMINIUM	1
17.	SCREWS	FD 20 X 17	ALLOY STEEL	4



ENGINEERS  
INDIA LIMITED



AGENCY APPROVALS FOR FLOCON® SOLENOID VALVES PRELIMINARY DOCUMENT CO. - MUMBAI

ENGINEERS INDIA LIMITED	NEW DELHI	EIL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	CAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	CHANDABAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NAGPUR	CCE	FLAME PROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAME PROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY ADVICE SERVICE & LABOUR INSTITUTE	MUMBAI	DGFSALI	FLAME PROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-55



Where the Quality goes in before the Name comes on.



# 2 - WAY SOLENOID VALVES

## NORMALLY CLOSED

FOR AIR, GAS, WATER, LIGHT HYDRAULIC OIL

**FLOCON**

FD - 208	[ 1" BSP (F) ]
FD - 209	[ 1 1/4" BSP (F) ]
FD - 2010	[ 1 1/2" BSP (F) ]
FD - 2012	[ 2" BSP (F) ]

**FLOCON** 2-Way Direct Operated Solenoid Valves have cast Bronze bodies and soft resilient seating which gives complete tight shut off. These valves are equipped with powerful Solenoids that provide higher efficiency and flow capacities than most comparable valves.

### SPECIFICATION :

#### OPERATION :

**NORMALLY CLOSED** : Valve open when Energised  
Closed when De - Energised.



#### APPLICATION

- (i) Gas Fired Burners
- (ii) Furnaces
- (iii) Boilers
- (iv) Ovens
- (v) Heating Plants

#### VALVE :

1. Direct operated
2. Pipe connections suitable for 1", 1 1/2", 2" BSP (F) / NPT (F).
3. Cast Bronze body.
4. Soft resilient seating.

#### SOLENOID :

1. General purpose Solenoid Enclosure Nema type 4, IP20, IP40.
2. Dust Proof, Watertight Solenoid Enclosure IP55, IP65.
3. Flame Proof as per IS2148 of 1981 for Group, I, IIA & IIB.
4. Class F, Class H Insulation.
5. Standard Voltages - 24, 48, 110, 220, 440 Volts 50 C/s AC.  
24, 48, 110, 220 VDC.
6. Ambient - 5° to 50°C.

#### FEATURES :

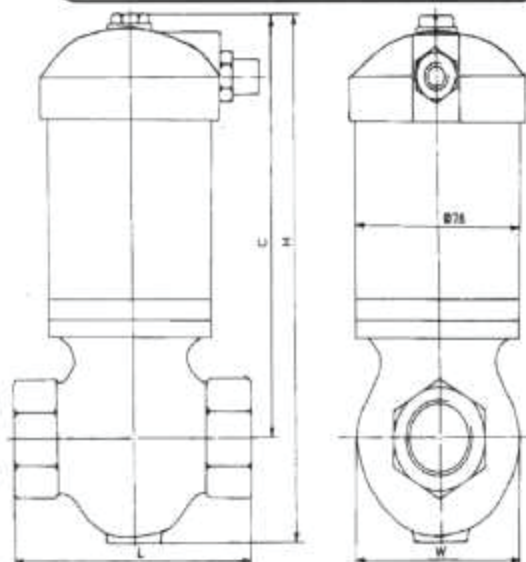
1. Packless
2. C. Bronze body
3. Complete tight shut off.
4. Continuous duty moulded coil.
5. Silent in operation.
6. Solenoid capable of being turned 360°.
7. No minimum operating press required.

**FLOCON** Valves are made from quality materials and rigorously tested for leakage and performance. Each Valve is subjected to twice the rated voltage plus 1000 Volts at 50 c/s for seconds for insulation test.

**FLOCON** Valves are guaranteed for free replacement against any manufacturing defect.

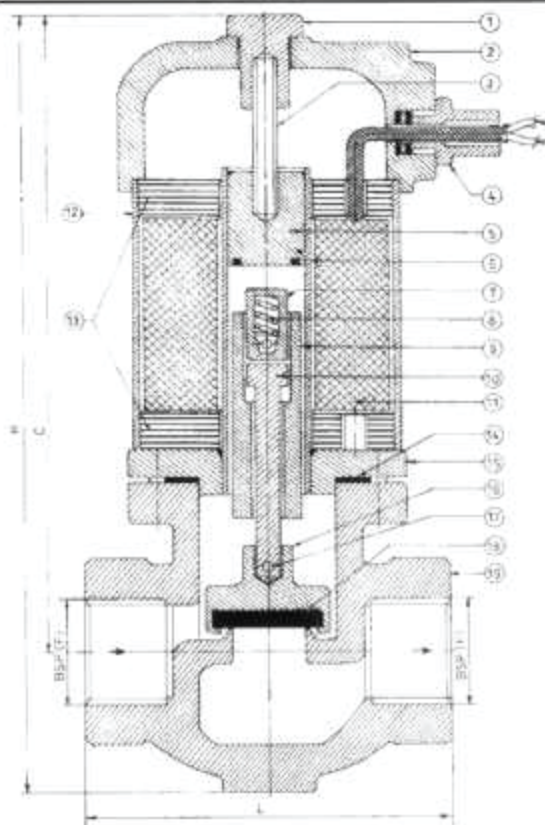


FD-200 SERIES



VALVE TYPE	PIPE - SIZE (INCH)	ORIFIC - SIZE INCH	Minimum Operating Pressure Differential (KG/CM <sup>2</sup> )	MAXIMUM OPERATING PRESSURE DIFFERENTIAL (KG/CM <sup>2</sup> )				SAFE BODY WORKING PRESSURE (KG/CM <sup>2</sup> )	FLOW FACTOR CV	MAXIMUM FLUID TEMPERATURE °C	WATT RATING		VA - INRUSH	VA - HOLDING		
											AC	DC				
				AIR, GAS		WATER, OIL									AC	DC
FD 208	1"	13/16"	0	0.3	0.25	0.3	0.25	15	7.5	85	25	25	70	50		
FD 209	1 1/4"	1 1/16"	0	0.25	0.2	0.25	0.2	15	13	85	25	25	70	50		
FD 210	1 1/2"	1 1/8"	0	0.2	0.15	0.2	0.15	15	13	85	25	25	70	50		
FD 2012	2"	1 3/8"	0	0.2	0.15	0.2	0.15	15	17	85	25	25	70	50		

TYPE	PIPE SIZE	L mm	W mm	C mm	H mm
FD 208	1"	106±1.5	71	184±3	222±3
FD 209	1 1/4"	131±2	87	200±3	248±3
FD 2010	1 1/2"	131±2	87	200±3	248±3
FD 2012	2"	180±2	101	214±3	268±3



#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### IMPORTANT :

Use Strainers with the valves. Use  
the only at pressure and voltage  
specified on the name plate.

#### NOTE :

*In line with their policy of continuous product  
development, the manufacturer reserves the right  
to change specifications without notice.*

No.	PART DESCRIPTION	MATERIAL	PART No.	QTY.
1.	TOP NUT	BRASS	FD-20001	1
2.	CAP	ALUMINIUM	FD-20002	1
3.	SCREW	M. S. PLATED	FD-20003	1
4.	TAIL-END	ALUMINIUM	FD-20004	1
5.	STOPPER	S. S. 430	FD-20005	1
6.	TUBE	SS-304	FD-20006	1
7.	RETAINER	BRASS	FD-02007	1
8.	SPRING	SP. STEEL	FD-20008	1
9.	PLUNGER	SS-430	FD-20009	1
10.	BRASS PIN	BRASS	FD-20010	1
11.	COIL	COPPER	FD-20011	1
12.	COIL HOUSING	M. STEEL	FD-20012	1
13.	LAMINATIONS	SIL-STEEL	FD-20013	1
14.	GASKET	ASBESTOS	FD-20014	1
15.	FLANGE	C. BRONZE	FD-20015	1
16.	FERRULE	BRASS	FD-20016	1
17.	RIVET	COPPER	FD-20017	1
18.	SEAT	NEOPRENE	FD-20018	1
19.	BODY	C. BRONZE	FD-20019	1



ENGINEERS  
INDIA LIMITED

IS 2148



AGENCY APPROVALS FOR **FLOCON**® SOLENOID VALVES PRECISION INSTRUMENT CO. - MUM-13.

ENGINEERS INDIA LIMITED	NEW DELHI	EIL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NAGPUR	CCE	FLAMEPROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAMEPROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY			
ADVICE SERVICE & LABOUR INSTITUTE	MUMBAI	DGFASLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-55



Where the Quality goes in before the Name comes on.



# 2 Way Solenoid Valves

## High Pressure Service

### for Air, Gas, Water and Light Hydraulic Oil.

**FLOCON®**

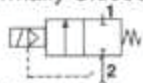
**SERIES  
FP 200 HP**

**FLOCON®** 2-Way solenoid valves for high pressure service are very compact and dependable for a wide range of high operating pressures. They are pilot operated and instant shut off or opening is achieved by a very versatile piston type design.

#### SPECIFICATIONS :

##### OPERATION :

Normally Closed : Valve open when energised ; closed when de-energised



##### VALVE :

- 1) Body material brass or stainless steel.
- 2) Teflon seating to withstand high pressure and impact.
- 3) Pipe connections suitable for 1/4" and 3/8" BSP/NPT
- 4) Operating pressures upto 50 kg/cm<sup>2</sup> for AC voltage
- 5) Orifice 5/16"
- 6) Cv-Flow factor 1.5
- 7) Solenoid pilot operated.

##### SOLENOID :

- 1) General purpose solenoid enclosure NEMA Type 1.
- 2) All solenoid parts in contact with fluid are made from 300 and 400 series stainless steel.
- 3) Continuous duty moulded coil.
- 4) Class B insulation.
- 5) Coil voltages : 24, 48, 110, 220, 440 V A-c.  
24, 48, 110, 220, V D-C.  
(Pressure will differ from AC Pressure by 15%)

Inrush VA 60.

Holding VA 24.

Watts 12.5

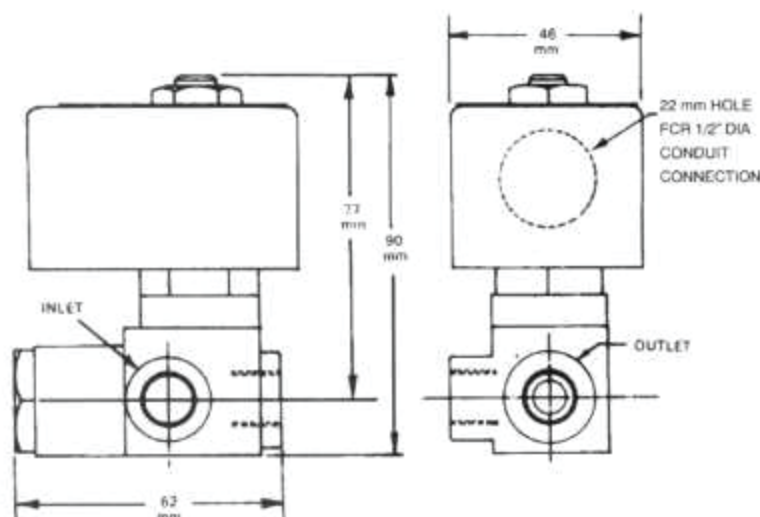
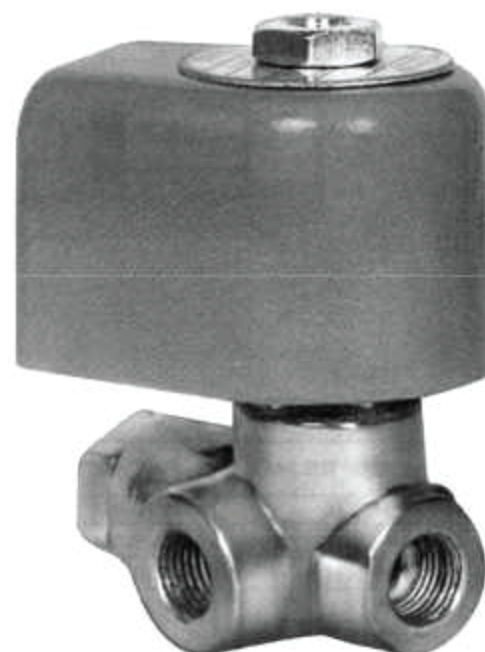
- 6) Ambient : 5°C to 50°C

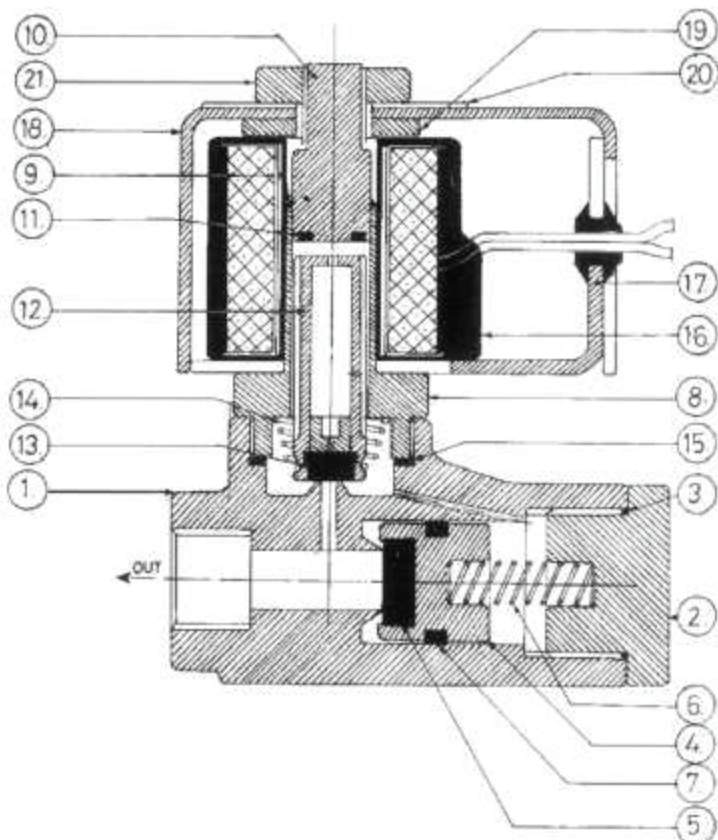
#### FREQUENCY OF OPERATION

650 Cycles per minute

#### FEATURES :

- Solenoid pilot operated.
- Packless.
- Complete tight shut off.
- Wide range of operating pressures.
- Brass or stainless steel body.
- Continuous duty moulded coil.
- Solenoid capable of being turned 360°
- Silent in operation.
- Compact size.
- Can be mounted in any position without affecting operation.
- Can be mounted directly on pipe.
- **FLOCON®** valves are made from quality materials and rigorously tested for leakage and performance. Each valve is subjected to twice the rated voltage plus 1,000 volts at 50 c/s for 60 seconds for Insulation Test.
- **FLOCON®** valves are guaranteed for free replacement against any manufacturing defect.





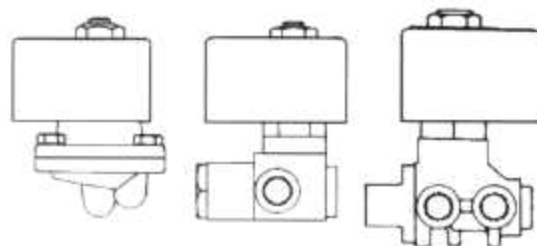
SR. NO.	NAME OF THE PART	PART NO.	MATERIAL	QTY.
1.	VALVE BODY	FPH 20001	FORGED BRASS	1
2.	END PLUG	FPH 20002	BRASS	1
3.	E. P. GASKET	FPH 20003	NEOPRENE	1
4.	PISTON	FPH 20004	S. S. 304	1
5.	PISTON SEAT	FPH 20005	TEFLON	1
6.	PISTON SPRING	FPH 20006	SS 304	1
7.	PISTON RING	FPH 20007	TEFLON	1
8.	TUBE NUT	FPH 20008	BRASS	1
9.	TUBE	FPH 20009	S. S. 304	1
10.	STOPPER	FPH 20010	SS 410	1
11.	SHADING RING	FPH 20011	COPPER	1
12.	PLUNGER	FPH 20012	SS 410	1
13.	PLUNGER SEAT	FPH 20013	NEOPRENE	1
14.	PLUNGER SPRING	FPH 20014	SS 304	1
15.	GASKET FOR '8'	FPH 20015	NEOPRENE	1
16.	COIL	FPH 20016	ENAMELLED C. W.	1
17.	BASE PLATE	FPH 20017	C. R. C.A.	1
18.	TOP COIL HOUSING	FPH 20018	C. R. C.A.	1
19.	SPRING WASHER	FPH 20019	SP STEEL	1
20.	NAME PLATE	FPH 20020	ALUMINIUM	1
21.	TOP NUT	FPH 20021	BRASS	1

#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### IMPORTANT :

Use Strainers with the valves. Use  
the valves only at pressure and  
voltage specified on the name plate.



#### NOTE :

In line with their policy of continous product  
development, the manufacturer reserves the right  
to change specifications without notice.



AGENCY APPROVALS FOR FLOCON® SOLENOID VALVES. PRECISION INSTRUMENT CO. - MUM-13.

ENGINEERS INDIA LIMITED	NEW DELHI	EIL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/87 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NAGPUR	CCE	FLAMEPROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAMEPROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY ADVISE SERVICE & LABOUR INSTITUTE	MUMBAI	DGFASLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-55



Where the Quality goes in before the Name comes on.



# MINIATURE 2 - WAY SOLENOID VALVES

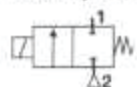
(NORMALLY CLOSED & NORMALLY OPEN)  
BRASS, S. STEEL, ALUMINIUM BODY,  
1/8", 1/4", 3/8" BSP / NPT CONNECTION



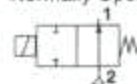
◀FLOCON▶ 2-way midget type solenoid valves with a compact design for automatic control of Gas Air, Water & Steam and other corrosive media. These direct operated valves work from 0 pressure to their maximum rated pressure.

## SPECIFICATIONS :

Normally Closed : Normally Closed : Inlet & Outlet get connected when Solenoid is energised.



Normally Open : Normally Open : Inlet & Outlet get connected when Solenoid is De-energised.



FDC Series Valves are supplied only in normally closed configuration with flow control.

## VALVE :

- 1) Forged Brass, S, Steel 304 & 316 & Aluminium Body
- 2) Resilient Or Teflon Seating for tight shut - off
- 3) Pipe Connection - 1/8", 1/4" & 3/8 BSP/NPT connection

## SOLENOID :

- 1) General purpose solenoid enclosure : IP - 20 & IP - 40
- 2) Weather proof IP55
- 3) Water tight, IP66, IP67 & flame proof as per IS-2148 of 1981 for group I, II A & IIB
- 4) Continuous duty epoxy moulded coils
- 5) Class F & H Insulation
- 6) All Solenoid parts in contact with fluid are made of 300 & 400 series S. Steel

## COIL VOLTAGES :

24, 48, 110, 230, 440 V AC, 50 Hz  
12, 24, 48, 110, 230 V DC

**Installation :** Mountable in any position.

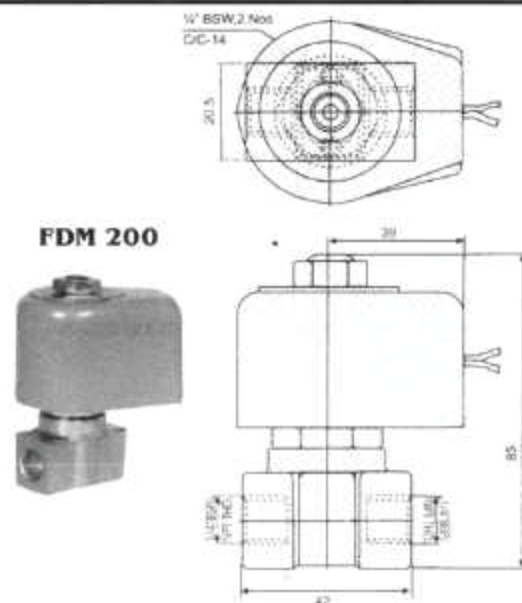
## Features :

Direct operated  
Packless  
Tight Shutoff  
Can be mounted direct on pipe.

