May 2015

SLAM SHUT VALVE

DESCRIPTION

The slam shut valve type VSX2 provides a protection of the network, downstream of the associated regulator, by immediately shutting off the gas flow in case of an under or over pressure situation.

- The slam shut valve can be mounted on various types of Fisher-Francel regulators.
- The VSX2 is equipped with an integral and automatic bypass, and has an adaptable disc-size for the associated regulators.
- The VSX2 offers the possibility of an internal or external sensing line dependable of the regulator type and/or the specified conditions.
- The VSX2 is interchangeable.

The VSX2 exists in two versions:

- LP version with a large diaphragm and a non-balanced plug stem.
- HP version with a reduced diaphragm and a balanced plug stem..

CHARACTERICS

Maximum inlet pressu	10 bar		
Maximum operating p	10 bar		
Maximum admissible	10 bar		
Maximum temperature	-30 to +71°C		
Reset trip mechanism	Manual		
Lead seal & wire	Possible		
Weight		1 kg	
Connections	Slam shut vent(4)	1/4" NPT	
	External sensing line IS(5)	1/4" NPT	
	Tube I.D. Ø	4 mm	
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- (1) Pressure/temperature limits in this manual, and any applicable code or standard limitations must not be exceeded.
- (2) Under the diaphragm, without external leakage and without operating failure.
- Under the diaphragm, without external leakage, internal parts may be damaged
 Normally equipped with a square plastic vent containing a protection screen.
- (5) Normally plugged with a plastic plug.

Accuracy	Ps > 20 mbar	Ps = 20 mbar	Ps = 10 mbar
AG (max.)	10	10	10
AG (min.)	10	15	n.a.





Figure 1. Type VSX2 Slam Shut Valve

DIMENSIONS

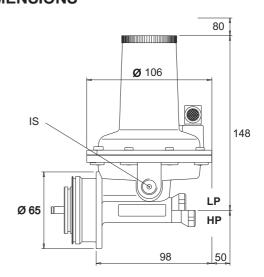


Figure 2. Type VSX2 - Dimensions



This instruction manual should be used in conjunction with the manual of the associated regulator.





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TRIPPING PRESSURE RANGES

	Regulator Setpoing		Spring Ranges (mbar)		VSX2 Spring Characteristics and Codes				
Version	(mbar)				Spring Ø (mm)		Spring Codes		
	Min.	Nominal	Max.	Min.	Max.	Min.	Max.	Min.	Max.
	10	20	30	5 to 30	30 to 60	1,1	1,7	FA142866T12	FA142859T12
	> 30	35	50	5 to 30	50 to 130	1,1	2,0		FA142860T12
	> 50	60	80	10 to 75	50 to 130	1,4	2,0	FA142867T12	FA142800112
LP	> 80	100	130	10 to 75	95 to 240	1,4	2,3		FA142861T12
Lr	> 130	160	250	25 to 160	150 to 380	1,7	2,6	FA142868T12	FA142862X12
	> 250	300	400	100 to 350	260 to 600	2,4	3,1	FA142869X12	FA142863T12
	> 400	500	700	100 to 500	400 to 1100	2,4	3,5		FA142864T12
	> 700	1000	1100	100 to 750	800 to 1600	3,2	4,1	FA142870T12	FA142865T12
HP	> 1100	1250	1500	500 to 1000	1100 to 2000	2,4	3,1	EA1400/0V/10	FA142863T12
	> 1500	2000	2500	500 to 2000	1700 to 3700	2,4	3,5	FA142869X12	FA142864T12
	> 2500	4000	4000	500 to 2800	2800 to 5500	3,2	4,1	FA142870T12	FA142865T12

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STANDARD FACTORY SETTINGS

Regulator Set Point	Slam Shut Standard Setting			
Pd (mbar)	Minimum	Maximum ⁽¹⁾	Maximum ⁽²⁾	
Pd < 35	Pd x 0,5	Pd x 2,0	Pd x 2,0 + 10	
35 <= Pd < 60	Pd x 0,5	Pd x 1,7	Pd x 1,7 + 10	
60 <= Pd < 160	Pd x 0,6	Pd x 1,5	Pd x 1,5 + 10	
160 <= Pd < 180	Pd x 0,7	Pd x 1,4	Pd x 1,4 + 10	
180 <= Pd < 300	Pd x 0,7	Pd x 1,4		
300 <= Pd	Pd x 0,7	Pd x 1,3		

⁽¹⁾ Regulator without relief valve (or with relief valve set above slam shut)

(2) Regulator with relief valve (set below slam shut)

VSX2 Assembly Part No. (without valve and tripping springs)				
LP	FA181101X12			
HP	FA181102X12			

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OPERATION

The downstream pressure is sensed under the diaphragm (item 1). When the pressure increases above the maximum set point, or decreases below the minimum set point, the trip mechanism (item 8) releases the locking ball (item 9) which causes the valve plug to close. The slam shut is put into service by the resetting knob (item 6).

