

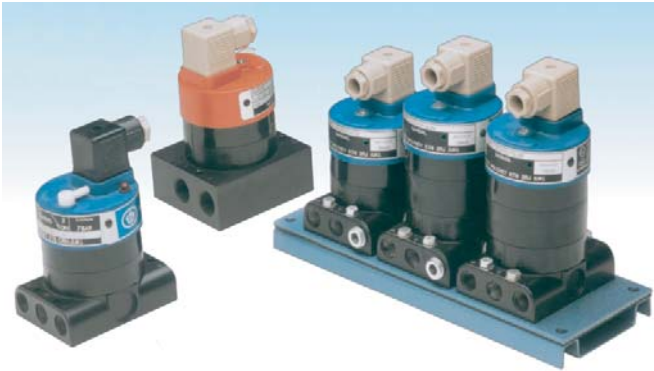


Information Sheet

Pneumatic Valves

Friction Free

High Performance and Intrinsically Safe
Solenoid Valves



The FFV "Friction Free Valve" offers exceptionally low power operation with high reliability in all service applications. From either non stop cycling to low use applications the FFV gives wear free and frictionless operation.

The Friction Free Valve provides freedom from sticking even over long "intrinsically safe" and other low power wire loops.

CERTIFICATION

Europe

ATEX to EN 50020. II 1 GD EEx ia IIC T6.
PTB to VDE 0171 Ex is (Zone 1 & 2) G4, G5.
ATEX to EN 50021. II 3G EEx n A IIC T6 or T4.

North America

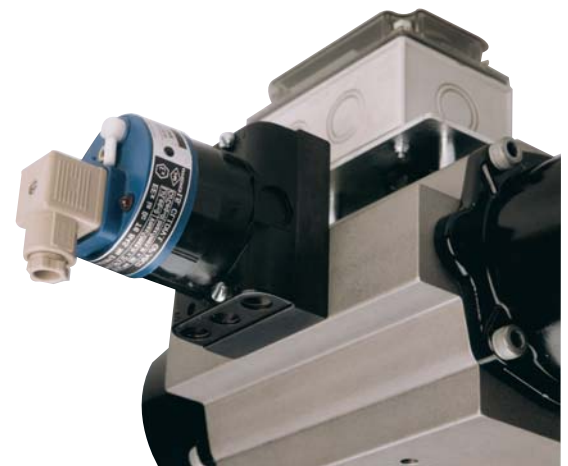
FM/USA Class I, Div 1, Groups A, B, C, D
(dependent on barriers used).

Specifying Information

The FFV consists of 3 basic sections:
The Electrical Parts:- Solenoid Operator Cap and Connector.
The main pneumatic parts: Valve Module section.
The pneumatic connection block: Port block or manifold.
The main part number consisting of 10 digits defines the valve. Select from the blocks below or speak with your technical sales representative for further advice.

KEY PERFORMANCE NOTES

- + Fast and positive control of equipment assured by high flow capacity.
- + Low power output controls can be used on large sites or long control loops with the FFV's extremely low power needs.
- + No sticking. Eliminate one of the most common plant valve problems with the FFV's friction free operation.
- + Up to 4 solenoids can be operated via one I.S. interface.
- + Minimize piping and simplify site installation using direct NAMUR actuator mounting options.
- + All common valve functions available to match virtually all process and control applications.
- + Manual "latch on" and L.E.D. "energized" indicator options valuable for process set-up and local plant control. Easier circuit "proving" and visual indication on "sequential" process control.
- + Certified to all major National and International standards.
- + A product manufactured by a leader in hazardous area technology, expert advice and application support is part of the service.



