



Data Sheet

Pneumatic Valves

Friction Free

High Performance and Intrinsically Safe
Solenoid Valve



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.

Explosion Protection

Hazardous Area classification:

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 nA 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 Operation 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 block on the back page or contact our technical sales representative for further advice.

Features

- + 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 "match 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. Provides expert advice and application support services.



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Purge + Pressurization + Innovation

www.expoworldwide.com

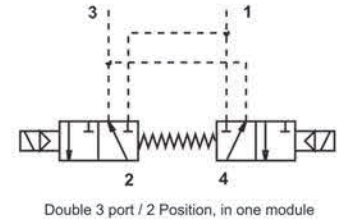
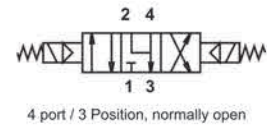
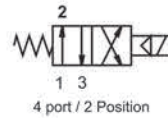
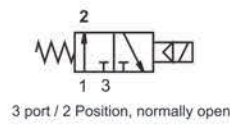
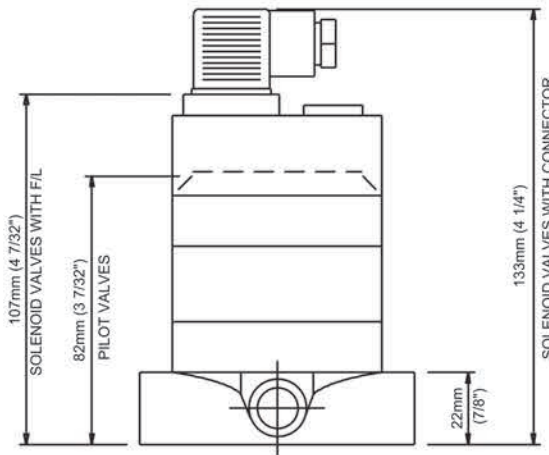
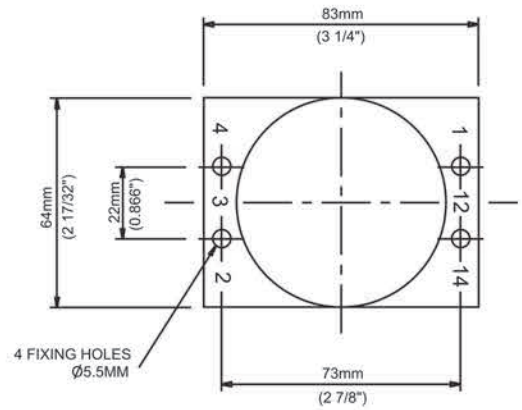
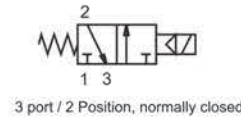
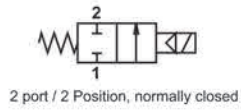
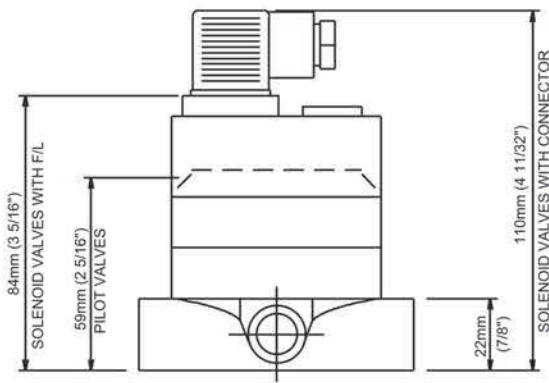


CE ISO 9001

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Pneumatic Valves (Friction Free)

Technical Specification



Outline Performance Data

Range of pneumatic functions

- 2 port 2 position normally closed.
- 3 port 2 position normally closed.
- 3 port 2 position normally open.
- 4 port 2 position.
- 4 port 3 position.
- Double 3 port 2 position in one valve module.

Manual reset

Option for when operator reset after valve "trip" is required. May be located on the valve or remotely piped.

Manifolds

Options for materials and function, common exhaust and supply options plus integrated individual stop valve options.