Mechanism (Figure 3)

Item.	Description	Material
1	Reinforced diaphragm	Nitrile
2	Max. tripping setpoint spring	
3	Max. tripping setpoint nut	Brass
4	Min. tripping setpoint nut	Brass
5	Min. tripping setpoint spring	
6	Resetting knob	Brass
7	Plug stem	SS steel
8	Tripping mechanism	
9	Locking ball	SS steel
10	Body/spring case	Chromated alu.
15	Diaphragm reducer	Chromated alu.
16	Stem guide	Brass

Example:

• Regulator without relief valve: for an outlet pressure (Pd) = 20 mbar max. tripping setpoint is Pd x 2 = 40 mbar

 Regulator with token relief valve set below max. tripping setpoint:

for an outlet pressure (Pd) = 20 mbar max. tripping setpoint is Pd x 2 + 10 = 50 mbar

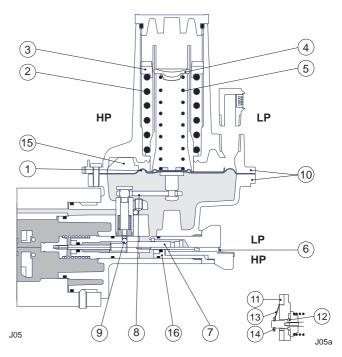


Figure 3. Type VSX2 - Principle of Operation

Valve with bypass (Figure 3)

(depending on regulator type) (Schéma J05a)

	Description	Code	Material
11	Valve C2	FA140811X12	Nitrile
	Valve C3	FA142130X12	Nitrile
12	Bypass O-ring	FA400501X12	Nitrile
13	"Star" spring (C3 valve only)	FA144064X12	SS steel
14	Fastner	FA406153X12	

COMMISSIONING



WARNING

This instruction manual should be used inconjunction with the manual of the associated regulator.

SLAM SHUT VALVE SPRING ADJUSTMENTS



WARNING

Before proceeding with the adjustment of the slam shut springs, the operator has to ensure that the upstream and downstream valves are closed, that the regulating line is put out of operation and the adjusting screws (items 3 & 4) are unscrewed.

Max. and min. trip setting (standard)

- SCREW
 - → Max. tripping setpoint nut (item 3)
- **ADJUST**
 - → Min. outlet pressure
- SCREW
 - → Setpoint nut (item 4) until tripping occurs
- ADJUST
 - → Max. outlet pressure
- - → Max. tripping setpoint nut (item 3) until tripping occurs
- CONTROL
 - → Max. and min. tripping pressure values
- ADJUST
 - → Tripping sertpoint if necessary

Max. only trip setting

Fully unscrew the min. tripping setpoint nut (item 4) or remove the min. spring (item 5) to avoid min. pressure tripping.

- **ADMIT**
 - → Max. tripping pressure on outlet side
- - → Max. tripping setpoint nut (item 3) untill tripping occurs
- CONTROL
 - → Max. tripping pressure value
- ADJUST
 - → Tripping setpoint if necessary

Min. only trip setting

Fully unscrew the max. tripping setpoint nut (item 3) to avoid max. pressure tripping.

- ADJUST
 - → Min. tripping pressure on outlet side
- - → Min. tripping sertpoint nut (item 4) until tripping occurs
- - → Min. tripping pressure value
- ADJUST
 - → Tripping setpoint if necessary

Manual tripping procedure

For closing by min. tripping, after isolating the regulator and slam shut valve with block valves, the gas must be purged to the atmosphere to close the slam shut valve (perform these operations with the regulator under pressure).

Manual reset procedure

Turn the resetting knob (item 6) 6 turns to permit the gas to flow through the internal progressive bypass.

In the case of low nominal outlet pressure (20 mbar for example), gently turn the resetting knob to obtain a smooth outlet pressure increase.

In the case of high nominal outlet pressure, turn the resetting knob auicker.

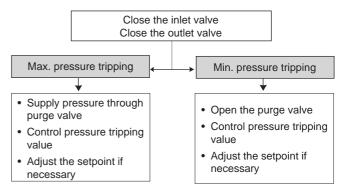
When there is equal pressure on both sides of the valve, pull out completely the resetting knob (item 6) to reset the tripping mechanism (item 8).

After resetting, gently push back the resetting knob and screw back until tight.

MAINTENANCE

RECOMMENDATIONS

Twice yearly, control the tripping mechanism as described below:



DISASSEMBLY

Recommanded frequency:

Every 3 years, control O-rings, valve plug and diaphragm.

Tools:

Six-sided spanner 2,5 Torx screwdriver 2,5

REGAL2F spring setting tool no. FA142932X12



Type VSX2

- CLOSE
 - → Inlet and outlet valves
- OPEN
 - → Purge valve
- UNSCREW
 - → Screw (item 1) (six-sided spanner 2,5)
- REMOVE
 - → Slam shut assembly
- PULL OUT
 - → Lock ring (item 3)
- REMOVE
 - → Valve plug (item 4) and O-ring (item 2)
- UNSCREW
 - → Adjusting nuts (items 8 & 9)
- UNSCREW
 - → Screw (item 5) (Torx screwdriver 2,5)
- REMOVE
 - → Spring casing (item 7)
- REMOVE
 - → Diaphragm assembly (item 6)



The disassembly of the stem plug/ tripping mechanism assembly can only be performed in the factory (specialized tool required).

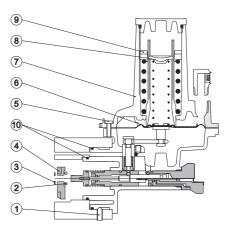


Figure 4. Type VSX2 - Maintenance

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ASSEMBLY

Perform the same operations as for disassembly in reverse order. Lightly lubricate all O-rings (silicone grease recommended).

SPARE PARTS

The spare parts kit for the VSX2 slam shut includes a diaphragm assembly (item 6) and a set of O-rings (items 10 and 2). A metal plug for external sensing line obturation: code FA135232X12.

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