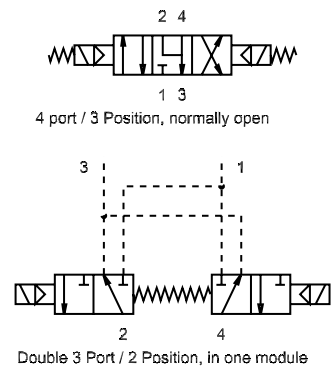
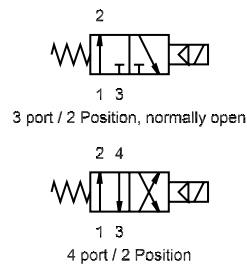
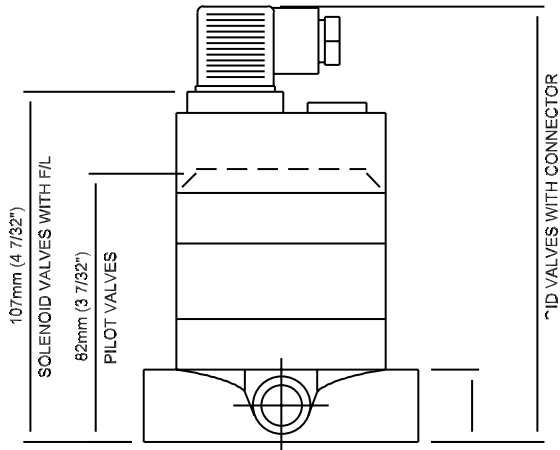
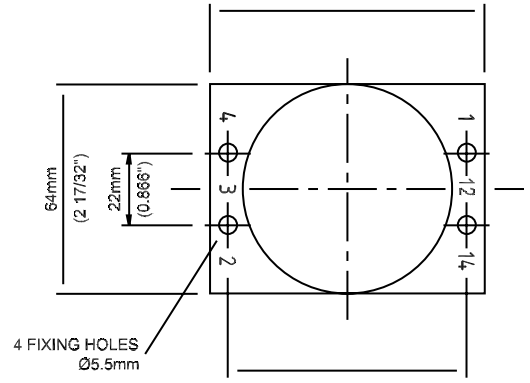
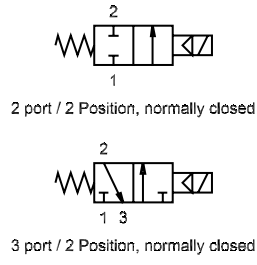
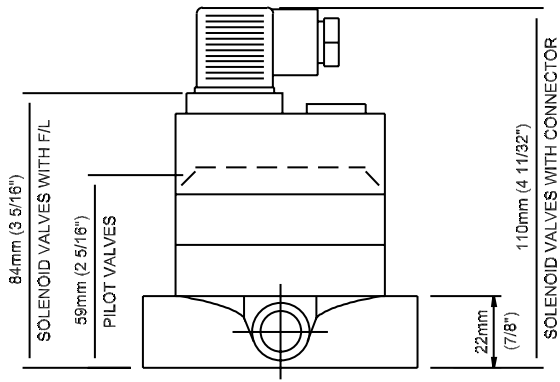
www.expoworldwide.com



ATEX



ISO 9001



Specifying Information

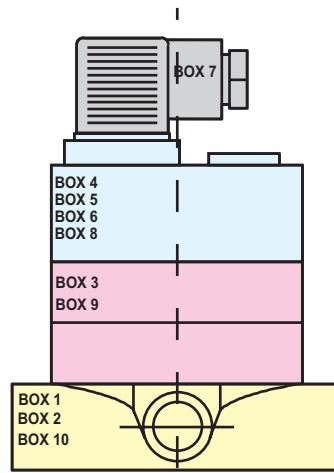
The FFV consists of 3 basic sections:

The Electrical Parts Solenoid Operator Cap and Connector.

The main pneumatic parts Valve Module section.

The pneumatic connection block Port block or manifold.

The main part number consisting of 10 digits defines the valve. Select from the blocks below or speak with your technical sales representative for further advice.



Standard materials

Solenoid Cap Maranyl housing with metal electrical parts.

Valve modules Kematal with metal springs and nitrile seals (optional seal materials)

Port Blocks Aluminium alloy LM6 anodized optional materials.

The intrinsically safe FFV's operate with suitable barriers available from all major suppliers. Further technical information is available covering other aspects of the solenoid valve range including dimensional information, installation data, manifolding options, materials, electrical criteria etc.