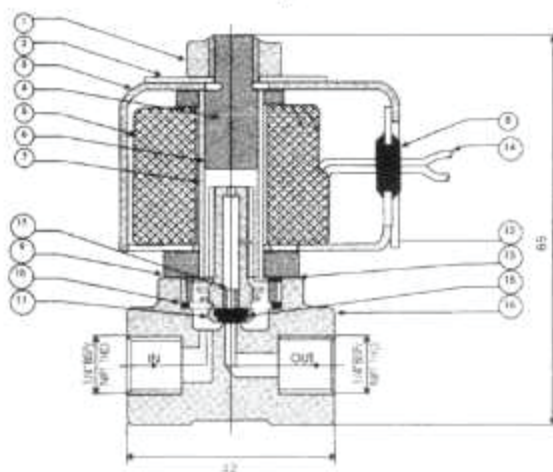


VALVE SERIES	PIPE SIZE (INCH)	OFFICE SIZE (MM)	MAXIMUM OPERATING PRESSURE (KG/CM <sup>2</sup> )						SAFE BODY WORKING PRESSURE (KG/CM <sup>2</sup> )	MAXIMUM AC FLUID TEMP. °C.	Cv Flow Factor	Watt Rating		VA-Holding	VA-Inrush
			AIR GAS		WATER		LIGHT HYDRAULIC OIL								
			AC	DC	AC	DC	AC	DC	AC	DC					
FDM 201	1/8	1.2	70	70	70	70	70	70	105	100	0.09	17	18	23	70
FDM 202	1/4	1.5	50	50	50	50	50	50	75	100	0.06	17	18	23	70
		2	25	25	25	25	25	25	35	100	0.15	17	18	23	70
FDM 203	3/8	3	10	10	10	10	10	10	35	100	0.21	17	18	23	70
FDC 202	1/4	2.7	10	10	10	10	10	10	35	100	0.18	17	18	23	70

**Valves are made from quality materials and are rigorously tested for leakage and performance. Each valve is subjected to twice the rated voltage plus 1,000 volts, at 50c/s, for 60 seconds for insulation test.**

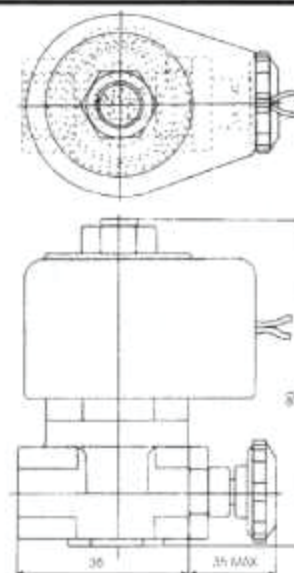


**FDM 200**

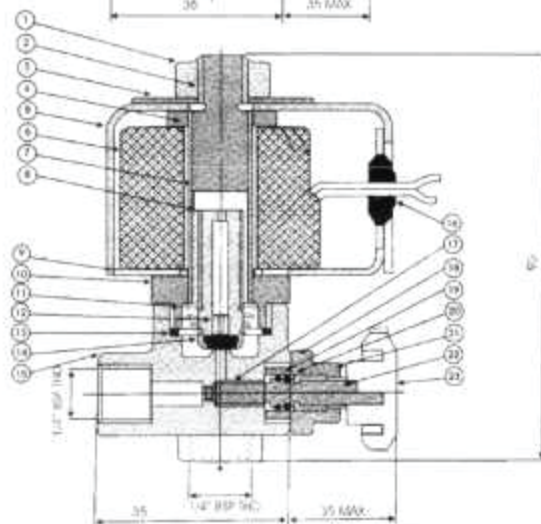


**FDM - 200 (ASSLY SECT & PARTS LIST)**

SR. NO.	NAME OF PART	MATERIAL	PART NO.	QTY.
1	TOP NUT	BRASS	FDM - 2001	1
2	NAME PLATE	ALUMINIUM	FDM - 2002	1
3	COIL HOUSING	C.R.C.A	FDM - 2003	1
4	STOPPER	S.S. - 430	FDM - 2004	1
5	SOLENOID COIL	ENML COPPER	FDM - 2005	1
6	SHADING COIL	COPPER	FDM - 2006	1
7	TUBE	S.S. 304	FDM - 2007	1
8	GROMMET	NEOPRENE	FDM - 2008	1
9	TUBE NUT	BRASS	FDM - 2009	1
10	GASKET	NYLON / TEFLON	FDM - 2010	1
11	PLUNGER	S.S. - 430	FDM - 2011	1
12	'L' BRACKET	C.R.C.A	FDM - 2012	1
13	PLUNGER SPRING	S. S. - 304	FDM - 2013	1
14	LEAD WIRE	P.V.C. AUTO CABLE	FDM - 2014	1
15	PLUNGER SEAT	NEOP/VITON/TEFLON	FDM - 2015	1
16	VALVE BODY	BRASS	FDM - 2016	1
17	PLUNGER SLEEVE	BRASS	FDM - 2017	1



**FDC 200**



**FDC - 200 (ASSLY SECT & PARTS LIST)**

SR. NO.	NAME OF PART	MATERIAL	PART NO.	QTY.
1	TOP NUT	BRASS	FDC - 2001	1
2	STOPPER	S.S. 304	FDC - 2002	1
3	NAME PLATE	ALUMINIUM	FDC - 2003	1
4	TUBE	S.S. 304 / 316	FDC - 2004	1
5	HOUSING	C.R.C.A.	FDC - 2005	1
6	SOLENOID COIL	ENML COPPER WIRE	FDC - 2006	1
7	SHADING COIL	COPPER	FDC - 2007	1
8	PLUNGER	S.S. 430	FDC - 2008	1
9	'L' BRACKET	C.R.C.A.	FDC - 2009	1
10	TUBE NUT	S.S. 304/316	FDC - 2010	1
11	PLUNGER SPRING	S.S. 304/316	FDC - 2011	1
12	PLUNGER SLEEVE	BRASS	FDC - 2012	1
13	GASKET	TEFLON	FDC - 2013	1
14	PLUNGER SEAT	VITON	FDC - 2014	1
15	VALVE BODY	FORGED BRASS	FDC - 2015	1
16	GROMMET	NEOPRENE	FDC - 2016	1
17	RIDER RING	TEFLON	FDC - 2017	1
18	SEAL RING	TEFLON	FDC - 2018	1
19	'O' RING	VITON	FDC - 2019	1
20	GUIDE RING	TEFLOW	FDC - 2020	1
21	CONTROL NUT	BRASS	FDC - 2021	1
22	CONTROL SCREW	BRASS	FDC - 2022	1
23	KNOB	ACETAL	FDC - 2023	1



Where the Quality goes in before the Name comes on.



## 2 - WAY ANGLE TYPE VALVES WITH PNEUMATIC ACTUATOR NORMALLY CLOSED / OPEN OPERATION FOR-AIR, WATER, GAS, OIL AND STEAM APPLICATION

FLOCON		
FCY - 204	[ 1/2" ]	BSP (F) ]
FCY - 206	[ 3/4" ]	BSP (F) ]
FCY - 208	[ 1" ]	BSP (F) ]
FCY - 2010	[ 1 1/4" ]	BSP (F) ]
FCY - 2012	[ 2" ]	BSP (F) ]

◀FLOCON▶ 2/2-Way direct operated angle type valves with Pneumatic Actuator  
**SPECIFICATION :**

**OPERATION :**

- A) Normally Closed - In normal position valve is closed by the spring action and the fluid pressure. When the actuator is pressurised, the piston and the plug is lifted up and the valve is open.
- B) Normally Open - In normal position valve is open by the spring action and the fluid pressure. When the actuator is pressurised, the piston and the plug is lowered down and the valve is closed.

**SIZE AND CONNECTION** - 1/2" BSP (F) / NPT (F) to 2" BSP (F) / NPT (F)

**PRESSURE & TEMP. RATING** - as per ANSI class 300.

**CONSTRUCTION** - Body and Bonnet investment casted, ASTM 351 CF8 (SS304)/CF8M (SS 16)

**SEALING** - Soft seated buna nitrile as STD. Optional - Viton, Teflon for max. operating fluid temp. up to 180°C.

**LEAKAGE** - Better than class IV bubble tight, Tight shut-off class IV in teflon sealing as per ANSI B 16. 104, 1976.

**STEM AND TRIM** - SS 304 / SS 316

**GLAND PACKING** - Self adjusted, spring loaded teflon v-seals and graphite wiper seals.

**CHARACTERISTICS** - On-Off, Normally closed, Normally open.

**ACTUATOR** - Spring return type Pneumatic cylinder.

**BODY AND FLANGE** - Aluminium - Silicon Alloy solution treated.

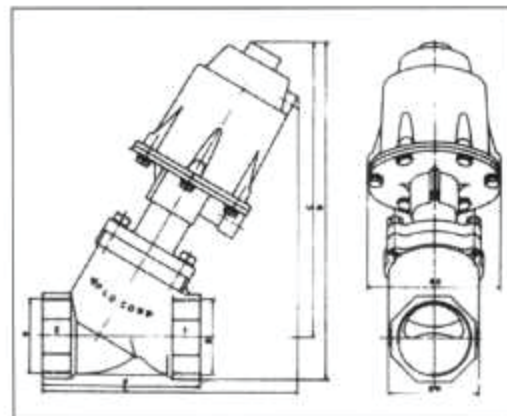
**ACTUATOR SPRING** - Spring Steel duly plated.

**ACTUATOR SIGNAL PRESS** - 2.5 to 6 kg/cm<sup>2</sup>

**ACCESSORIES** - For main Valve

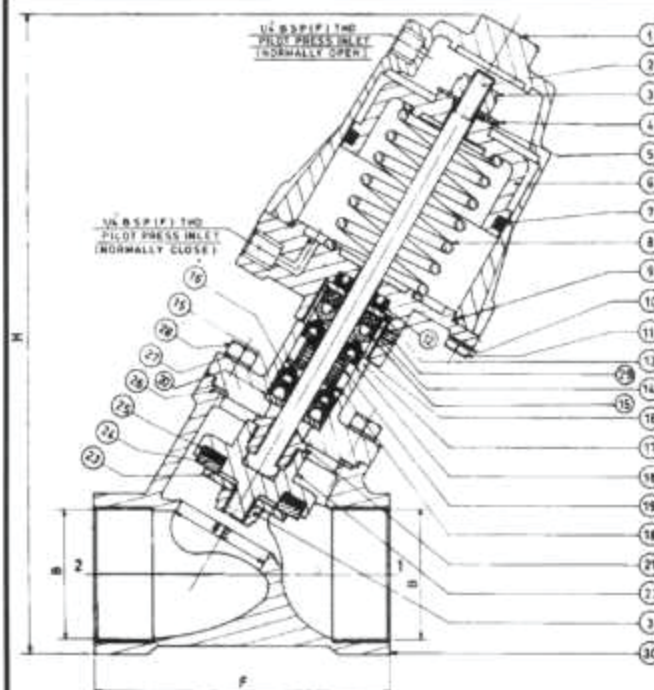
- 1) Non-return valve
- 2) Strainer
- 3) Air lock relay
- 4) Solenoid Valve
- 5) Proximity Switch

**FCY - 200 SERIES**

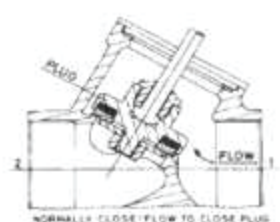
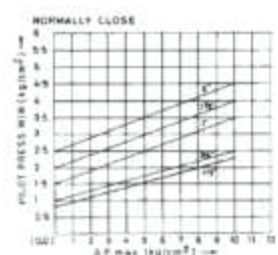


VALVE TYPE	PIPE - SIZE (INCH)	ORIFIC - SIZE (INCH)	CV	SAFE WORKING PRESSURE (KG/CM <sup>2</sup> )	WORKING PRESSURE (KG/CM <sup>2</sup> )	AIR CONSUMPTION (LITRES/CY)
FCY-204	1/2"	16	4	16	0-10	0.13
FCY-206	3/4"	16	4	16	0-10	0.13
FCY-208	1"	23	12	16	0-10	0.14
FCY-2010	1 1/4"	34	22.5	16	0-10	0.33
FCY-2012	2"	45	45	16	0-10	0.35

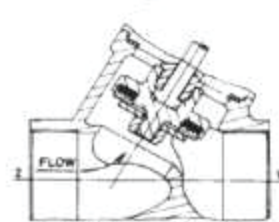
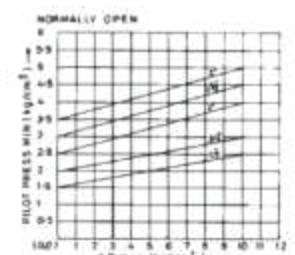
VALVE TYPE	SIZE (B) SIZE (F)	F MM	H MM	C MM	L MM	D MM	W MM	APPROX. WEIGHT (KG)
FCY-204	1/2"	70 <sup>+3</sup>	182 <sup>+3</sup>	165 <sup>+3</sup>	126 <sup>+3</sup>	86	42	1.350
FCY-206	3/4"	70 <sup>+3</sup>	182 <sup>+3</sup>	165 <sup>+3</sup>	126 <sup>+3</sup>	86	42	1.250
FCY-208	1"	85 <sup>+3</sup>	197 <sup>+3</sup>	177 <sup>+3</sup>	136 <sup>+3</sup>	86	52	1.650
FCY-2010	1 1/4"	130 <sup>+3</sup>	278 <sup>+3</sup>	243 <sup>+3</sup>	200 <sup>+3</sup>	110	75	4.300
FCY-2012	2"	130 <sup>+3</sup>	278 <sup>+3</sup>	243 <sup>+3</sup>	200 <sup>+3</sup>	110	75	4.150



SR. NO.	NAME OF THE PART	MATERIAL	PART NO.	QTY.
1.	CYLINDER	ALUMINIUM	FCY 200-1	1
2.	SPINDLE	SS304/SS316	FCY 200-2	1
3.	LOCK-NUT	SS304/SS316	FCY 200-3	2
4.	WASHER	SS304/SS316	FCY 200-4	1
5.	O' RING	NEOPRENE	FCY 200-5	1
6.	PISTON	ALUMINIUM	FCY 200-6	1
7.	PISTON RING	NEOPRENE	FCY 200-7	1
8.	SPRING	SPRING STEEL	FCY 200-8	1
9.	SEALING RING	NEOPRENE	FCY 200-9	1
10.	SPRING WASHER	C-STEEL	FCY 200-10	6
11.	CYLINDER BOLT	C-STEEL	FCY 200-11	6
12.	U-SEAL	NEOPRENE	FCY 200-12	1
13.	GLAND PACKING	ASBESTOS	FCY 200-13	1
14.	CYLINDER FLANGE	ALUMINIUM	FCY 200-14	1
15.	V-SEAL	PTFE	FCY 200-15	2
16.	WIPER SEAL	PTFE + C	FCY 200-16	2
17.	BONNET	SS304/SS316	FCY 200-17	1
18.	U-WASHER	SS304/SS316	FCY 200-18	2
19.	SPRING	SS304	FCY 200-19	1
20.	WASHER	SS304	FCY 200-20	1
21.	PLUG NUT	SS304/SS316	FCY 200-21	1
22.	PLUG	SS304/SS316	FCY 200-22	1
23.	WASHER	SS304/SS316	FCY 200-23	1
24.	ORIFICE SEAL	PTFE/NEOP/VITON	FCY 200-24	1
25.	WASHER	VITON/ NEOPRENE	FCY 200-25	1
26.	GASKET	PTFE/NEOP/VITIO	FCY 200-26	1
27.	WASHER	C. STEEL	FCY 200-27	4
28.	BOLT	C. STEEL	FCY 200-28	4
29.	GRUB SCREW	C.STEEL	FCY 200-29	1
30.	BODY	SS304/SS316	FCY 200-30	1



NORMALLY CLOSE FLOW TO CLOSE PLUG



NORMALLY OPEN FLOW TO OPEN PLUG



Where the Quality goes in before the Name comes on.

<b>AGENCY APPROVALS FOR FLOCON® SOLENOID VALVES - PRECISION INSTRUMENT CO. - MUMBAI</b>			
ENGINEERS INDIA LIMITED	NEW DELHI	IEL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/K7 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NAGPUR	CCE	FLAMEPROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAMEPROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY	MUMBAI	DSFSLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
ADVISE SERVICE & LABOUR INSTITUTE	MUMBAI	DSFSLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-55



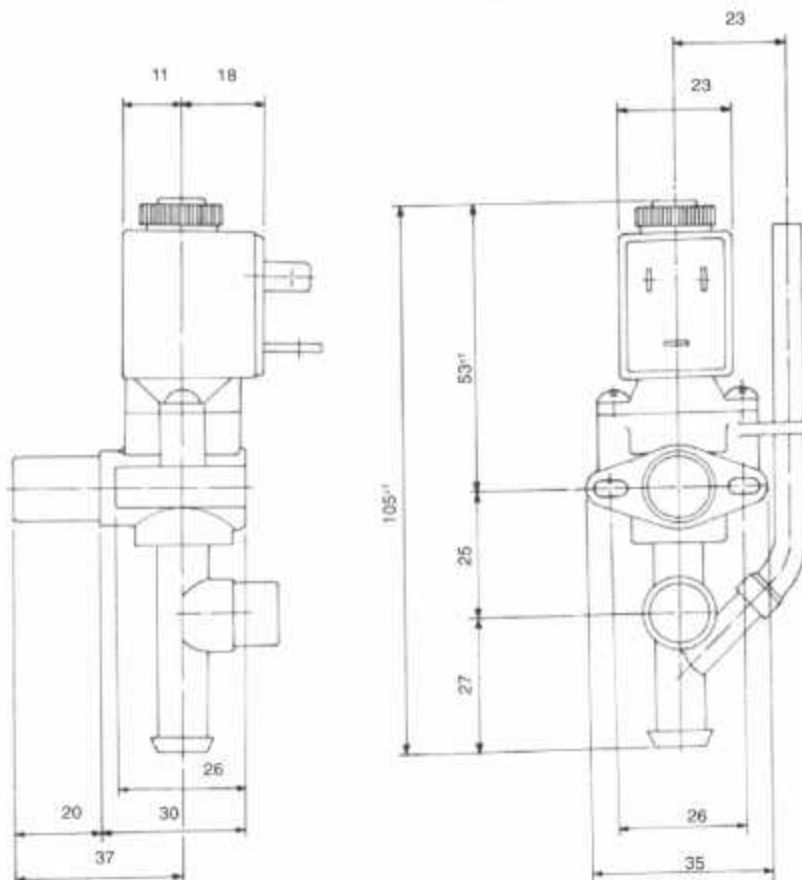
## 2 WAY DIRECT ACTING SOLENOID VALVE NORMALLY CLOSED FOR VENDING MACHINES

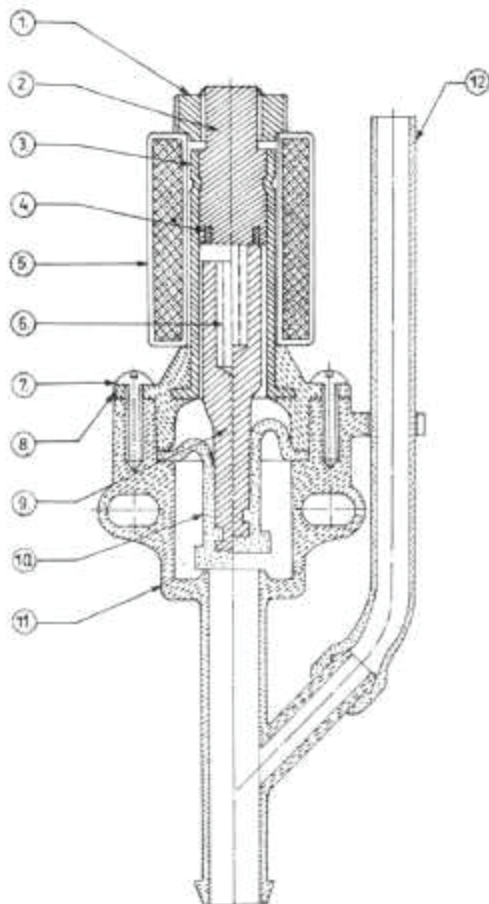


**FLOCON**® 2 way direct acting specialised food grade dry armature dispense solenoid valve is widely accepted by the vending industry in India. Valves are supplied with flow control & vent.