Port Blocks

NAMUR adapter plates for direct mounting to valve actuators are a standard option.

Operating Speed (typical)

70mS (3 port 2 position) 110mS (4 port 2 position).

Environment Suitability

-10°C to +65°C (+14°F to +150°F)
-20°C to +65°C (-4°F to 150°F)
Low temperature seals.

Nominal voltage AC/DC	**14-24	12-24	50	110	220/240
Operating voltage range	13-26.4	10.8-26.4	45-55	99-121	*198-264
Nominal current mA	9.5-16	8-16	11	11	10
Power consumption Watt	0.15-0.4	0.1-0.4	0.6	1.3	2.4
Total resistance Ohm	1.5k	1.5k	4.5k	9.7k	25.0k
Rating	Continuous				

The built in bridge rectifier, as well as permitting AC or DC operation, effectively eliminates back e.m.f. spikes when the valve de-energizes.

*216V for type N approved valves **Low energy type

Flow Capacity

With 4 bar (58 psi) inlet pressure and unrestricted outlet: 821 liters/min (29 scfm).
With 6 bar (87 psi) inlet and unrestricted outlet: 1175 liters/min (41.5 scfm). Please consult Expo Technologies for more details flow data.

Expected life

Better than 100 million cycles under standard conditions.

Air quality

Filtration to better than 50 micron particle size and dew point below expected ambient temperature. Lubricated air is not required but is not detrimental.

Pressure Limits

3/2 n/c & 2/2 n/c, 2-9 bar (30-130 psi). 4/2 and 3/2 n/o, 4-7 bar (60-100 psi). 4/3, 2-7 bar (30-100 psi). Separate pilot supply and other low pressure valves are available. Outside this range, consult Expo Technologies for options.

Specifying Information

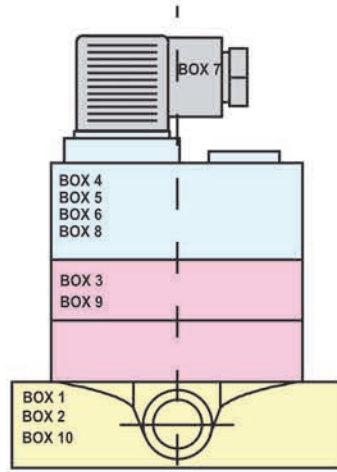
The FFV consists of 3 basic sections:

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 our technical sales representative for further advice.



Specifying Information

Solenoid Cap: Maranyl housing with metal electrical parts.