EXAMPLE

1 2 3 4 5 6 7 8 9 0
V 2 4 5 0 2 1 L 0 0

BOX 1

- V VALUE + STANDARD PORT BLOCK
- B VALUE + BRASS PORT BLOCK
- S VALUE + ST/ST PORT BLOCK
- M MODULE ONLY
- C VALVE + ALUMINUM MANIFOLD WITH STOP VALVES
- R NAMUR ADAPTER PLATE
- H VALVE + STEEL MANIFOLD

BOX 2 PORT SIZE

- 0 NOT APPLICABLE
- 2 1/4" BSP (G1/4)
- 3 1/4" BSP EPOXY PAINTED (G 1/4)
- 4 1/4" NPT EPOXY PAINTED
- 5 1/4" NPT/API
- 6 3/8" BSP (G3/8)
- 7 3/8" BSP EPOXY PAINTED (G3/8)
- 8 3/8" NPT EPOXY PAINTED
- 9 3/8" NPT

BOX 3 VALVE FUNCTION

- 0 NOT APPLICABLE
- 1 2 PORT 2 POSITION NORMALLY CLOSED
- 2 3 PORT 2 POSITION NORMALLY CLOSED
- 3 3 PORT 2 POSITION NORMALLY OPEN
- 4 4 PORT 2 POSITION
- 5 4 PORT 3 POSITION

BOX 4 OPERATOR

- 1 PILOT AIR
- 2 SOLENOID MANUAL RESET + MANUAL OPERATOR
- 3 SOLENOID MANUAL RESET
- 4 SOLENOID + MANUAL OPERATOR
- 5 SOLENOID + MOMENTARY OPERATOR
- 6 LOW ENERGY SOLENOID + MANUAL OPERATOR
- 7 LOW ENERGY SOLENOID + MOMENTARY OPERATOR
- 8 LOW ENERGY SOLENOID RESET + MANUAL OPERATOR
- 9 LOW ENERGY SOLENOID RESET + MOMENTARY OPERATOR

BOX 5 SECONDARY OPERATOR

- 0 SPRING RETURN
- 1 PILOT AIR
- 4 SOLENOID + MANUAL OPERATOR
- 5 SOLENOID + MOMENTARY OPERATOR
- 6 LOW ENERGY SOLENOID + MANUAL OPERATOR
- 7 LOW ENERGY SOLENOID + MOMENTARY OPERATOR

BOX 10 MANIFOLD VALVES

- 0 NOT APPLICABLE
- X SUPPLY COMMON EXHAUST COMMON
- Y COMMON SUPPLY ONLY
- Z COMMON EXHAUST ONLY

BOX 9 MODULE

- 0 STANDARD SEALS AND STANDARD PILOT SUPPLY
- 2 STANDARD SEALS AND SEPARATE PILOT SUPPLY
- 3 LOW TEMPERATURE SEALS AND STANDARD PILOT SUPPLY
- 4 LOW TEMPERATURE SEALS AND SEPARATE PILOT SUPPLY
- 5 VITON SEALS AND STANDARD PILOT SUPPLY
- 6 VITON SEALS AND SEPARATE PILOT SUPPLY

BOX 8 APPROVAL REFERENCE

- 0 NOT APPLICABLE
- A BASEEFA (GB) I.S. (SFA3012) (SUPERSEDED BY "L")
- C ATEX CAT 3 ZONE 2 Ex nA
- E PTB (D) I.S. (SUPERSEDED BY "L")
- L ATEX CAT I I.S. (EN 50 020)
- J FM (USA) I.S. (J & K)

BOX 7 SOLENOID CONNECTOR

- 0 NOT APPLICABLE
- 1 PLUG-IN CONNECTOR (PGA. DIN43650)
- 2 FLYING LEAD (1 METER LENGTH)
- 3 M20 FEMALE PLUG CONNECTOR
- 4 FLYING LEAD (2 METER LENGTH)
- 5 FLYING LEAD (4 METER LENGTH)
- 6 PLUG-IN CONNECTOR (1/2" NPT CONDUIT ENTRY)