### TECHNICAL SPECIFICATION

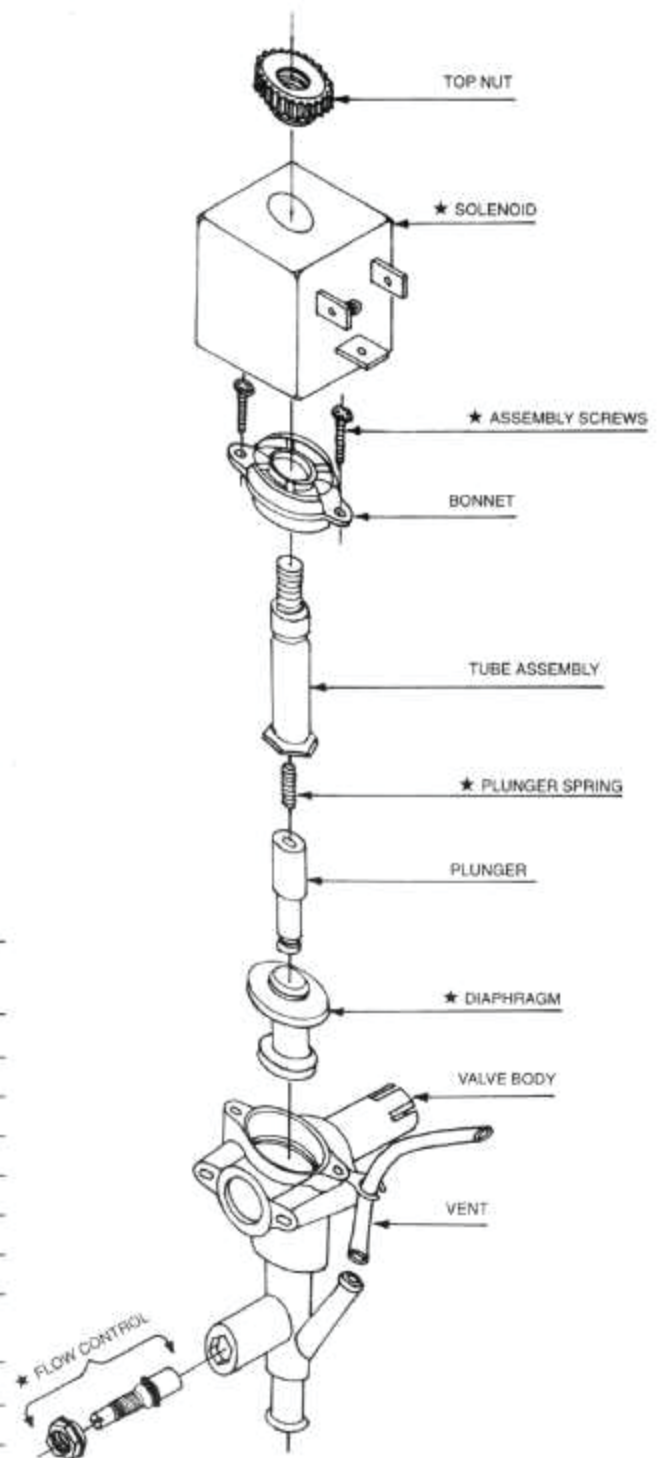
- |                            |  |
|----------------------------|--|
| 1) Construction            | - Dry Armature for Hygiene and Reliability                                       |
| 2) Operating Pressure      | - 0 to 0.5 kg/cm <sup>2</sup>  |
| 3) Operating Temperature   | - 0° to 95°C   |
| 4) Material                | - All food grade material in contact with media.                                 |
| 5) Seat                    | - Valve seat operates with wiping action to avoid limescale.                     |
| 6) Port Size               | - 8 mm   |
| 7) Medium                  | - Hot Water  |
| 8) Coil Voltage            | - 230V AC/24V DC $\pm$ 10%   |
| 9) Body material           | - Acetal / Polycarbonate   |
| 10) Armature tube Assembly | - Brass  |
| 11) Coil                   | - Epoxy moulded IP -65, 'F' Class for (155°C)<br>Coil watts - 8, Current - 60 mA |





### PART LIST

SR. NO.	NAME OF THE PART	MATERIAL	PART NO.	QTY.
1.	TOP NUT	SS-304	FDV - 2001	1.
2.	STOPPER	SS-430	FDV - 2002	1.
3.	ARMATURE TUBE ASSLY.	BRASS	FDV - 2003	1.
4.	SHADING COIL	COPPER	FDV - 2004	1.
5.	SOLENOID	ENML. CU WIRE	FDV - 2005	1.
6.	PLUNGER SPRING	SS-304	FDV - 2006	1.
7.	ASSEMBLY SCREW	SS-304	FDV - 2007	2.
8.	BONNET	ACETAL/ POLYCARBONATE	FDV - 2008	1.
9.	PLUNGER	SS-430	FDV - 2009	1.
10.	DIAPHRAGM	SILICONE	FDV - 2010	1.
11.	VALVE BODY	ACETAL/ POLYCARBONATE	FDV - 2011	1.
12.	VENT	SILICONE	FDV - 2012	1.



★ RECOMMENDED SPARES / PARTS



**SOLENOID VALVES**  
**3WAY SERIES:**

# 3 WAY SOLENOID VALVES.

for Air, Gas, Water and Light Hydraulic Oil.  
1/8" & 1/4" BSP/NPT

**FLOCON**

SERIES  
FD 300

**FLOCON** 3 Way direct operated solenoid valves compact brass stainless steel and aluminium bodies with soft seating for tight shut off. No minimum operation pressure is required for operation. Its miniature size makes it ideal for application where space is a limitation. These 3 Way solenoid valves control the flow of air and gases by applying pressure to and venting pressure from cylinders and diaphragms. They are mainly used in applications such as pilot operators, single acting cylinders, air compressors and instrumentation.

## FEATURES :

- Direct operated
- Miniature size
- Packless
- Silent in operation
- Solenoid capable of being turned 360°
- Can be mounted directly on pipe.

**FLOCON** valves are made from quality materials and rigorously tested for leakage and performance.

Each valve is subjected to twice the rated voltage plus 1,000 volts at 50 c/s for 60 seconds for Insulation Test.



## SPECIFICATIONS :

### OPERATION :

Normally closed-applies pressure when solenoid is energised, exhausts pressure when solenoid is de-energised.

### VALVE :

- Brass, stainless steel or aluminium bodies
- Direct operated
- Resilient seating for tight shut off.
- Pipe connections suitable for 1/8" & 1/4" BSP/NPT
- Operating pressure from 0 to 10kg/cm<sup>2</sup>

### SOLENOID :

- General purpose solenoid enclosure (NEMA 1) Weather proof solenoid enclosure (NEMA 2 & 3R)
- All solenoid parts in contact with fluid are made of series 300 and 400 stainless steel.;
- Continuous duty moulded coil
- Class F insulation

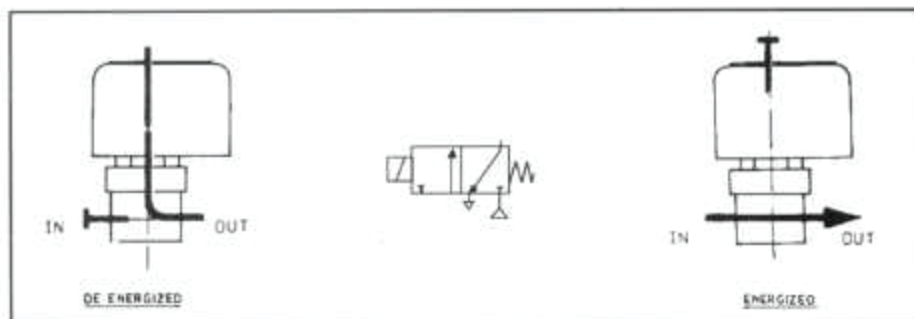
### Coil Voltages :

24, 48, 110, 230, 440 V AC

24, 48, 110, 230 V DC

### FREQUENCY OF OPERATION :

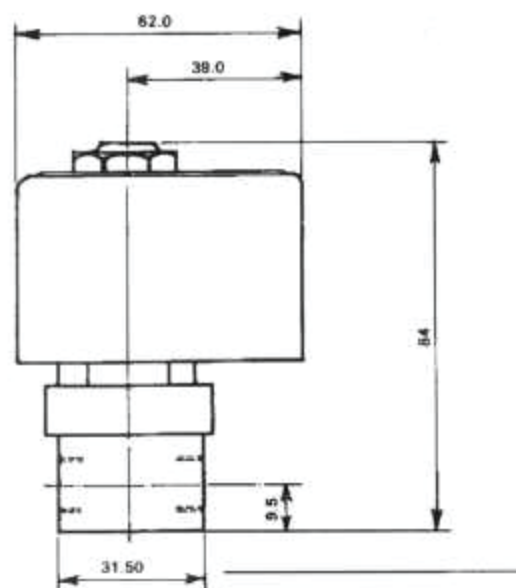
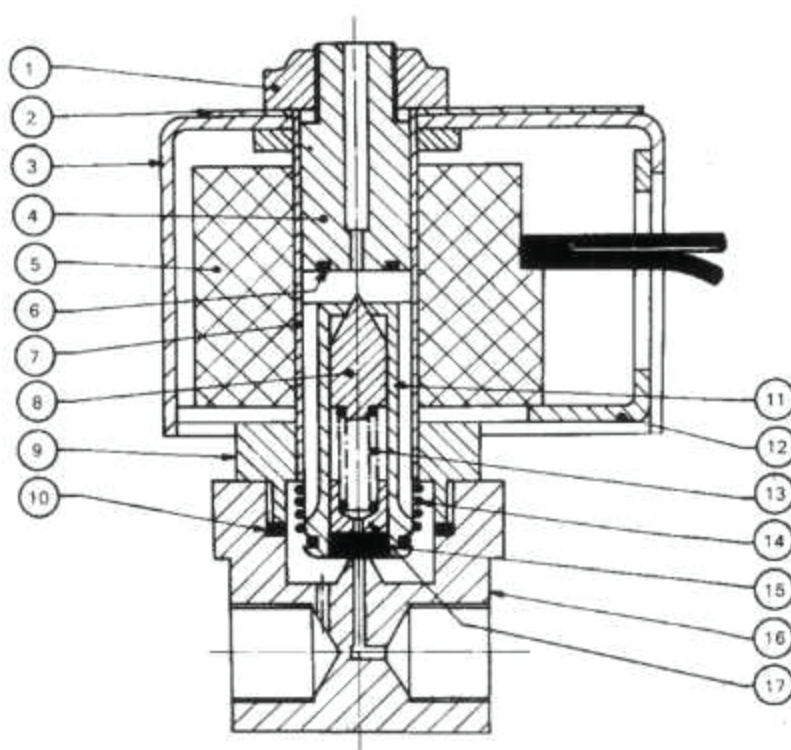
650 CYCLES PER MINUTE



Valve Series	Pipe Size BSP/NPT	Orifice Size (mm)	Maximum Operating Pressure Differential (in Kg/cm <sup>2</sup> )							Safe Body Working Pressure (Kg/cm <sup>2</sup> )	Maximum AC Fluid Temp. °C.	Cv Flow Factor	Watt Rating		Class of Insulation	VA-Holding	VA-Inrush
			Air Gas		Water		Light Hydraulic Oil										
			AC	DC	AC	DC	AC	DC									
FD 301	1/8"	1.2	10	8	10	8	10	8	40	80°	.06	13	12	F	23	70	
		1.5	7	6	7	6	7	6	40	80	.09	13	12	F	23	70	
FD 302	1/4"	1.7	5	4	5	4	5	4	40	80°	.15	13	12	F	23	70	
		2.0	3	3	3	3	3	3	40	80°	.21	13	12	F	23	70	

**FLOCON**





AGENCY APPROVALS FOR <b>FLOCON</b> ® SOLENOID VALVES PRECISION INSTRUMENT CO. - ME-34-13			
ENGINEERS INDIA LIMITED	NEW DELHI	ERL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-40 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NAGPUR	CCE	FLAME PROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAME PROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY ADVISE SERVICE & LABOUR INSTITUTE	MUMBAI	DGFASLI	FLAME PROOF SOLENOID VALVE ENCLOSURE
GENELC LIMITED	MUMBAI	GENELC	IP-55

SR. NO.	NAME OF PART	PART NO.	MATERIAL	QTY.
1.	TOP NUT	FD - 3001	BRASS	1
2.	NAME PLATE	FD - 3002	ALUMINIUM	1
3.	COIL HOUSING	FD - 3003	C.R.C.A.	1
4.	STOPPER	FD - 3004	410 S/S	1
5.	COIL	FD - 3005	S. E. COPPER WIRE	1
6.	SHADING COIL	FD - 3006	COPPER	1
7.	TUBE	FD - 3007	304 S/S	1
8.	EXH. SEAT	FD - 3008	TEFLON	1
9.	TUBE NUT	FD - 3009	BRASS	1
10.	GASKET	FD - 3010	TEFLON	1
11.	PLUNGER	FD - 3011	410 S/S	1
12.	L BRACKET	FD - 3012	C.R.C.A.	1
13.	PLUNGER SPRING	FD - 3013	304 S/S	1
14.	SPRING (MAIN)	FD - 3014	304 S/S	1
15.	PLUNGER SEAT	FD - 3015	NEOPRENE	1
16.	BODY	FD - 3016	BRASS	1
17.	PLUNGER SLEEVE	FD - 3017	BRASS	1

#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### NOTE :

In line with their policy of continuous product development, the manufacturer reserves the right to change specifications without notice.



Where the Quality goes in before the Name comes on.

# 3 - WAY SOLENOID VALVES

Miniature Size for Air, Gas, Water and  
Light Hydraulic Oil  
1/8", 1/4" & 3/8" BSP / NPT

**FLOCON®**

**SERIES  
FDU - 300**

◀FLOCON▶ latest 3 Way Valve design eliminates the orifice connection in the solenoid - all connections are now in the valve body providing in - line piping. This concept with orifice and pipe connections in the body permits coil replacement without opening pipe connections - now necessary on all other 3 Way valves. These valves are commonly used to apply pressure to and vent pressure from cylinders and diaphragms or for selection and diversion of pressure. They also used for automatic control of all gases and liquids non-corrosive to brass and stainless steel.

**IMPORTANT - NO MINIMUM OPERATING PRESSURE REQUIRED.**

## SPECIFICATIONS :

### Operation :

Three Types are available :

- Normally Closed - Applies pressure when Solenoid is energised; exhausts pressure when solenoid is de-energised.
- Normally Open - Applies pressure when solenoid is de-energised; exhausts pressure when solenoid is energised.
- Universal - For Normally closed or Normally open operation.  
Selection or diversion of pressure can be applied at 1, 2 & 3 without change of springs or making other adjustments.

### VALVE :

- Forged Brass / Aluminium / Stainless steel body.
- Resilient or teflon seating for tight

COIL VOLTAGES : Standard.

24, 48, 110, 230, 440 V AC

24, 48, 110, 230 V DC

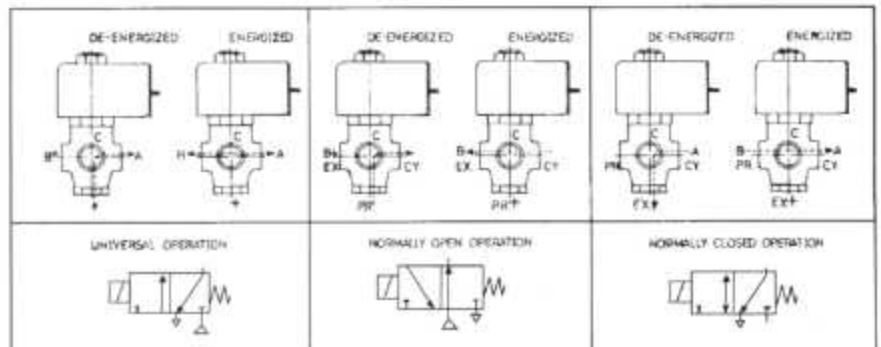
FREQUENCY OF OPERATION :  
650 CYCLES PER MINUTE.

### INSTALLATION :

Mountable in any position without affecting operation.