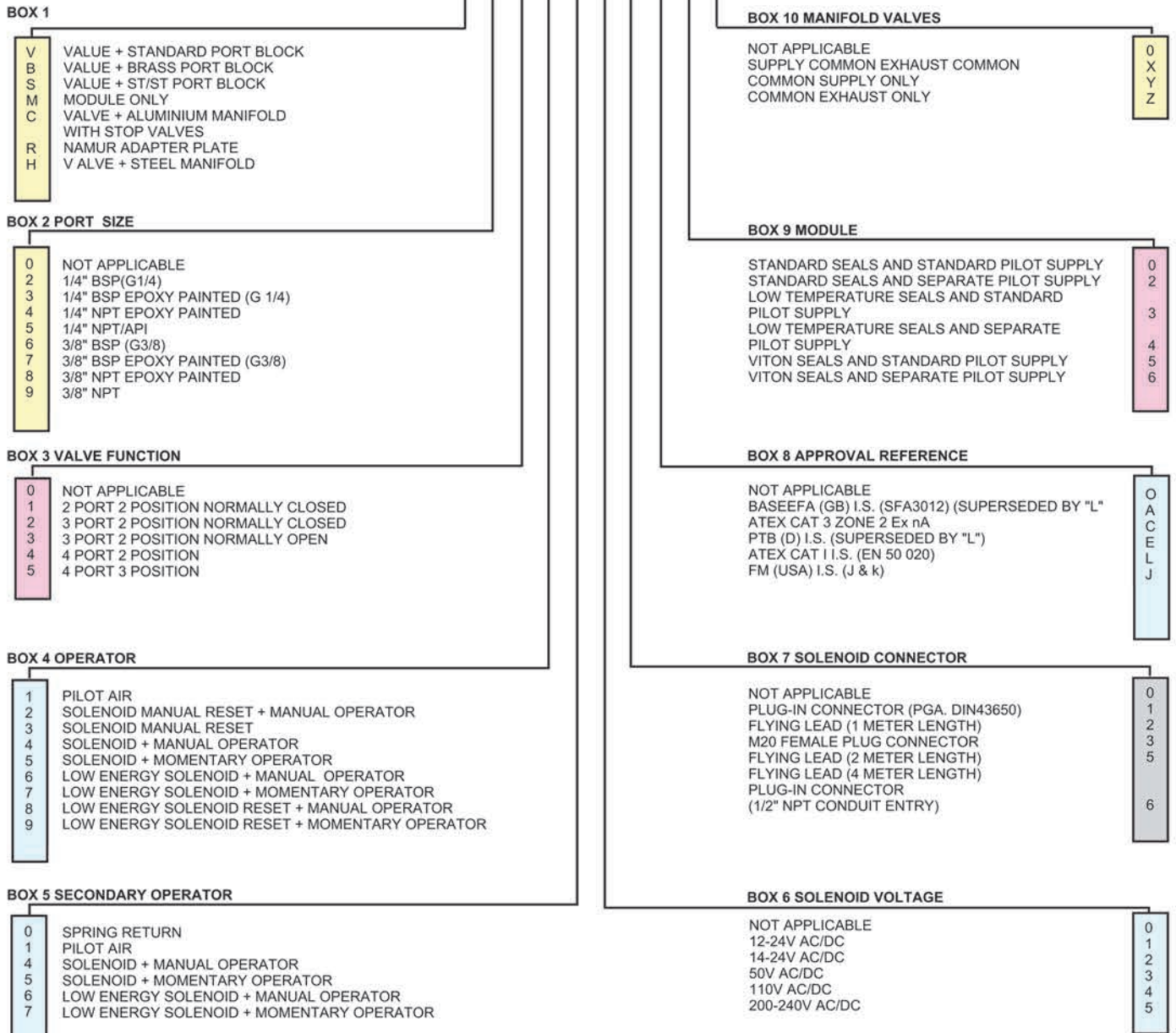
Valve modules: Kemetal with metal springs and nitrile seals (optional seal materials)

Port Blocks: Aluminum 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 3 4 0 2 1 L 0 0



Purge + Pressurization + Innovation.

Friction Free Valve

BARRIERS AND DRIVERS FOR INTRINSICALLY SAFE SOLENOID VALVES

ZENER BARRIER

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

CEAG-Crouse Hinds

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

MTL

7708+ Over volt protected Single Channel
7728+ Single Channel
7779+ Dual Channel
4787+ 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 certified [EEx ia] IIC (CENELEC) and for Class I Div 1 Group A, B, C, D (USA).

CEAG-Crouse Hinds

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

MTL

3021 Loop powered Single Channel
20 - 35V dc Single Channel
4021(/S) Single Channel
with fail safe 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 - 35Vdc Single Channel
5024 Single Channel
20 - 35V dc Logic driven Single Channel

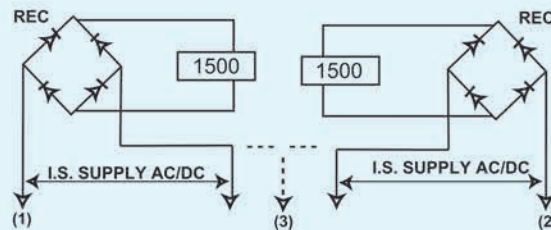
Pepperl & Fuchs

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

935/10-16/10 Single Channel
9451/12-02-10 4 Channel Eurocard
9451/12-04-10 4 Channel Eurocard loop powered

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.

This is a selection of suitable barriers. Other unit 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.