BOX 6 SOLENOID VOLTAGE

- 0 NOT APPLICABLE
- 1 12-24V AC/DC
- 2 14-24V AC/DC
- 3 50V AC/DC
- 4 110V AC/DC
- 5 200-240V AC/DC

BARRIERS AND DRIVERS FOR INTRINSICALLY SAFE SOLENOID VALVES

ZENER BARRIERS

Units shown are for 24 V systems with earthed return. Units are also available for 18 V and 15 V systems and for floating returns. Units are certified [EEx ia] IIC (CENELEC) and for Class I Div 1 Grp A, B, C, D (USA).

CEAG-Crouse Hinds

GHG 111 9140 V 0728	Single Channel
GHG 114 9140 V 0779	Dual Channel

MTL

7708+ Overvolt protected	Single Channel
7728+	Single Channel
7779+	Dual Channel
4787+	Dual Channel
4787P+	Dual Channel
7028+	Single Channel
7128+	Single Channel
7208+	Single Channel

Note: The "Line Fail Detection" feature is NOT compatible with the FFV Solenoid.

Pepperl & Fuchs

Z129/Ex	Single Channel
Z229/Ex	Dual Channel
Z728/Ex	Single Channel
Z779/Ex	Dual Channel

Stahl

9001/01-280-085-10	Single Channel
9002/11-280-186-00	Dual Channel
9004/01-280-025-00	Single Channel

Electronic current limit

GALVANICALLY ISOLATED DRIVERS

Units shown are for 24 V systems unless otherwise stated. Units are certified [EEx ia] IIC (CENELEC) and for Class I Div 1 Grp A, B, C, D (USA).

CEAG-Crouse Hinds

GHG 138 331 A 7008	Single Channel
Loop powered	Single Channel
GHG 138 331 B 7008	Single Channel

MTL

3021 Loop powered	Single Channel
20 - 35 V dc	Single Channel
4021(/S)	Single Channel
With failsafe override	Single Channel
2241	Single Channel
240,110 Vac 24 Vdc	Single Channel
2242	Single Channel
240,110 Vac 24 Vdc	Four Channel
5021	Single Channel
Loop powered 20-35V dc	Single Channel
5024	Single Channel
20-35V dc Logic driven	Single Channel

Pepperl & Fuchs

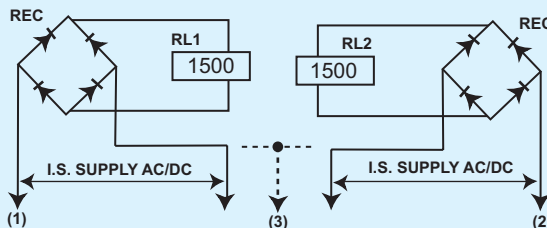
EGA-135	Dual Channel Eurocard
ED2-VM-Ex 4.35	4 Channel Eurocard
KFD2-SD-Ex 1.48	Single Channel loop powered
KFD2-SL-Ex 1.48	Single Channel logic input

Stahl

9351/10-16-10	Single Channel
9451/12-02-10	4 Channel Eurocard
9451/12-04-10	4 Channel Eurocard loop powered

This is a selection of suitable barriers. Other units from these or other manufacturers may also be suitable. A complete file is kept and further advice and guidance can be given. The inclusion or exclusion of any manufacturer does not imply any recommendation, but is provided only for the guidance of our users.

The FFV Low Energy Solenoid Cap



3 wire circuit is shown as broken line and is used when this plug-in connector is supplied. Pin connections are shown in brackets. Single solenoid uses pins 3 and 2.

Expo Technologies Ltd

Summer Road, Thames Ditton,
Surrey, KT7 0RH, UK
T +44 (0) 20 8398 8011
F +44 (0) 20 8398 8014
E sales@expoworldwide.com

Expo Technologies Inc

P.O. Box 486, Chagrin Falls,
Ohio 44022-0486, USA
T 888-NFPA-496 (Toll Free)
F +1 440 247 5409
E sales.na@expoworldwide.com

www.expoworldwide.com

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