### FEATURES :

- Direct operated
- Packless
- Complete tight shut off
- Compact size
- Silent in operation
- Solenoid capable of being turned 360°
- Can be mounted directly on pipe
- ◀FLOCON▶ valves are made from quality materials and are rigorously tested for leakage and performance. Each valve is subjected to twice the rated voltage plus 1,000 volts at 50C/S for seconds for insulation test



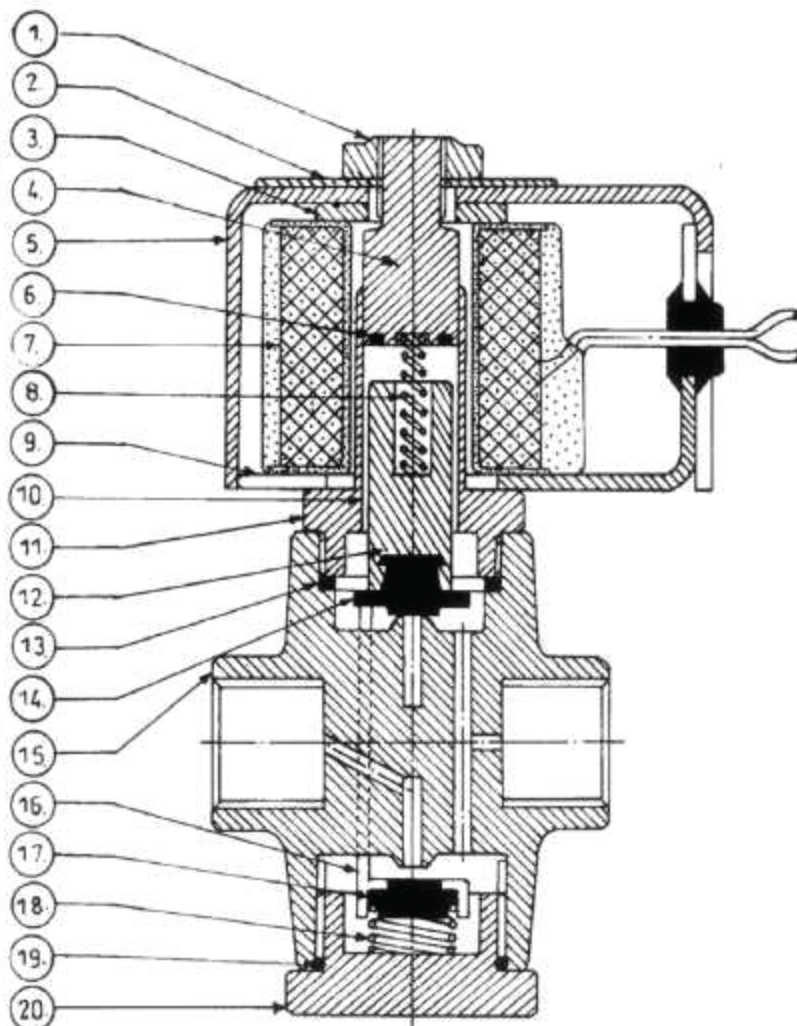
Maximum Operating Pressure (in Kg / cm <sup>2</sup> )		Working g/cm <sup>2</sup>	C Fluid C <sub>1</sub>																	
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## Compatibility chart

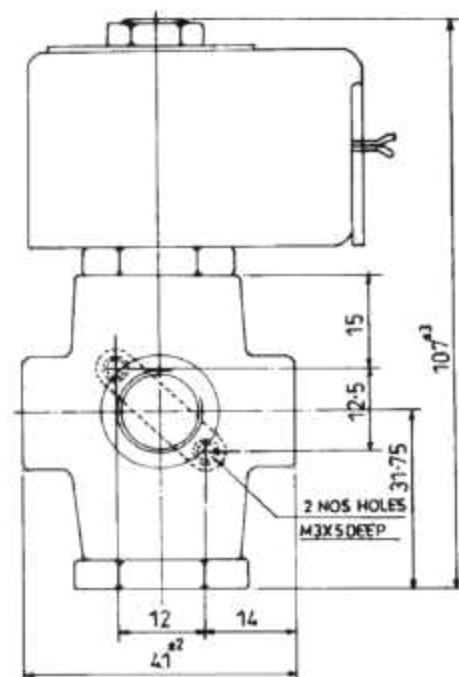
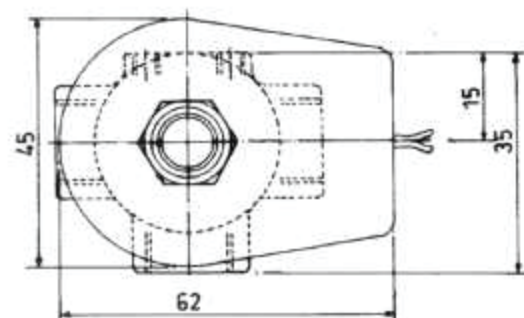
		BUNA-N	EPDM	NEOPRENE	VITON	TEFLON	COPPER	SILVER	ALUMN	SS-20	SS-302-303-304	SS-316	SS-430	STEEL	IRON	BRONZE	BRASS	ALUMN	SPECIFIC GRAVITY
1	ACETONE	U	S	U	U	S	S	S	F		F	F	F	S	S	S	S	F	0.79
2	ACETYLENE	S	S	F	S	S	U	U	S		S	S	S	S	S	U	T	S	0.897
3	ACETIC ACID - 10%		S	S			U	F	F	S	S	S	F	U	U	U	U	F	
4	ACETIC ACID-PURE CH <sub>3</sub> COOH	T	U	T	U	S	U	S	S	S	F	S	F	U	U	U	U	S	1.06
5	AIR N <sub>2</sub> O <sub>2</sub>	S		S	S		S	S	S		S	S	S	U	S	S	S	T	1.000
6	ALCOHOL ETHYL (ETHANOL) C <sub>2</sub> H <sub>5</sub> OH	F	S	F	F	S	F	S	F	F	F	F	F	S	F	F	F	T	6.73
7	ALCOHOL METHYL (METHANOL) CH <sub>3</sub> OH	S	S	S	U	S	S	S	T	F	S	S	F	S	S	S	S	T	0.81

F = FAIR  
T = TEST (MAY/MAY NOT BE USED)  
S = SATISFACTORY  
U = UN-SATISFACTORY





SR. NO.	NAME OF PART	PART NO.	MATERIAL	QTY.
1.	TOP NUT	FDU 3001	BRASS	1
2.	NAME PLATE	FDU 3002	ALUMINIUM	1
3.	WASHER	FDU 3003	C.R.C.A.	1
4.	STOPPER	FDU 3004	410 S. STEEL	1
5.	COIL HOUSING	FDU 3005	C.R.C.A.	1
6.	SHADING COIL	FDU 3006	COPPER	1
7.	COIL	FDU 3007	ENAMEL COPPER WIRE	1
8.	PLUNGER SPRING	FDU 3008	STAINLESS STEEL	1
9.	L BRACKET	FDU 3009	C.R.C.A.	1
10.	TUBE	FDU 3010	304 STAINLESS STEEL	1
11.	TUBE NUT	FDU 3011	BRASS	1
12.	PLUNGER	FDU 3012	410 STAINLESS STEEL	1
13.	GASKET	FDU 3013	TEFLON	1
14.	PLUNGER SEAT	FDU 3014	NEOPRENE	1
15.	BODY	FDU 3015	FORGED BRASS/ STAINLESS STEEL	1
16.	TRIPOD	FDU 3016	DELFIN	1
17.	TRIPOD SEAT	FDU 3017	NEOPRENE	1
18.	SPRING FOR TRIPOD	FDU 3018	STAINLESS STEEL	1
19.	'O' RING	FDU 3019	NEOPRENE	1
20.	END NUT	FDU 3020	BRASS	1



#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### NOTE :

In line with their policy of continuous product  
development, the manufacturer reserves the right  
to change specifications without notice.



Where the Quality goes in before the Name comes on.

# High Flow 3 - Way Solenoid Valves

## Normally Open and Closed Operation

### 3/8", 1/2", 3/4" BSP/NPT



**FLOCON** Three Way Internal Piloted diaphragm type Valves have gun metal valve bodies and soft seating for tight shut off. These valves have four main operating parts S.S. core, two diaphragms, insert and disc holder.

#### IMPORTANT :

10 PSI minimum operating pressure differential required. Valve vent to 0 PSI.

#### APPLICATION :

These valves are used in variety of applications such as pilots, compressor unloaders, cylinders and turbines.

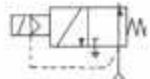
#### SPECIFICATIONS :

##### OPERATION :

A) Normally Closed : Valve opens when Solenoid is energised & closes when Solenoid is de-energised.



B) Normally Open: Valve opens when Solenoid is de-energised & closes when Solenoid is energised.



Please refer to flow diagram for direction of flow.

Valves parts in contact with fluid:

- Body-cast Bronze.
- Seat & Disc-Neoprene/Nitrile.
- Diaphragm-Neoprene with brass and S. Steel trim.
- Core & Plunger-410 S.S.
- Shading Coil-Copper.
- Pilot Seat and Disc holder-Acetal.

#### SOLENOID ENCLOSURE :

- 1) General purpose enclosure NEMA type 1/IP 20.
- 2) Watertight and dust proof NEMA type 2a, 3 R IP55, IP56, IP67.
- 3) Flameproof up to I, IIA & IIB-IS 2148.
- 4) Continuous duty moulded coil CLASS 'F' & 'H'.
- 5) Maximum temperature 80°C.
- 6) Electrical Voltage : 24, 48, 120, 240, 440 C/S AC.  
12, 24, 48, 120, 240, DC.
- 7) All Solenoid parts in contact with fluids are made of 300 & 400 series stainless steel.

#### INSTALLATION :

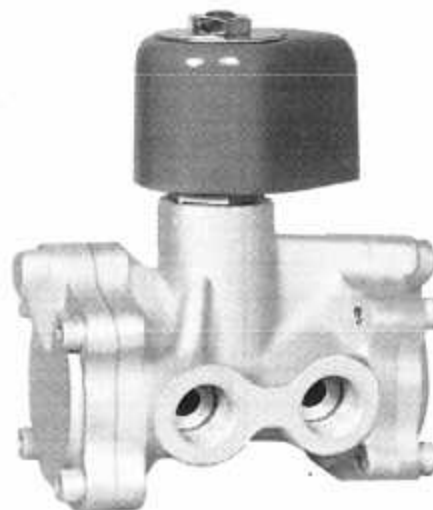
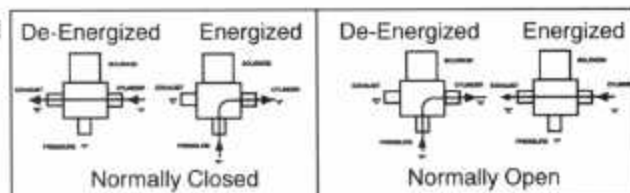
Valves may be mounted in any position.

#### FEATURES :

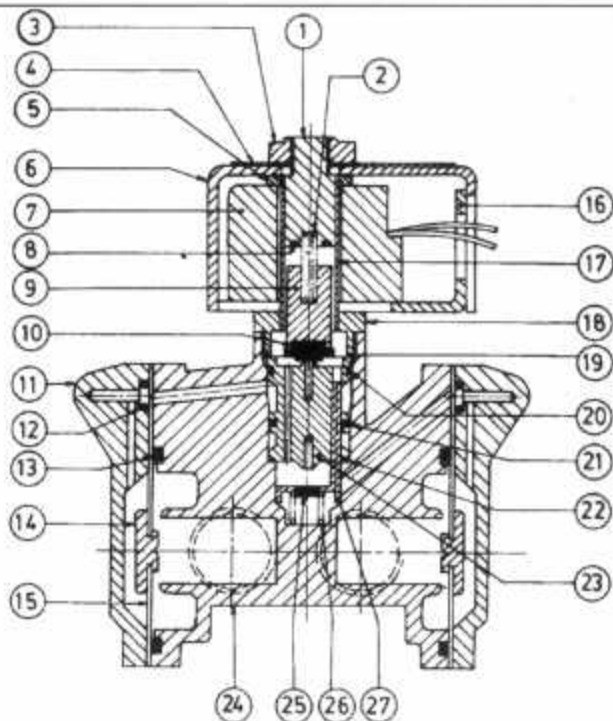
- 1) Packless.
- 2) Gun metal tight shut off.
- 3) Complete tight shut off.
- 4) Silent in operation.
- 5) Continuous duty moulded coils F/H insulation.
- 6) Solenoid capable of being turned 360°

**IMPORTANT:** Minimum operating pressure differential must be maintained between the pressure and exhaust port, supply and piping must be full area, unrestricted.

**FLOCON** Valves are made from quality materials and tested for leakage and performance. Each valve is tested as per IS 8935.







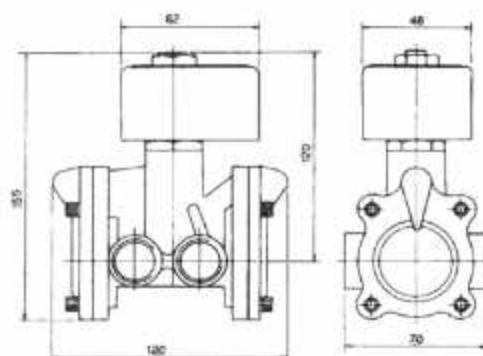
SR. NO.	NAME OF PART	PART NO.	MATERIAL	QTY.
1	STOPPER	FSD 3001	S.S. 410	1
2	PLUNGER SPRING	FSD 3002	STAINLESS STEEL	1
3	TOP NUT	FSD 3003	BRASS	1
4	NAME PLATE	FSD 3004	ALUMINIUM	1
5	WASHER	FSD 3005	C. R. C. A.	1
6	COIL HOUSING	FSD 3006	C. R. C. A.	1
7	COIL	FSD 3007	ENAMELLED COPPER WIRE	1
8	SHADING COIL	FSD 3008	COPPER	1
9	PLUNGER	FSD 3009	S.S. 410	1
10	PLUNGER SEAT	FSD 3010	NEOPRENE	1
11	COVER	FSD 3011	BRONZE	2
12	O' RING	FSD 3012	NEOPRENE	2
13	O' RING	FSD 3013	NEOPRENE	1
14	DIAPHRAGM PLATE	FSD 3014	S. S. 304	2
15	DIAPHRAGM	FSD 3015	NEOPRENE	2
16	L' BRACKET	FSD 3016	C. R. C. A.	1
17	TUBE	FSD 3017	S. S. 304	1
18	TUBE NUT	FSD 3018	BRASS	1
19	GASKET	FSD 3019	TEFLON	1
20	O' RING	FSD 3020	NEOPRENE	1
21	O' RING	FSD 3021	NEOPRENE	1
22	O' RING	FSD 3022	NEOPRENE	1
23	INSERT	FSD 3023	DELFIN	1
24	BODY	FSD 3024	BRONZE	1
25	SEAT	FSD 3025	NEOPRENE	1
26	SPRING	FSD 3026	S. S. 304	1
27	TRIPOD SEAT	FSD 3027	NEOPRENE	1

#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### IMPORTANT :

Use Strainers with the valves. Use  
the valves only at pressure and  
voltage specified on the name plate.



#### NOTE :

In line with their policy of continuous product  
development, the manufacturer reserves the  
right to change specifications without notice.

AGENCY APPROVALS FOR FLOCON <sup>®</sup> SOLENOID VALVES PRECISION INSTRUMENT CO., MUMBAI			
ENGINEERS INDIA LIMITED	NEW DELHI	ENCL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ENTL	DAMP HEAD TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ENTL	OPERATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEM	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEM	IP-65/ET TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	HADAPSUR	CCO	FLAMEPROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAMEPROOF SOLENOID VALVE ENCLOSURE
DIRECTOR'S GENERAL FACTORY			
ADVANCE SERVICE & LABOUR INSTITUTE	MUMBAI	DSFASLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-65



Where the Quality goes in before the Name comes on.

# 3 Way Solenoid Valves

for Air, Gas, Water, Light Hydraulic Oil,  
Liquids and Steam

1/8" 1/4", 3/8" & 1/2" BSP/NPT

**FLOCON**

SERIES  
FDL 300

**FLOCON** 3 way solenoid valves are direct operated with a power multiplying lever which helps to close or open the valve. They are packless and eliminate the use of stuffing boxes, sliding glands and minimise all maintenance problems. They are factory adjusted for individual flow conditions and are not interchangeable. These valves have unlimited applications and are mainly used for controlling single acting cylinders and pressure operated mechanisms. They are also used to select or divert gases and liquids.

**IMPORTANT : NO MINIMUM OPERATING PRESSURE**

REQUIRED.

## SPECIFICATIONS :

### Operation :

Three types are available

- Normally Closed-applies pressure to cylinder when solenoid is energised; exhausts cylinder when solenoid is de energised.
- Normally open - applies pressure to cylinder when solenoid is de-energised exhausts cylinder when solenoid is energised.
- Universal-may be used for normally closed, normally open, diversion or selector service by selecting proper inlet connection (refer to flow diagram)

### VALVE :

- Forged Brass/Aluminium body.
- Resilient or teflon seating for tight shut off.
- Pipe connections suitable for 1/8" 1/4" 3/8" BSP/NPT.  
(1/2" BSP/NPT with adapters)

### SOLENOID :

- General purpose solenoid enclosure (NEMA 1) Weather proof solenoid enclosure (NEMA 2 & 3R)
- Continuous duty moulded coil.
- Class B & F insulation.
- All solenoid parts in contact with fluid are made of series 300 & 400 stainless steel.

Coil Voltages : Standard :  
24, 48, 110, 220, 440 V AC.

24, 48, 110, 220, V DC.  
FREQUENCY OF OPERATION 650  
CYCLES PER MINUTE

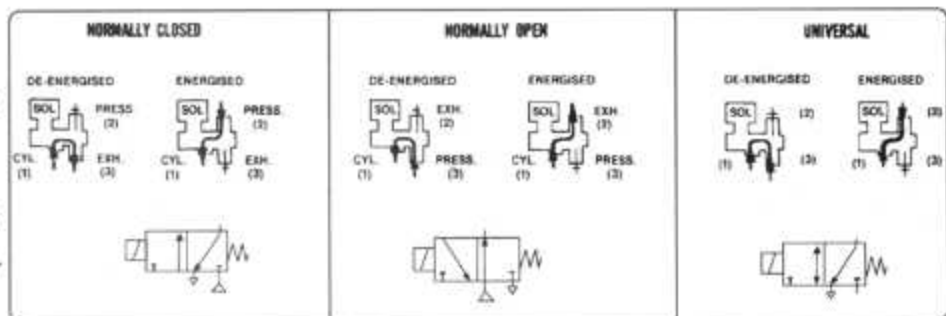
### INSTALLATION :

Valves must be mounted with solenoid vertical and upright.

### FEATURES :

- Direct operated
- Packless
- Complete tight shut off
- Compact size
- Silent in operation
- Solenoid capable of being turned 360°
- Can be mounted directly on pipe.

**FLOCON** valves are made from quality materials and are rigorously tested for leakage and performance. Each valve is subjected to twice the rated voltage plus 1000 volts at 50 c/s for 60 seconds for insulation test.

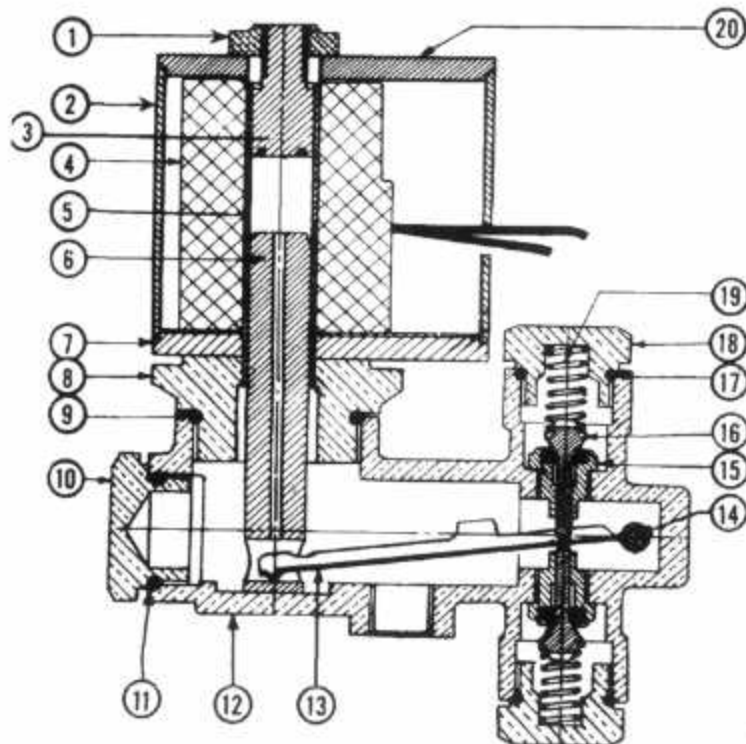


Valve Series	Pipe Size (Inch.)	Orifice Size (Inch.)	Maximum Operating Pressure Differential (in Kg/cm <sup>2</sup> )						Safe Body Working Pressure (Kg/cm <sup>2</sup> )	Max AC Fluid Temp. °C.	Cv Flow Factor	Watt Rating		Class of Insulation	VA-Holding	VA-Inrush
			Normally Closed Normally Open				Universal									
			Air Gas Water Light Hydraulic Oil **		Saturated Steam *		Air Gas Water Light Hydraulic Oil **									
			AC	DC	AC	AC	DC									
FDL 301	1/8"	1/8	15	13	10	10	7	40	100	0.13	20	33	B & F	30	70	
		5/32	10	9	10	7	6	40	100	0.25	20	33	B & F	30	70	
		3/16	7	6	7	5	4	40	100	0.35	20	33	B & F	30	70	
		1/4	4	3	4	4	3	40	100	0.45	20	33	B & F	30	70	
FDL 302	1/4"	1/8	15	13	10	10	7	40	100	0.13	20	33	B & F	30	70	
		5/32	10	9	10	7	6	40	100	0.25	20	33	B & F	30	70	
		3/16	7	6	7	5	4	40	100	0.35	20	33	B & F	30	70	
		1/4	4	3	4	4	3	40	100	0.45	20	33	B & F	30	70	
FDL 303	3/8"	1/4	4	3	4	4	3	40	100	0.45	20	33	B & F	30	70	
		5/16	3	2	3	3	2	40	100	0.75	20	33	B & F	30	70	

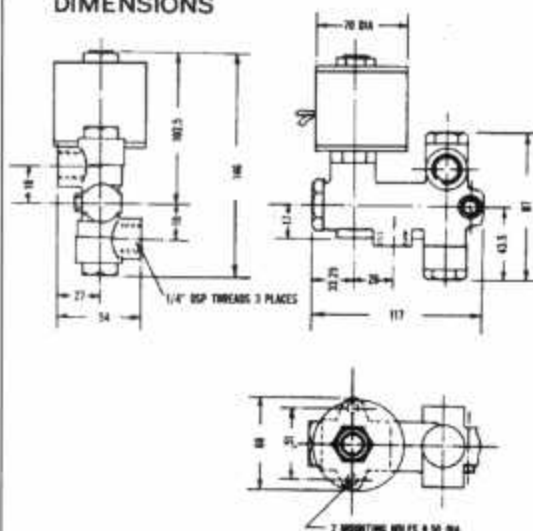
\* For Super Heated Steam consult factory. \*\* For higher pressure consult Factory

**FLOCON**





## DIMENSIONS



## ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

## NOTE :

In line with their policy of continuous product development, the manufacturer reserves the right to change specifications without notice.

SR. NO.	NAME OF THE PART	PART NO.	MATERIAL	QTY.
1.	NUT	FDL 3001	BRASS	1
2.	COIL HOUSING	FDL 3002	CRCA	1
3.	STOPPER	FDL 3003	410 STAINLESS STEEL	1
4.	COIL	FDL 3004	ENAMEL COPPER WIRE	1
5.	TUBE	FDL 3005	304 STAINLESS STEEL	1
6.	PLUNGER	FDL 3006	410 STAINLESS STEEL	1
7.	COIL HOUSING PLATE	FDL 3007	CRCA	2
8.	NUT	FDL 3008	BRASS	1
9.	'O' RING	FDL 3009	NEOPRENE	1
10.	END NUT	FDL 3010	BRASS	1
11.	'O' RING	FDL 3011	NEOPRENE	1
12.	BODY	FDL 3012	FORGED BRASS	1
13.	LEVER	FDL 3013	304 STAINLESS STEEL	1
14.	LEVER PIN	FDL 3014	304 STAINLESS STEEL	1
15.	SEAT NUT	FDL 3015	BRASS	2
16.	PLUG PIN	FDL 3016	304 STAINLESS STEEL	2
17.	'O' RING	FDL 3017	NEOPRENE	2
18.	SPRING RETAINING NUT	FDL 3018	BRASS	2
19.	SPRING	FDL 3019	304 STAINLESS STEEL	2
20.	NAME PLATE	FDL 3020	ALUMINIUM	1



AGENCY APPROVALS FOR FLOCON® SOLENOID VALVES PRECISION INSTRUMENT CO. - MUMBAI

ENGINEERS INDIA LIMITED	NEW DELHI	DEL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	CHANDABAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NAGPUR	CCE	FLAME PROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAME PROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY	MUMBAI	DGFALI	FLAME PROOF SOLENOID VALVE ENCLOSURE
ADVISE SERVICE & LABOUR INSTITUTE	MUMBAI	GENELEC	IP-65



Where the Quality goes in before the Name comes on.

# 3 Way Solenoid Valves

**Quick Exhaust**  
**Normally Closed and Normally Open Operation**  
**1/4" and 3/8" BSP / NPT**

**FLOCON**

**SERIES**  
**FPQ 300**

**FLOCON** 3 way quick exhaust valves are versatile. They are internally pilot operated type and incorporate an over size orifice for fast venting of cylinders and diaphragms. These 3 way valves control the flow of gases and liquids by applying pressure to and venting pressure from cylinders and diaphragms. They are used in applications such as pilot operators, single acting cylinders, aircompressors, air motors and instrumentation.

## SPECIFICATIONS :

Operation :

- (a) Normally closed - applies pressure when solenoid is energised;
- (b) Normally open - applies pressure when solenoid is de - energised; exhausts pressure when solenoid is energised.

## VALVE :

- Forged Brass / Aluminium body
- Internal pilot operated
- Oversize exhaust orifice for fast venting
- Resilient or teflon seating for tight shut off
- Pipe connections suitable for 1/4" and 3/8" BSP/NPT.
- Operating pressure from 0.3 Kg/cm<sup>2</sup> to 15 kg/cm<sup>2</sup>

## SOLENOID :

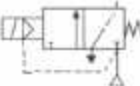





- General purpose solenoid enclosure (NEMA 1).
  - Weather proof solenoid enclosure (NEMA 2 & 3R).
  - All solenoid parts in contact with fluid are made of series 300 and 400 stainless steel.
  - Continuous duty moulded coil
  - Class B & F insulation
- Coil Voltages : Standard :  
 24, 48, 110, 220, 440 V AC.  
 24, 48, 110, 220 V DC.
- FREQUENCY OF OPERATION  
 250 Cycles per minute.



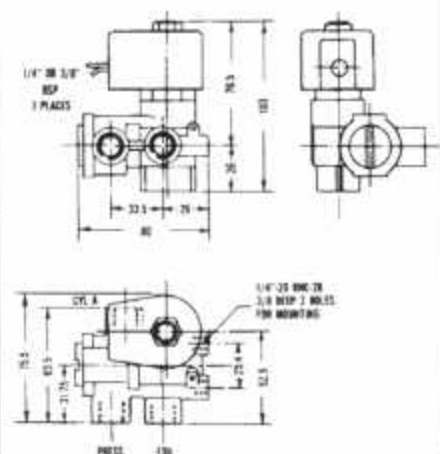
## FEATURES :

- Packless
- Can be mounted in any position without affecting operation
- Silent in operation
- Compact size
- Can be mounted directly on pipe
- quick Exhaust

**FLOCON** Valves are made from quality materials and are rigorously tested for leakage and performance. Each valve is subjected to twice the rated voltage plus 1,000 volts at 50 c/s for 60 seconds for insulation test.

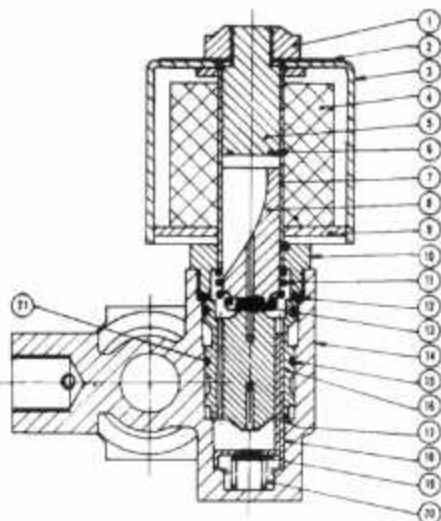
VALVE SERIES	Pipe Size (inch)	Orifice size (inch)		Operating Pressure Differential (KG/CM <sup>2</sup> )				Mix. AC Fluid Temp. °C	Safe Body Working Pressure in Kg/cm <sup>2</sup>	CV Flow Factor		Watt Rating		Class of Coil Insulation	VA - INHUSH	VA - HOLDING	
		Pressure	Exhaust	Maximum		Pressure	Exhaust			AC	DC						
				Minimum	Light Hydraulic Oil, Water, Air, Gas												
												AC	DC				
<b>NORMALLY CLOSED OPERATION</b>																	
																	
FPQ 302	1/4	9/32	11/32	0.3	15	15	85	40	0.8	1.2	12.5	13	B&F	60	24		
FPQ 303	3/8	9/32	11/32	0.3	15	15	85	40	0.8	1.2	12.5	13	B&F	60	24		
<b>NORMALLY OPEN OPERATION</b>																	
																	
FPQ 302	1/4	9/32	11/32	0.3	15	15	85	40	0.8	1.2	12.5	13	B&F	60	24		
FPQ 303	3/8	9/32	11/32	0.3	15	15	85	40	0.8	1.2	12.5	13	B&F	60	24		

## DIMENSION

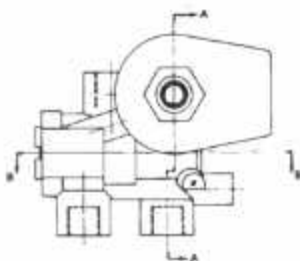


**FLOCON**





SECTION - AA



SECTION - BB

SR. NO.	NAME OF THE PART	PART NO.	MATERIAL	QTY.
1.	TOP NUT	FPQ 3001	BRASS	1
2.	NAME PLATE	FPQ 3002	ALUMINIUM	1
3.	COIL HOUSING	FPQ 3003	C.R.C.A.	1
4.	COIL	FPQ 3004	E. COPPER WIRE	1
5.	STOPPER	FPQ 3005	SS 410	1
6.	SHADING RING	FPQ 3006	COPPER	1
7.	TUBE	FPQ 3007	SS 304	1
8.	PLUNGER	FPQ 3008	SS 410	1
9.	BASE PLATE	FPQ 3009	C.R.C.A.	1
10.	TUBE NUT	FPQ 3010	BRASS	1
11.	SPRING	FPQ 3011	SS 304	1
12.	GASKET	FPQ 3012	TEFLON	1
13.	PLUNGER SEAT	FPQ 3013	NEOPRENE	1
14.	BODY	FPQ 3014	FORGED BRASS	1
15.	'O' RING	FPQ 3015	NEOPRENE	1
16.	INSERT	FPQ 3016	DELIN	1
17.	'O' RING	FPQ 3017	NEOPRENE	1
18.	TRIPOD	FPQ 3018	DELIN	1
19.	SEAT	FPQ 3019	NEOPRENE	1
20.	SPRING	FPQ 3020	SS 304	1
21.	'O' RING	FPQ 3021	NEOPRENE	1
22.	END PLUG	FPQ 3022	BRASS	1
23.	'O' RING	FPQ 3023	NEOPRENE	1
24.	PISTON	FPQ 3024	SS 304	1
25.	'O' RING	FPQ 3025	NEOPRENE	1
26.	BUSH	FPQ 3026	BRASS	1
27.	'O' RING	FPQ 3027	NEOPRENE	1
28.	'U' CUP SEAL	FPQ 3028	NEOPRENE	1

#### NOTE :

In line with their policy of continuous product development, the manufacturer reserves the right to change specifications without notice.



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DIRECTORS GENERAL FACTORY	MUMBAI	DGFALI	FLAME PROOF SOLENOID VALVE ENCLOSURE
ADVISE SERVICE & LABOUR INSTITUTE	MUMBAI	DSFALI	FLAME PROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-65



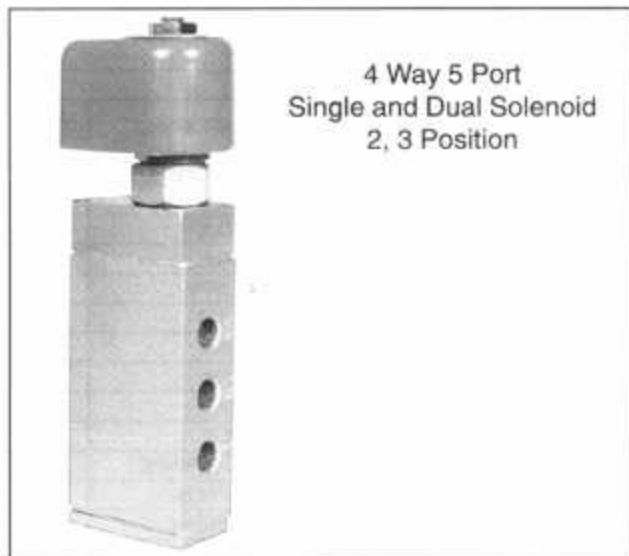
Where the Quality goes in before the Name comes on.

**SOLENOID VALVES**  
**4WAY SERIES:**



**FLOCON 4/2 Way Pilot Operated Poppet type and 4/3 Pilot Operated Spool and Sleeve type. Solenoid Valves 2 position single Solenoid and 3 position dual Solenoids 1/4" to 3/4" BSP/NPT, for Air/Water/Light Oil.**

**◀FLOCON▶**  
**TYPE**  
**FP 400**



4 Way 5 Port  
Single and Dual Solenoid  
2, 3 Position

These heavy duty 4 Way Solenoid Valves have Bronze and Aluminium Valve bodies with poppet spool type seats and discs to provide tight seating.

- APPLICATION** — Double acting Cylinders  
Machine Tools  
Forging Equipments  
Moulding Equipments
- OPERATING** — single Solenoid - The Valve changes position when the Solenoid is energised, the valve returns to its original position when de-energised.
- DUAL SOLENOID POSITION 1** — 3 Position.
- POSITION 2** — Solenoid No. 1 is energised and Solenoid No. 2 is de-energised. Pressure at Cylinder A and Exh through cylinder B.
- POSITION 3** — Solenoid No. 2 is energised and Solenoid No. 1 is de-energised. Pressure at cylinder B and exh. through cylinder A.
- POSITION 3** — Both Solenoids are de-energised, all orifices closed and piston blocked.

Valve parts in contact with fluids :

1. Body-Bronze, Bar Stock Aluminium
2. Seats and Discs - Neoprene moulded brass / Nylon
3. Core tube - 304 SS

4 Way 4 Port  
Single Solenoid  
2 Position



4. Core & Plunger - 410 SS
5. Spring - 304 SS
6. Shading coil - Copper
7. Orifice Size - 3/8", 1/2"
8. Operating pressure - 1 to 10 kg/cm<sup>2</sup>
9. Cv Flow factor 2.2 Maximum Fluid Temp. 80°C.

**SOLENOID** — General purpose solenoid enclosure NEMA-1 Weather proof solenoid enclosure NEMA-2 & 3 R Flameproof Coil enclosure IS 2148, 1981 Group I, IIA & IIB approved certified by CMRS, Dhanbad.

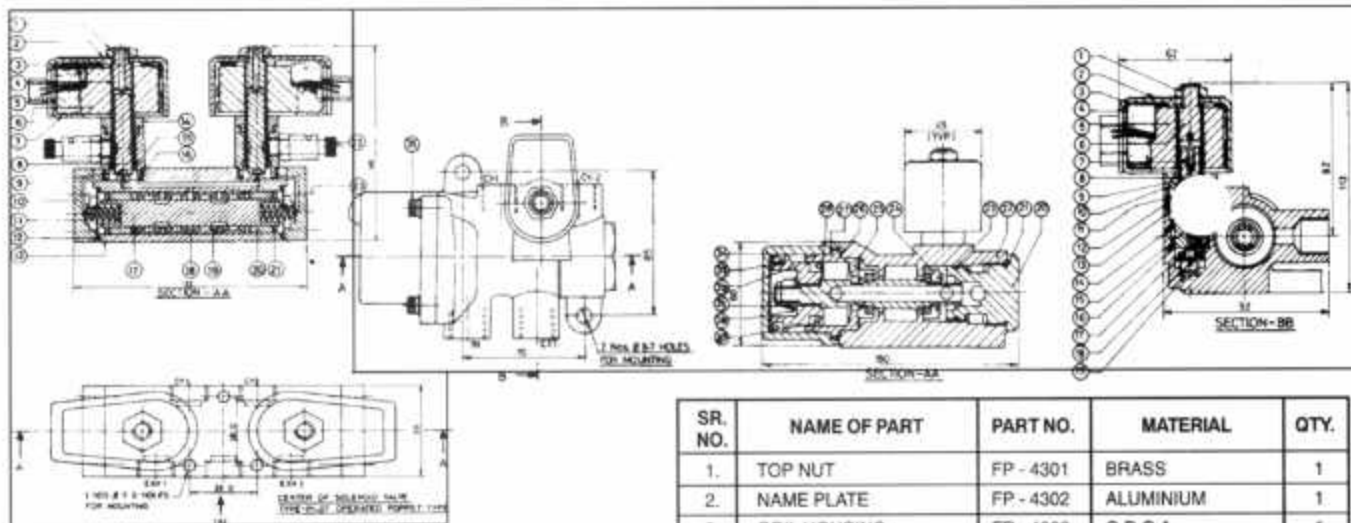
◀FLOCON▶ Valves are made from quality materials and tested for leakage and performance. Each valve is subjected to twice the rated voltage plus 1000 volts at 50c/s for 60 seconds for coil insulation test.

**IMPORTANT** — Minimum operating pressure differential must be maintained between the pressure and exhaust port supply and exhaust must be of full port area.

- Continuous Duty Moulded Coils
- Coils Insulation Class & F & H
- Coil Voltages  
24, 48, 120, 240, 440 V. AC 50c/s.  
12, 24, 48, 110, 220 V. DC

**FEATURES** — Packless, can be mounted in any position, directly on a pipe. Silent in operation, compact size.

**◀FLOCON▶**



S.R. NO.	NAME OF PART	PART NO.	MATERIAL	QTY.
1.	TOP NUT	FP - 2001	BRASS	2
2.	NAME PLATE	FP - 2002	ALUMINIUM	2
3.	STOPPER	FP - 2003	S. S. 430	2
4.	S. S. TUBE	FP - 2004	S. S. 304	2
5.	COIL HOUSING	FP - 2005	C.R.C.A.	2
6.	COIL	FP - 2006	ENAMELLED COPPER WIRE	2
7.	L. BRACKET	FP - 2007	C. R. C. A.	2
8.	PLUNGER	FP - 2008	410 S.S.	2
9.	SEAT	FP - 2009	NEOPRENE	2
10.	END COVER	FP - 2010	ALUMINIUM	2
11.	SPRING	FP - 2011	S. STEEL	2
12.	'O'RING	FP - 2012	NEOPRENE	2
13.	BODY	FP - 2013	ALUMINIUM	1
14.	BRASS NUT	FP - 2014	BRASS	2
15.	PLUNGER SPRING	FP - 2015	S.S.304	2
16.	GASKET	FP - 2016	TEFLON	2
17.	SPINDLE	FP - 2017	S. S. 304	1
18.	'O' RING	FP - 2018	NEOPRENE	5
19.	DISC	FP - 2019	NYLON	4
20.	COLLAR	FP - 2020	NYLON	2
21.	WASHER	FP - 2021	NYLON	2
22.	MANUAL OPERATOR	FP - 2022	BRASS	2
23.	ALLEN SCREW	FP - 2023	C. STEEL	8

S.R. NO.	NAME OF PART	PART NO.	MATERIAL	QTY.
1.	TOP NUT	FP - 4301	BRASS	1
2.	NAME PLATE	FP - 4302	ALUMINIUM	1
3.	COIL HOUSING	FP - 4303	C.R.C.A.	1
4.	L. BRACKET	FP - 4304	C.R.C.A.	1
5.	COIL	FP - 4305	E.C.WIRE	1
6.	STOPPER	FP - 4306	S. S.410	1
7.	PLUNGER SPRING	FP - 4307	S.S.304	1
8.	S.S. TUBE	FP - 4308	S.S.304	1
9.	TUBE NUT	FP - 4309	BRASS	1
10.	PLUNGER	FP - 4310	410 S.S.	1
11.	PLUNGER SEAT	FP - 4311	NEOPRENE	1
12.	GASKET	FP - 4312	NEOPRENE	1
13.	INSERT 'O' RING	FP - 4313	NEOPRENE	1
14.	INSERT 'O' RING	FP - 4314	NEOPRENE	1
15.	INSERT	FP - 4315	ALUMINIUM	1
16.	INSERT 'O' RING	FP - 4316	NEOPRENE	1
17.	TRIPOD	FP - 4317	DELTRIN	1
18.	TRIPOD SEAT	FP - 4318	NEOPRENE	1
19.	TRIPOD SPRING	FP - 4319	S.S.304	1
20.	END PLUG	FP - 4320	BRASS	1
21.	'O' RING FOR END PLUG	FP - 4321	NEOPRENE	1
22.	BODY	FP - 4322	BRONZE	1
23.	'O' RING FOR END PLUG	FP - 4323	NEOPRENE	1
24.	DISC	FP - 4324	BRASS NEOPRENE	2
25.	CYLINDER	FP - 4325	BRASS	1
26.	GASKET	FP - 4326	NEOPRENE	1
27.	'O' RING FOR CYLINDER	FP - 4327	NEOPRENE	1
28.	'O' RING FOR SHAFT	FP - 4328	NEOPRENE	1
29.	'U' SEAL	FP - 4329	NEOPRENE	1
30.	WASHER	FP - 4330	BRASS	1
31.	NUT	FP - 4331	BRASS	1
32.	CYLINDER	FP - 4332	BRASS	1
33.	'U' SEAL	FP - 4333	NEOPRENE	1
34.	BONNET	FP - 4334	BRONZE	1
35.	BOLT	FP - 4335	C. STEEL	4



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GENELEC LIMITED	MUMBAI	GENELEC	IP-65



# 4-WAY SOLENOID VALVES

## Midget size

### for Air, Water and Light Oil 1/4" BSP/NPT

**FLOCON®**

**SERIES  
FP 402**

**FLOCON** Midget valves are packless, solenoid pilot operated 4-way valves with forged brass bodies. These valves are extremely compact and are primarily used to control double acting cylinders, not larger than 4" in diameter.

#### SPECIFICATIONS :

##### OPERATION :-

When solenoid is energised pressure is applied to 'Cylinder B' and 'Cylinder A' is open to exhaust. When solenoid is de-energised pressure is applied to 'Cylinder A' and 'Cylinder B' is open to exhaust.

##### VALVE :

- 1) Forged brass body.
- 2) Resilient seating.
- 3) Pipe connections suitable for 1/4" BSP/NPT.
- 4) Operating pressures from 0.8 kg/cm<sup>2</sup> to 10 kg/cm<sup>2</sup> for AC Voltages
- 5) Inlet orifice 1/16", Cv-Flow factor 0.036.
- 6) Exhaust orifice 3/32", Cv-Flow factor 0.092.
- 7) Maximum A-C fluid temperature 95°C.

##### SOLENOID :

- 1) General purpose solenoid enclosure NEMA Type 1.
- 2) All solenoid parts in contact with fluid are made from 300 and 400 series stainless steel.
- 3) Continuous duty moulded coil.
- 4) Class B insulation.
- 5) Coil voltages : 24, 48, 110, 220, 440 V A-C.

24, 48, 110, 220 V D-C.

(Pressure will differ from AC Pressure by 15%)

Inrush VA 60.

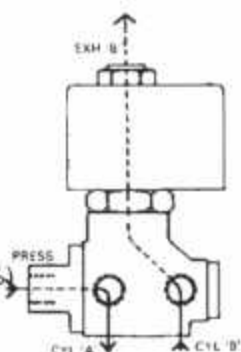
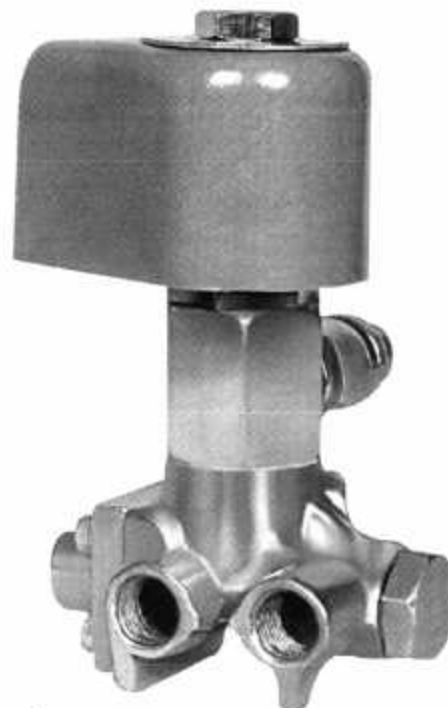
Holding VA 24

Watts 12.5

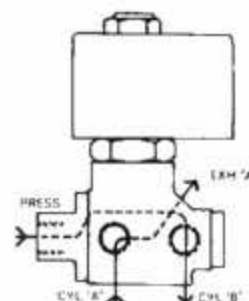
- 6) Ambient : 5°C to 50°C.

#### FREQUENCY OF OPERATION

650 Cycles per minute



SOLENOID DE-ENERGIZED

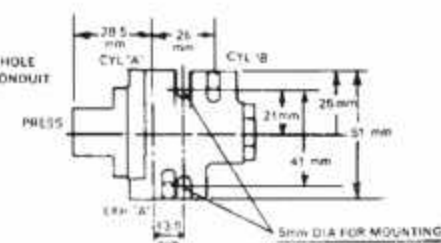
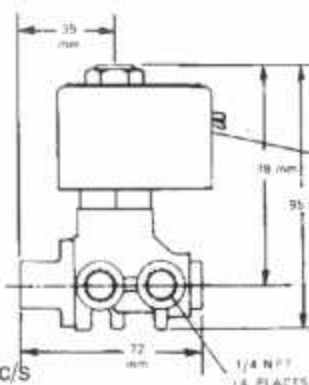


SOLENOID ENERGIZED

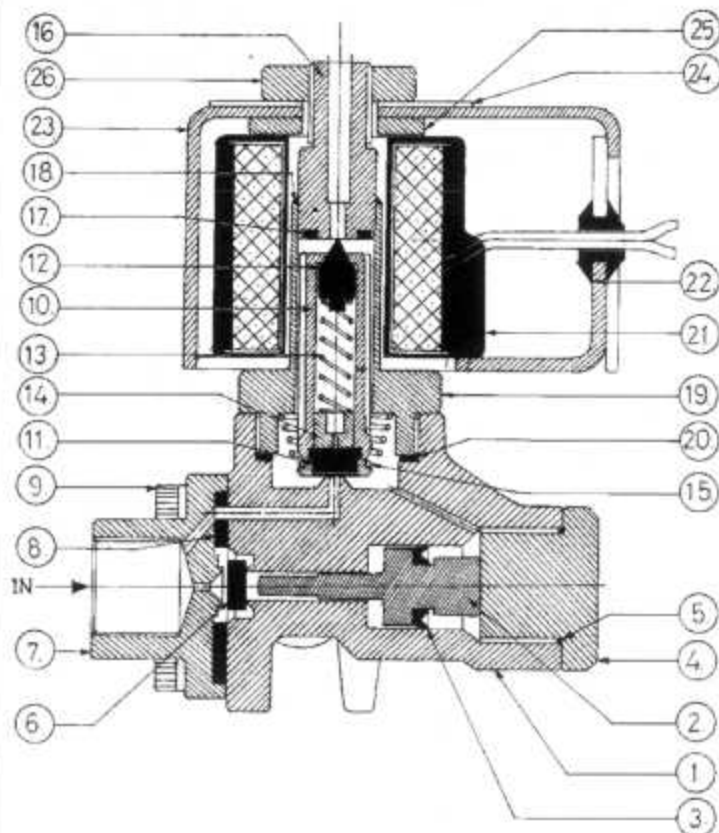
#### FLOW DIAGRAMS

#### FEATURE :

- 4 way operation.
- Forged brass body
- Silent in operation.
- Solenoid capable of being turned 360°
- Continuous duty moulded coil.
- Compact size
- Can be mounted in any position without affecting performance.
- **FLOCON** valves are made from quality materials and rigorously tested for leakage and performance. Each valve is subjected to twice the rated voltage plus 1,000 volts at 50 c/s for 60 seconds for Insulation Test.
- **FLOCON** valves are guaranteed for free replacement against any manufacturing defect.



DIMENSIONS



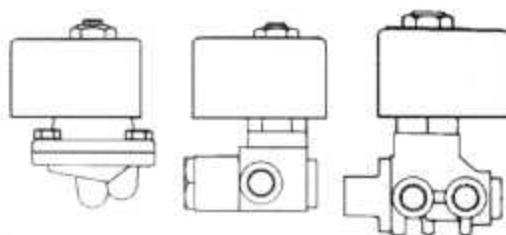
SR. NO.	NAME OF PART	PART NO.	MATERIAL	QTY.
1.	VALVE BODY	FP 40201	BRASS	1
2.	PISTON	FP 40202	S S 304	1
3.	U-CUP SEAL	FP 40203	NEOPRENE	1
4.	END PLUG	FP 40204	BRASS	1
5.	E. P. GASKET	FP 40205	NEOPRENE	1
6.	DISC	FP 40206	NEOPRENE	1
7.	INLET NUT	FP 40207	BRASS	1
8.	I. N. PACKING	FP 40208	NEOPRENE	1
9.	SCREWS	FP 40209	ALLOY STEEL	4
10.	PLUNGER	FP 40210	S S 410	1
11.	PLUNGER SEAT	FP 40211	NEOPRENE	1
12.	STOPPER SEAT	FP 40212	NYLON	1
13.	SPRING FOR '12'	FP 40213	SS 304	1
14.	SLEEVE	FP 40214	SS 304	1
15.	PLUNGER SPRING	FP 40215	SS 304	1
16.	STOPPER	FP 40216	SS 410	1
17.	SHADING RING	FP 40217	COPPER	1
18.	S. S. TUBE	FP 40218	S S 304	1
19.	HEX NUT FOR '18'	FP 40219	BRASS	1
20.	GASKET FOR '19'	FP 40220	NEOPRENE	1
21.	COIL	FP 40221	ENAMELLED C. W.	1
22.	BASE PLATE	FP 40222	C. R. C. A.	1
23.	COIL HOUSING (TOP)	FP 40223	C. R. C. A.	1
24.	NAME PLATE	FP 40224	ALUMINIUM	1
25.	SPRING WASHER	FP 40225	SPRING STEEL	1
26.	TOP NUT	FP 40226	BRASS	1

#### ORDERING INFORMATION :

We must have Type, Pipe size  
Operating Pressure, Operating  
Voltage and Media handled.

#### IMPORTANT :

Use Strainers with the valves. Use the  
valves only at pressure and voltage  
specified on the name plate.



#### NOTE :

*In line with their policy of continuous product  
development, the manufacturer reserves the right  
to change specifications without notice.*



ENGINEERS  
INDIA LIMITED



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DIRECTORS GENERAL FACTORY ADVISE SERVICE & LABOUR INSTITUTE	MUMBAI	DGFASLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-55



Where the Quality goes in before the Name comes on.



## **PRESSURE REGULATORS**

# PRESSURE REGULATORS

1/4" BSP (F)/ NPT (F)

**FLOCON**

**SERIES  
FCPB**



## APPLICATIONS :

◀FLOCON▶ 'S latest air filter combination pressure regulator is specially designed to provide precise degree of regulation and flow to operate efficient functioning of pneumatic instruments. The filter element effectively removes the water vapour and other contaminating particles generally present in compressed air supply system.

◀FLOCON▶ filter combination pressure regulator is a compact and precise unit to provide clean, dry and regulated air to be used for pneumatic process control instruments, diaphragm control valves, air cylinders and pneumatic tools.

◀FLOCON▶ In all pressure regulators as the flow is increased the reduced pressure drops from the original reduced pressure setting.

The deviation between set pressure and actual pressure is called 'regulator drop'.

◀FLOCON▶ minimises this drop by utilizing an efficient aspirator and separate diaphragm chamber. With increased flow rates the aspirator creates a lower pressure under the diaphragm thus, greater force is applied to the stem and the valve opens further allowing greater air flow to offset the pressure drop.

## FEATURES :

1. Suitable for primary pressure up to 15 kg/cm<sup>2</sup>
2. Four optional secondary pressure (0 to 1.4 kg/cm<sup>2</sup>, 0-2.5 kg/cm<sup>2</sup>, 0 to 4 kg/cm<sup>2</sup> and 0 to 7 kg/cm<sup>2</sup>).
3. Choice of ceramic and sintered bronze filter.  
S. Bronze - 2 to 50 micron Ceramic - 50 micron.
4. Manual drain cock for liquid draining.
5. Rugged aluminium bar stock body.
6. Neoprene diaphragm for sensitive regulation.

## PRESSURE TEMPERATURE

Maximum supply pressure 15 kg/cm<sup>2</sup>

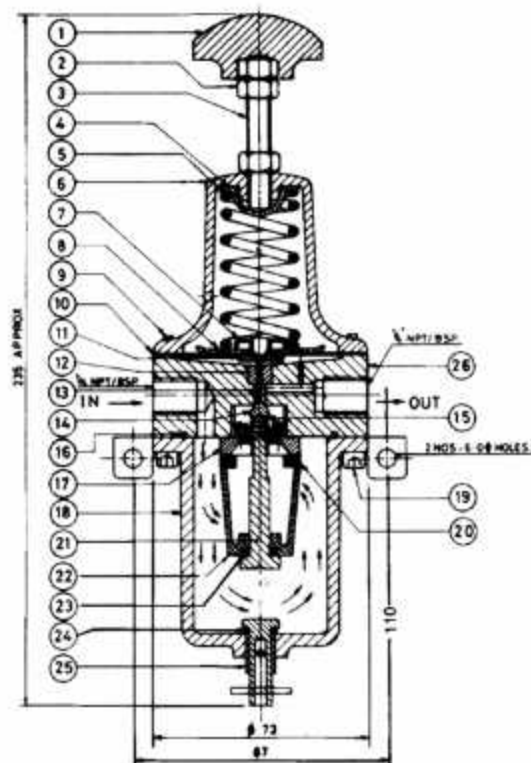
Maximum operating temperature 55°C

## ACCESSORIES & OPTIONS :

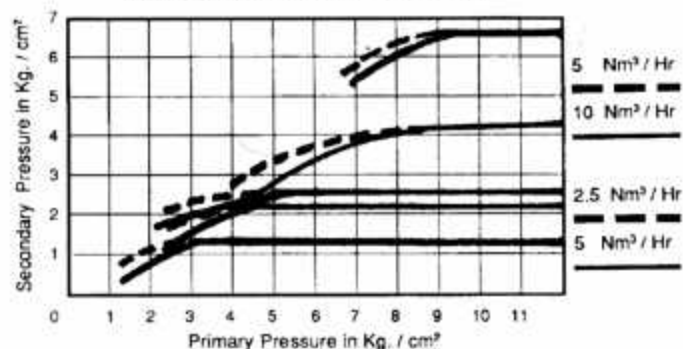
1. Pressure gauge 1/4" NPT x 55 mm dia.  
(Specify suffix 'G')
2. L Bracket (Specify suffix 'L')  
for field mounting
3. S.S. Internals.  
(Valve and Spring)

**FLOCON**

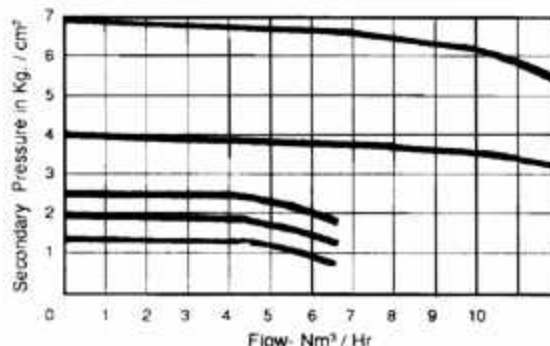




REGULATION CHARACTERISTICS



REGULATOR FLOW CHARACTERISTIC



S.R. NO.	NAME OF PART	PART NO.	MATERIAL	QTY.
1	KNOB FOR PRESSURE ADJUSTING SCREW	FSPN 1001	BAKELITE	1
2	LOCK NUT	FSPN 1002	M.S.	1
3	STUD FOR PRESSURE ADJUSTING	FSPN 1003	S. S. 304	1
4	SPRING RETAINER	FSPN 1004	C.S.	1
5	REGULATOR SPRING	FSPN 1005	S. STEEL	1
6	SPRING CAP	FSPN 1006	ALUMINIUM	1
7	CUP FOR DIAPHRAGM ASSLY	FSPN 1007	C.S.	1
8	DIAPHRAGM PLATE	FSPN 1008	C.S.	1
9	SCREW	FSPN 1009	C.S.	6
10	DIAPHRAGM	FSPN 1010	NEOPRENE	1
11	RIVET FOR DIAPHRAGM	FSPN 1011	BRASS	1
12	GUIDE BUSH	FSPN 1012	BRASS	1
13	PIN FOR THE VALVE	FSPN 1013	BRASS	1
14	CUP	FSPN 1014	NEOPRENE	1
15	TAPER SPRING	FSPN 1015	S. STEEL	1
16	O' RING	FSPN 1016	NEOPRENE	4
17	VALVE ADOPTER	FSPN 1017	DELFIN	1
18	FILTER CHAMBER	FSPN 1018	ALUMINIUM	1
19	SCREW	FSPN 1019	C.S.	4
20	FILTER GASKET	FSPN 1020	NEOPRENE	1
21	FILTER SCREW	FSPN 1021	DELFIN	1
22	FILTER	FSPN 1022	CERAMIC/SINTERED BRONZE	1
23	O' RING FOR SCREW	FSPN 1023	NEOPRENE	1
24	O' RING FOR DRAIN VALVE	FSPN 1024	NEOPRENE	1
25	DRAIN VALVE	FSPN 1025	BRASS/S.S. 304	1
26	BODY	FSPN 1026	ALUMINIUM	1

**NOTE :**

*In line with their policy of continous product development, the manufacturer reserves the right to change specifications without notice.*

			18-2148
AGENCY APPROVALS FOR FLOCON <sup>®</sup> SOLENOID VALVES PRECISION INSTRUMENT CO. L. MUM-13.			
ENGINEERS INDIA LIMITED	NEW DELHI	EIL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NASIPUR	CCE	FLAMEPROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAMEPROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY			
ADVISE SERVICE & LABOUR INSTITUTE	MUMBAI	DSFASLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-65



Where the Quality goes in before the Name comes on.

# INTEGRAL FILTER-REGULATORS

**FLOCON®**

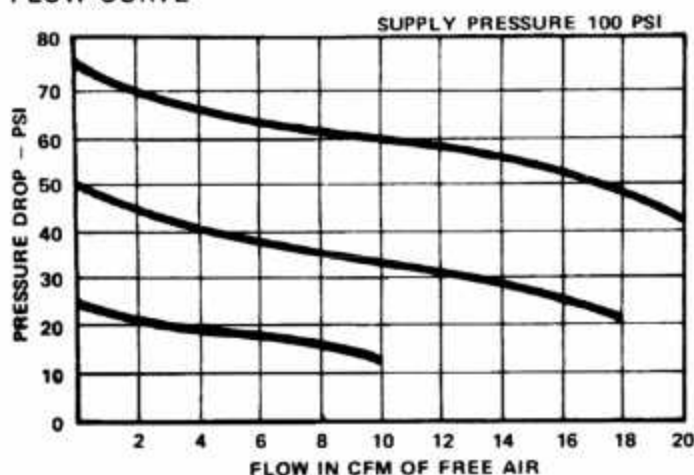
**SERIES  
FCPM**



## APPLICATIONS :

◀FLOCON▶ 'S' latest miniature Pressure Regulator combined with a filter makes it a compact integral unit to provide clean dry and regulated air for flow rates upto 15 SCFM without excessive pressure drop. It is available in either relieving or non-relieving types. This unique space saving control is especially suited for limited space applications such as control cabinets and miniaturised circuits.

## FLOW CURVE



## SIZES-NUMBERS (Relieving Type\*)

	STANDARD	AUTOMATIC DRAIN :
SIZE	TYPE	TYPE
1/8"	FCPM 1	FCPMA 1
1/4"	FCPM 2	FCPMA 2

\* Non relieving type and metal bowl also available.

## PRESSURE TEMPERATURE :

Maximum Supply pressure 14 kg/cm<sup>2</sup>

Maximum Operating temperature 35°C

## ACCESSORIES & OPTION :

**Panel Mount** - Specify Suffix "P" (Panel Mount hole diameter 7/8") **Pressure Gauge** - Specify suffix "G" (1 1/2" dial, 1/8" BSP back connected)

## REDUCED PRESSURE :

Available in three ranges :

0 to 2.5 Kg/cm<sup>2</sup>

0 to 4 Kg/cm<sup>2</sup>

0 to 9 Kg/cm<sup>2</sup>

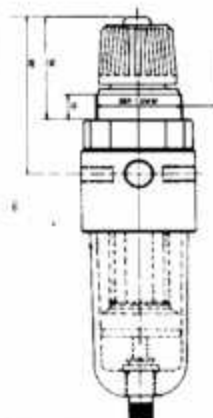
## FILTER ELEMENT :

Filter is standardly supplied with 20 micron sintered bronze element.

## FEATURES :

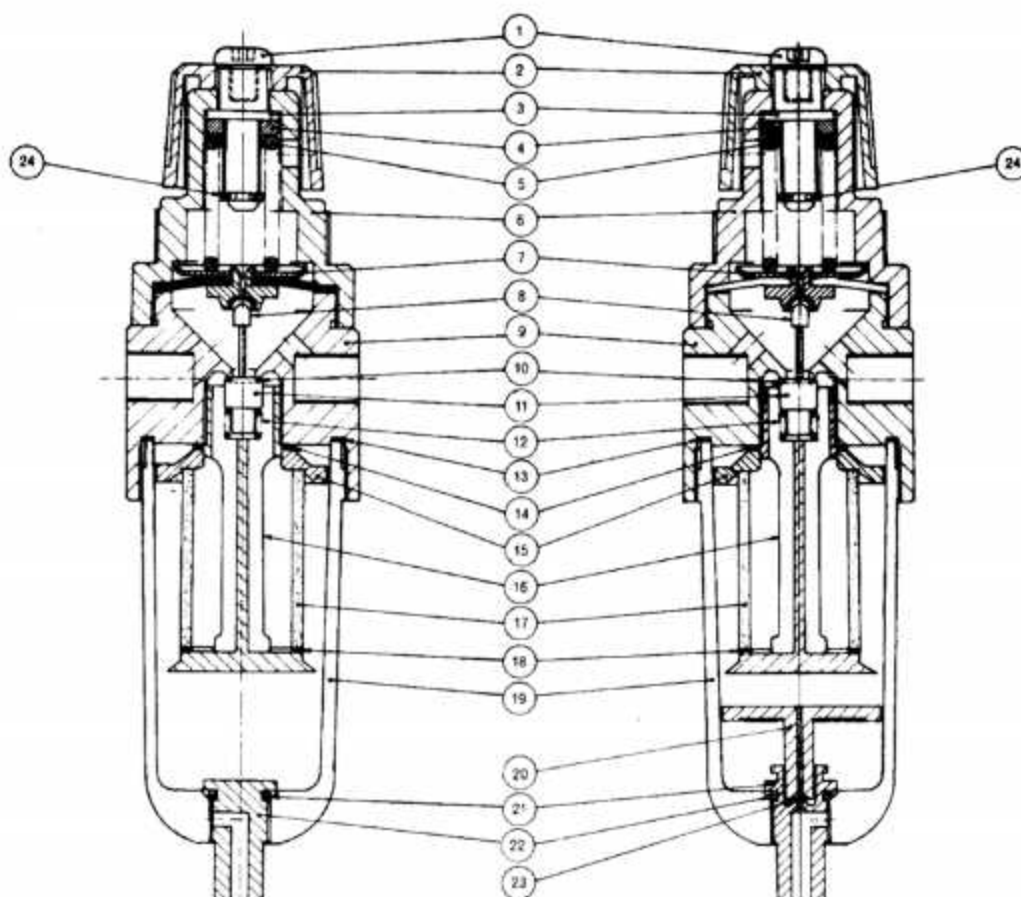
1. Rugged aluminium construction
2. Attractive non-rising adjustment knob.
3. Filter completely dis-assembled by hand for easy servicing.
4. Compact size.

## MOUNTING DIMENSION



◀FLOCON▶





**CROSS SECTION (MATERIAL LIST)**

SR.	NO.	DESCRIPTION	REMARK
1.	1	SCREW	C. STEEL
2.	1	KNOB	ACETYL RESIN
3.	1	REGULATING SCREW	C. STEEL
4.	1	NUT	C. STEEL
5.	1	SPRING	S. STEEL
6.	1	BONNET	ACETYL RESIN
7.	1	DIAPHRAGM ASSEMBLY	NEOPRENE BRASS
8.	1	EXHAUST SEAT	BRASS
9.	1	BODY	ALUMINIUM
10.	1	'O' RING	NEOPRENE
11.	1	DISC	BRASS
12.	1	SPRING	S. STEEL
13.	1	GASKET	NEOPRENE
14.	1	GASKET	NEOPRENE
15.	1	DEFLECTOR	ACETYL RESIN
16.	1	BAFFLE	ACETYL RESIN
17.	1	FILTER	S. BRONZE
18.	1	GASKET	NEOPRENE
19.	1	BOWL	POLYCARBONATE
20.	1	AUTOMATIC BRAIN PISTON	ACETYL RESIN
21.	1	DRAIN VALVE	BRASS
22.	1	'O' RING	NEOPRENE
23.	1	PISTON SEAT	NEOPRENE
24.	1	CIRCLIP	SPRING STEEL

**NOTE :**

*In line with their policy of continuous product development, the manufacturer reserves the right to change specifications without notice.*



AGENCY APPROVALS FOR **FLOCON**® SOLENOID VALVES PRECISION INSTRUMENT CO. - MUM-13.

ENGINEERS INDIA LIMITED	NEW DELHI	EIL	SOLENOID VALVES
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	DAMP HEAT TEST REPORT
ELECTRONICS REGIONAL TEST LABORATORY	MUMBAI	ERTL	VIBRATION TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65 TEST REPORT
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS	MUMBAI	IDEMI	IP-65/67 TEST REPORT
CENTRAL MINING RESEARCH INSTITUTE	DHANSBAD	CMRI	FLAME PROOF SOLENOID VALVE ENCLOSURE
CHIEF CONTROLLER OF EXPLOSIVES	NAGPUR	CCE	FLAMEPROOF SOLENOID VALVE ENCLOSURE
BUREAU OF INDIAN STANDARDS	MUMBAI	BIS	FLAMEPROOF SOLENOID VALVE ENCLOSURE
DIRECTORS GENERAL FACTORY			
ADVICE SERVICE & LABOUR INSTITUTE	MUMBAI	DGFASLI	FLAMEPROOF SOLENOID VALVE ENCLOSURE
GENELEC LIMITED	MUMBAI	GENELEC	IP-55



Where the Quality goes in before the Name comes on.

Installation  
and  
Maintenance  
Manual  
FSD 200

# INSTALLATION AND MAINTENANCE MANUAL

## 2 WAY INTERNALLY PILOT OPERATING DIAPHRAGM TYPE SOLENOID VALVES NORMALLY OPEN/CLOSED

TYPE  
FSD-200  
(1"TO4")

### DESCRIPTION :

Flocon Type FSD200 series 2 way internally pilot operated diaphragm type valves are standard valves having fitted with general purpose enclosure. FSD200 series valves are also available with explosion/Flame proof enclosures as per IS 2148 certified by CMRS Dhanbad for use on Area group, I, IIA & IIB. They also comply to IS 2147 or protection class IP67.

### MANUAL OPERATOR :

Valves are provided with manual operator as required which allows manual operation when desired or during an interruption of electrical power by rotating Knurled pin 180° clockwise valve can be opened and again turn anticlockwise valve can be closed.

### INSTALLATION :

Check name plate for correct pressure voltage and service.

### TEMPERATURE LIMITATION :

Valve with Teflon viton diaphragm &

Seals are up to 150°C

### MOUNTING:

This valve is designed to perform properly when mounted in any position, however for optimum life and performance the solenoid should be mounted vertical and upright so as to reduce the possibility of foreign matter accumulating in the core tube area.

### PIPING:

Connect piping to valve according to markings on valve body, apply pipe compound sparingly to make pipe thread only. If applied to valve threads, it may enter the valves and cause operational difficulties. Do not use valve as a lever when tightening the pipe.

### IMPORTANT:

For protection of the solenoid valve install a strainer or filter suitable for the service involved in the inlet side as close to the valve as possible, periodic cleaning is required depending on the service condition.

### WIRING:

Housing for all solenoid are provided with connection for 1/2" conduit. The general purpose solenoid enclosure may be rotated to facilitate wiring by loosening top nut of enclosure.

### SOLENOID TEMPERATURE :

When the solenoid is energised for a long period the solenoid enclosure becomes hot and can be touched with the hand only for an instant. This is the safe operating temperature, any excessive heating will be indicated by the smoke and odour of burning of coil insulation.

### MAINTENANCE:

Turn off electrical power supply and de-pressurise valve before making repairs it is not necessary to remove valve from pipe line for repairs.

### CLEANING:

A periodic cleaning of all solenoid valves is desirable. The time between cleaning will vary depending on media and service conditions, excessive leakage or noise will indicate that cleaning is required.

### PREVENTIVE MAINTENANCE :

1. Keep the medium flowing through the valve as free from direct and foreign material as possible.
2. While in service operate the valve at least once a month to ensure proper opening and closing.
3. Periodic inspection (depending on medium and service conditions) of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace any parts that are worn or damaged.

### IMPROPER OPERATION:

1. **Faulty Control Circuit:** Check the electrical system by energizing the solenoid. Vibration signifies the solenoid is operating. Absence of the vibration indicates loss of power supply. Check for loose or blown-out fuses, open-circuited or grounded coil, broken lead wires or splice connections.
2. **Burned-Out Coil:** Check for open-circuited coil. Replace coil if necessary.
3. **Low Voltage :** Check voltage across the coil leads. Voltage must be at least 85% of nameplate rating.
4. **Incorrect Pressure:** Check valve pressure. Pressure to valve must be within range specified on nameplate.
5. **Excessive Leakage:** Disassemble valve and clean all parts. Replace worn or damaged part with a complete Spare Parts Kit for best results.

### COIL REPLACEMENT:

Remove top nut, name plate and housing, slip coil off the solenoid base sub assembly. Re assemble in reverse order of dis assembly paying careful attention to the exploded view provided for identification and placement of parts.

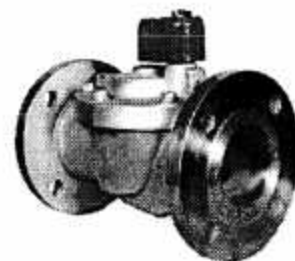
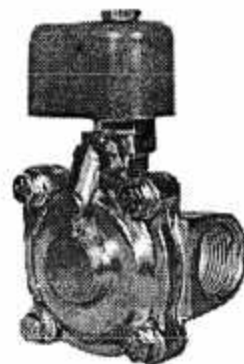
### VALVE DIS ASSEMBLY:

1. Disassemble valve in an orderly fashion paying careful attention to exploded view provided for identification of parts.
2. Remove top nut then slip the entire solenoid enclosure off the solenoid base assembly.
3. Unscrew solenoid base sub assembly and remove bonnet gasket, core assembly and core spring.
4. Remove four bonnet screws, Valve bonnet, diaphragm assembly and body gasket.

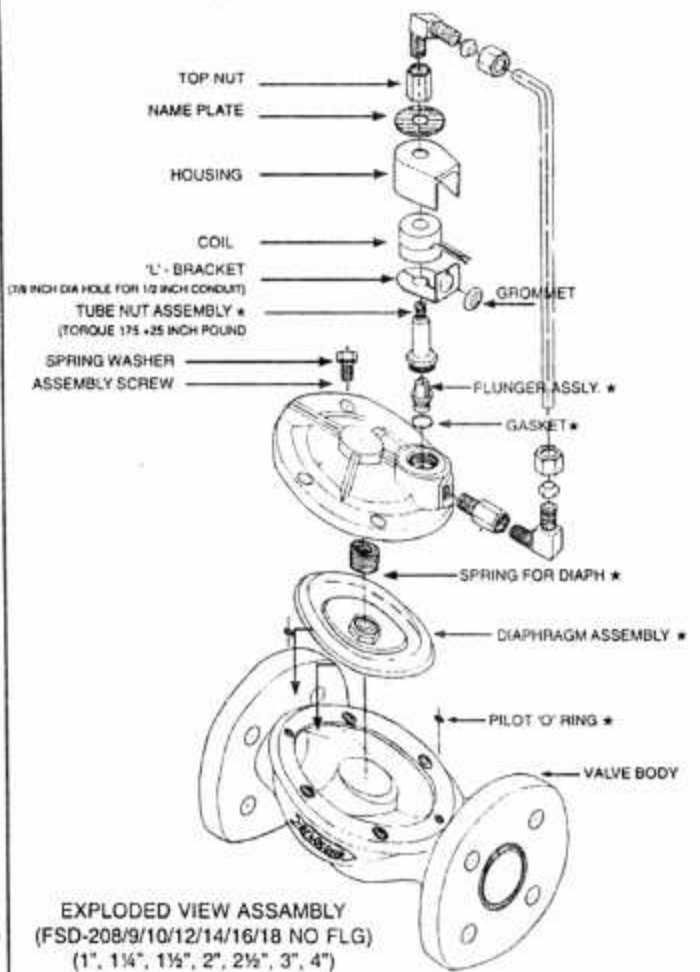
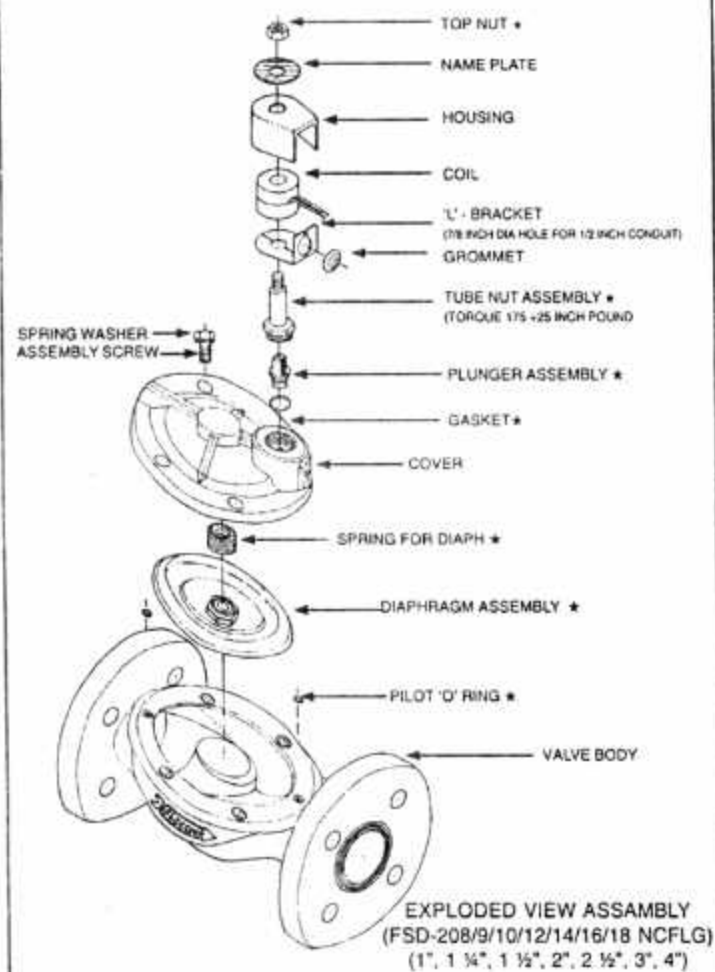
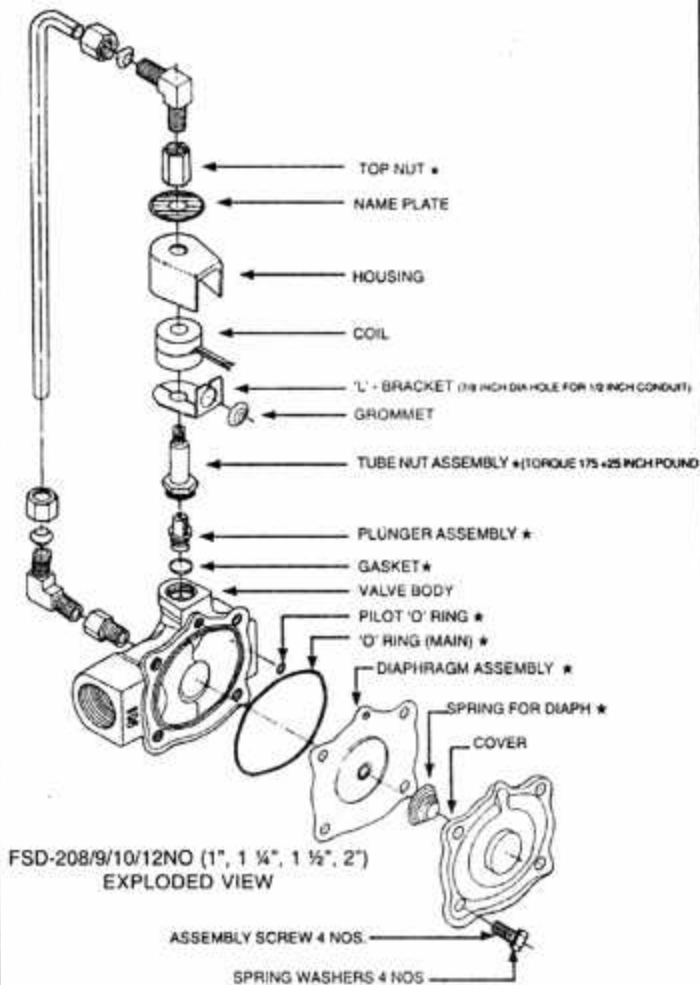
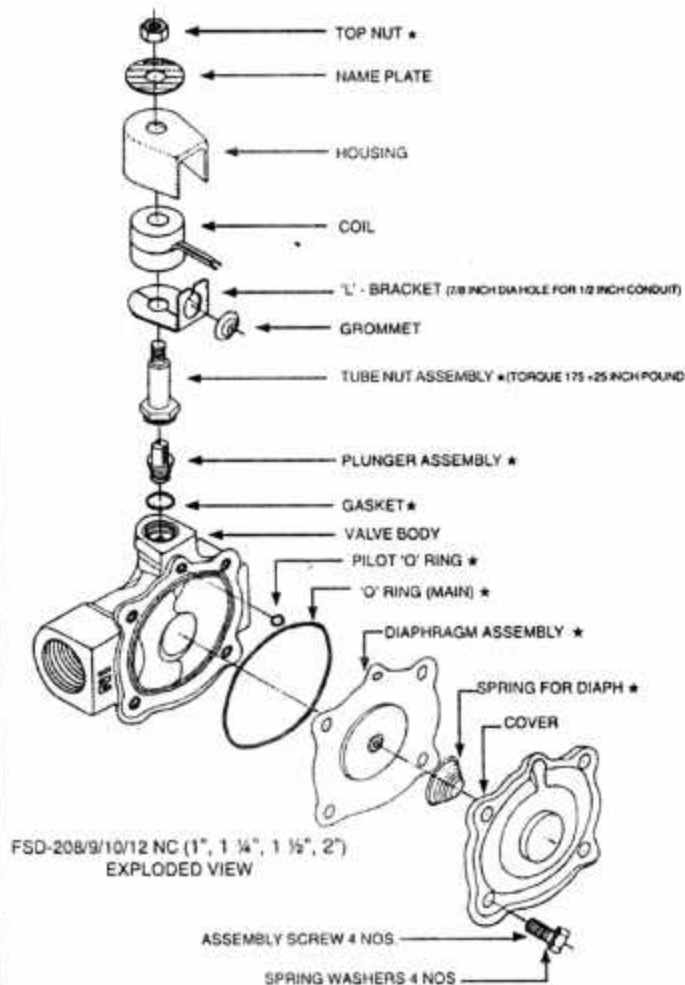
All parts are now accessible for cleaning or replacement. Replace worn or damaged parts with spare parts for best results.

### VALVE RE ASSEMBLY :

1. Re assemble in reverse order of disassembly paying careful attention to exploded view provided for identification and placement of parts.
2. Replace body gasket and diaphragm assembly.
3. Replace valve bonnet and bonnet screws.
4. Install core assembly with core spring into solenoid base sub assembly, replace bonnet gasket and install solenoid base sub assembly with core assembly inside of it.
5. Replace solenoid enclosure and top nut.
6. After maintenance operate the valve a few times to be sure of proper opening and closing.







# INSTALLATION AND MAINTENANCE MANUAL

## 2 WAY INTERNALLY PILOT OPERATING DIAPHRAGM TYPE SOLENOID VALVES NORMALLY OPEN/CLOSED

## INSTRUCTION MANUAL FSD-200

### DESCRIPTION :

Flocon Type FSD200 series 2 way internally pilot operated diaphragm type valves are standard valves having fitted with general purpose enclosure. FSD200 series valves are also available with explosion/Flame proof enclosures as per IS 2148 certified by CMRS Dhanbad for use on Area group, I, IIA & IIB. They also comply to IS 2147 or protection class IP67.

### MANUAL OPERATOR :

Valves are provided with manual operator as required which allows manual operation when desired or during an interruption of electrical power by rotating Knurled pin 180° clockwise valve can be opened and again turn anticlockwise valve can be closed.

### INSTALLATION :

Check name plate for correct pressure voltage and service.

### TEMPERATURE LIMITATION :

Maximum ambient temperature 120°F

Maximum fluid temperature 180°F

### MOUNTING:

This valve is designed to perform properly when mounted in any position, however for optimum life and performance the solenoid should be mounted vertical and upright so as to reduce the possibility of foreign matter accumulating in the core tube area.

### PIPING:

Connect piping to valve according to markings on valve body, apply pipe compound sparingly to make pipe thread only. If applied to valve threads, it may enter the valves and cause operational difficulties. Do not use valve as a lever when tightening the pipe.

### IMPORTANT:

For protection of the solenoid valve install a strainer or filter suitable for the service involved in the inlet side as close to the valve as possible, periodic cleaning is required depending on the service condition.

### WIRING:

Housing for all solenoid are provided with connection for 1/2" conduit. The general purpose solenoid enclosure may be rotated to facilitate wiring by loosening top nut of enclosure.

### SOLENOID TEMPERATURE :

When the solenoid is energised for a long period the solenoid enclosure becomes hot and can be touched with the hand only for an instant. This is the safe operating temperature, any excessive heating will be indicated by the smoke and odour of burning of coil insulation.

### MAINTENANCE:

Turn off electrical power supply and de-pressurise valve before making repairs it is not necessary to remove valve from pipe line for repairs.

### CLEANING:

A periodic cleaning of all solenoid valves is desirable. The time between cleaning will vary depending on media and service conditions, excessive leakage or noise will indicate that cleaning is required.

### PREVENTIVE MAINTENANCE :

1. Keep the medium flowing through the valve as free from direct and foreign material as possible.
2. While in service operate the valve at least once a month to ensure proper opening and closing.
3. Periodic inspection (depending on medium and service conditions) of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace any parts that are worn or damaged.

### IMPROPER OPERATION:

1. **Faulty Control Circuit:** Check the electrical system by energizing the solenoid. Vibration signifies the solenoid is operating. Absence of the vibration indicates loss of power supply. Check for loose or blown-out fuses, open-circuited or grounded coil, broken lead wires or splice connections.
2. **Burned-Out Coil:** Check for open-circuited coil. Replace coil if necessary.
3. **Low Voltage :** Check voltage across the coil leads. Voltage must be at least 85% of nameplate rating.
4. **Incorrect Pressure:** Check valve pressure. Pressure to valve must be within range specified on nameplate.
5. **Excessive Leakage:** Disassemble valve and clean all parts. Replace worn or damaged part with a complete Spare Parts Kit for best results.

### COIL REPLACEMENT:

Remove top nut, name plate and housing, slip coil off the solenoid base sub assembly. Re assemble in reverse order of dis assembly paying careful attention to the exploded view provided for identification and placement of parts.

### VALVE DIS ASSEMBLY:

1. Disassemble valve in an orderly fashion paying careful attention to exploded view provided for identification of parts.
2. Remove top nut then slip the entire solenoid enclosure off the solenoid base assembly.
3. Unscrew solenoid base sub assembly and remove bonnet gasket, core assembly and core spring.
4. Remove four bonnet screws, Valve bonnet, diaphragm assembly and body gasket.

All parts are now accessible for cleaning or replacement. Replace worn or damaged parts with spare parts for best results.

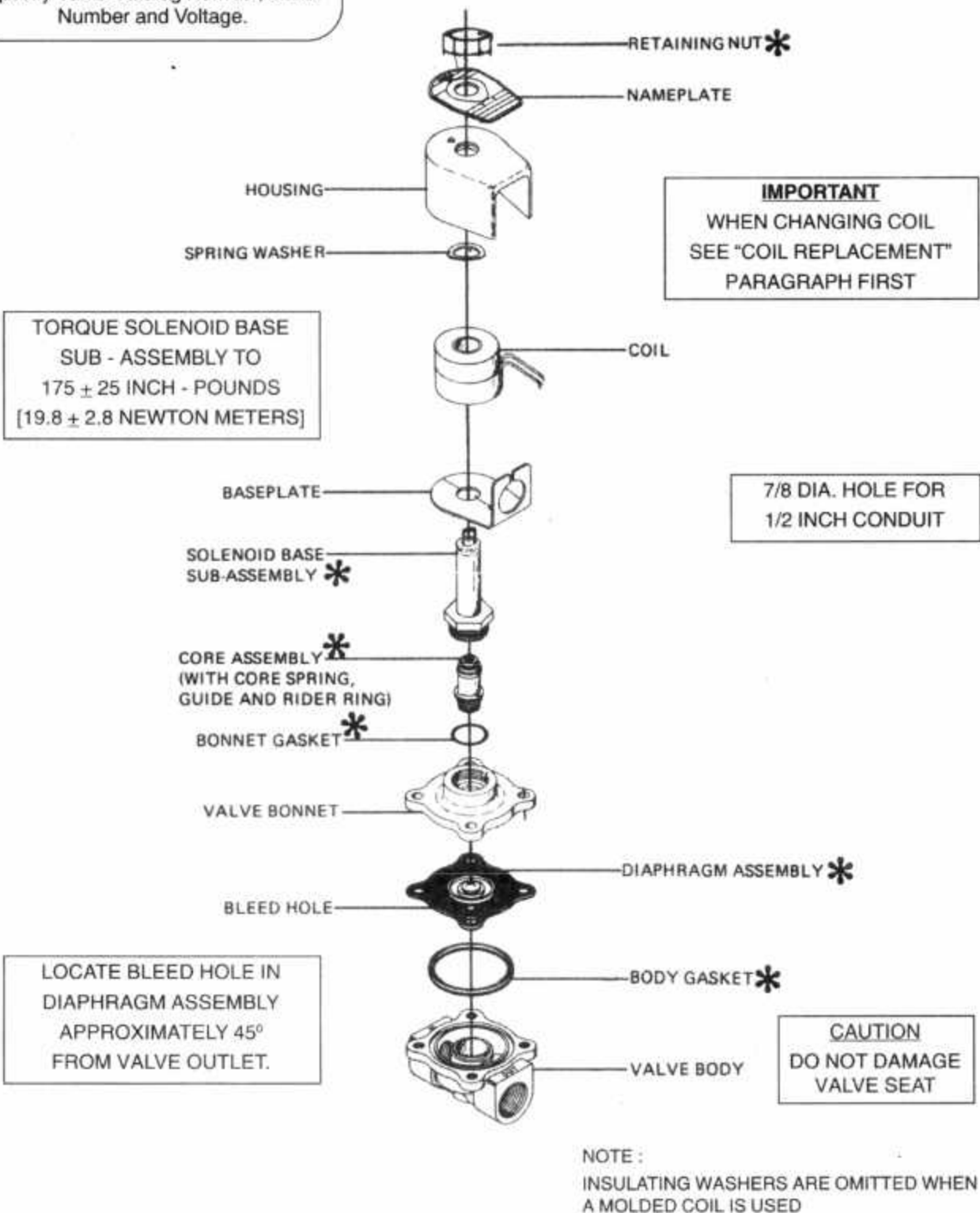
### VALVE RE ASSEMBLY :

1. Re assemble in reverse order of disassembly paying careful attention to exploded view provided for identification and placement of parts.
2. Replace body gasket and diaphragm assembly.
3. Replace valve bonnet and bonnet screws.
4. Install core assembly with core spring into solenoid base sub assembly, replace bonnet gasket and install solenoid base sub assembly with core assembly inside of it.
5. Replace solenoid enclosure and top nut.
6. After maintenance operate the valve a few times to be sure of proper opening and closing.



**ORDERING INFORMATION  
FOR SPARE PARTS KITS:**

When Ordering Spare parts Kits or Coils,  
Specify Valve Catalog Number, Serial  
Number and Voltage.



**Figure 1**

**General Purpose Solenoid Enclosure Shown**



Compatibility chart

	F = FAIR T = TEST (MAY/MAY NOT BE USED) S = SATISFACTORY U = UN-SATISFACTORY	BUNA-N	EPDM	NEOPRENE	VITON	TEFLON	COPPER	SILVER	ALUMN	SS-20	SS-302-303-304	SS-316	SS-430	STEEL	IRON	BRONZE	BRASS	ALUMN	SPECIFIC GRAVITY
1	ACETONE	U	S	U	U	S	S	S	F		F	F	F	S	S	S	S	F	0.79
2	ACETYLENE	S	S	F	S	S	U	U	S		S	S	S	S	S	U	T	S	0.897
3	ACETIC ACID - 10%		S	S			U	F	F	S	S	S	F	U	U	U	U	F	
4	ACETIC ACID-PURE CH <sub>3</sub> COOH	T	U	T	U	S	U	S	S	S	F	S	F	U	U	U	U	S	1.06
5	AIR N <sub>2</sub> O <sub>2</sub>	S		S	S		S	S	S		S	S	S	U	S	S	S	T	1.000
6	ALCOHOL ETHYL (ETHANOL) C <sub>2</sub> H <sub>5</sub> OH	F	S	F	F	S	F	S	F	F	F	F	F	S	F	F	F	T	6.73
7	ALCOHOL METHYL (METHANOL) CH <sub>3</sub> OH	S	S	S	U	S	S	S	T	F	S	S	F	S	S	S	S	T	0.81
8	ALCOHOL (ISOPROPYL) CH <sub>3</sub> CHOH	S	S	S		S		S		S	S	F				S			0.81
9	AMMONIA NH <sub>3</sub>	F		S	U	S	U	U	F	S	S	S	S	S	S	U	U	F	0.89
10	ARGON Ar	F		S						S	S	S	S	F	U	U	U	U	1.379
11	BENEZENE C <sub>6</sub> H <sub>6</sub>	U	U	U	F	S	S	S	S	S	S	S	S	S	S	S	S	S	0.69
12	BUTANE C <sub>4</sub> H <sub>10</sub>	F	U	F	S	S	S		S		S	S	S	S	S	S	S	S	2.050
13	CARBON DIOXIDE, DRY CO <sub>2</sub>	F	T	T	T	S	S	S	S		S	S	S	S	S	S	S	S	1.516
14	CARBON TETRACHLORIDE CC <sub>14</sub>	U	U	U	S	S	T	F	U	S	F	F	F	T	U	F	T	U	1.59
15	CHLORINE UNHYDROUS LIQUID	U		U	S	S	T				U	U	F		U	T	U		1.56
16	CHLORINE GAS Cl <sub>2</sub>	U	U	U	F	F	T	F	T	S	U	F	U	T	T	T	U	T	2.423
17	COFFEE	S		S	S	S	S				S	S	S			S	S		
18	COKE OVEN GAS	T	U	T	F	S	S	S	S		S	S	S	S	S	T	U	S	
19	COOLANT OIL	S				S	S	S	F		S	S	S	S		S	S		
20	DIESEL FUEL	T			S	S	S	S	S		S	S	S	S		S	S	S	
21	ETHYLENE GLYCOL (CH <sub>2</sub> OH) (CH <sub>2</sub> OH <sub>2</sub> )	S	S	F	S	S	F	S	F		S	S	F	S	F	F	F	F	
22	ETHYLENE OXIDE	U	I	U	U	S	I	I	F	S	S	S	S	S	F	I	I	F	
23	FREON - 11-12-13-21-502	F	U	F	U	S	S	S	S	S	S	S	S	U	U	S	S	S	
24	FREON-1301 (FIRE EXT.)	S		S	F		S				S	S	S				S		
25	GASOLINE	T	U	U	S	S	T	S	F		S	S	S	S	T	S	S	T	0.72
26	HELIUM He	S	S	S	S	S				S	S	S	S	S	S	S	S	S	0.138
27	HYDRAULIC OIL	S	U	T	S	S	S	S	S		S	S	S	S	S	S	S	S	
28	HYDROCARBONS (CLORINATED)	T	U	U	F	S	S	F	S		F	F	F			S	S	S	
29	HYDROGEN H	S	S	S	S	S	S	S	S		S	S	S	S	S	S	S	S	0.069
30	HYDROGEN PEROXIDE H <sub>2</sub> O <sub>2</sub>	T	T	U	S	S	U	U	F	S	T	F	T	T	T	U	U	F	
31	HYDROCHOLORIC ACID HCL		F	T	T	F		T			U	U	U	U	U			T	1.19
32	KEROSENE	S	U	F	S	S	S	S	S		S	S	S	S	S	S	S	S	0.81
33	LPG	F	U	F	S		S	S	S		S	S	S			S	S	S	
34	METHYL ETHYL KETONE (MEK) CH <sub>3</sub> CCO <sub>2</sub> HS	U	S	U	U	S	S	F	S		F	F	F	S	S	S	S	S	
35	MILK	S	S	S	S	S	S		S		S	S	S	S	S	S	S	S	1.03
36	NAPTHA C <sub>6</sub> H <sub>5</sub> NO	F	U	U	S	S	F	S	S	S	S	S	S	S	T	F	F	S	0.76
37	NATHRAL GAS	S	U	S	S	S	F	S	S		S	S	S	S	S	T	S	S	
38	NITRIC ACID HNO <sub>3</sub>	U	U	U	U	S	U		T	U	S	T	T	U	U	U	U	T	1.50
39	NITROGEN N <sub>2</sub>	S	F	F	S		S	S	T	S	S	S	S	S	S	S	S	T	0.9666
40	OIL COOKING		T		S		S		T		S	S	S				S		
41	OIL FUEL	T	U	F	S	S	T	S	S		S	S	S	T	T	S	S	S	
42	OIL HYDRAULIC-MIL-H-5606	S	U	S	S	S	S	S	S		S		S				S	S	
43	OILS LUBRICATING OR MOTOR	S			S		S	S	F		S	S	S		S	S	S	T	
44	OXYGEN O <sub>2</sub>	T		S	S	T	S	F	S		S	S	S		S	S	S	S	1.103
45	PERCHLORETHELYENE CL <sub>2</sub> C=CCL <sub>2</sub>	U	U	U	S	S	F	S	T	S	F	F	F	F	F	F	F	T	
46	PHOSPHORIC ACID (AREATED) H <sub>3</sub> PO <sub>4</sub>	I	F	I	S	S	U	F	T	S	T	F	U	U	U	U	U	I	1.78
47	PHOTOGRAPHIC SOLUTION																		
48	POTASSIUM SULPHATE K <sub>2</sub> SO <sub>4</sub>	S	S	S	S	S		S	S	U	U	S	S	S	U	U	U	U	
49	PROPANE GAS LIQUID C <sub>3</sub> H <sub>8</sub>	S	T	U	S	S	U	S	S	U	S	S	S	U	U	U	U	F	1.554
50	SEWAGE	S	S	S	S	S	F		U			U		U				U	
51	SODIUM HYDROXIDE (caustic Soda) NaOH	T	S	T	T	S	T		U	U	F	S	F	T	T	T	T	F	
52	STEAM CONDENSATE	S	S	S												S			
53	STODDARTE SOLVENT	S	U	F	S						S	S	S	S		S	S		
54	SULPHURIC ACID	U	T	U	S	S	U	U	F	T	T	T	T	T	U	U	U	F	1.83
55	TOULENE CH <sub>3</sub> C <sub>6</sub> H <sub>5</sub>	U	U	U	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
56	TRICHOLO ETYLENE								S		S	S	S	T		S	S	T	0.87
57	TRISODIUM PHOSPATE - TSP	S		S		S	T	F	U		F	S	F	S	S			U	
58	TURPENTINE	S	U	T	F	S	F	S	F		F	F	F	F	F	F	F	F	1.00
59	VEGETABLE OIL	F	S		S	S			S		S	S	F	S			T	S	
60	VINEGAR	T	S	T	S	S	F	S			F	F	F	T	T	F	U	T	1.08
61	VINYL CHLORIDE CH <sub>2</sub> CHCl			S		S	U				T	F		T	T	U	U		
62	WATER - BOILER FEED	S		T	T	S	F	S	F	S	S	S	S	T		F	T	F	
63	WATER - CARBONATED	T	S		S	S	F		F		S	S	S			F	F	F	
64	WATER - CONDENSATE	S	S	T	T	S	F	S	F	S	S	S	S	T		F	T	F	
65	WATER-DISTILLED DEMINERAL-DEIONISE	T	S		S	S	T		S	S	S	S	S	U	U	T	T	S	
66	WATER - SEA	S	S	S	S	S	F	S	U		T	F	U	U	U	S	U	U	1.02