SLAM-SHUT VALVE

Type OSE

FISHER™

EMERSON™

Type OSE Slam-Shut Valve

DESCRIPTION

The purpose of the OSE slam shut valve is to totally and rapidly cut off gas flow when the outlet pressure exceeds or drops below the setting.

The OSE is equipped with an OS2 release relay. The OS2 has the same essential characteristics as the previous one, a double-stage mechanism, including:

- ***Accuracy, independent of inlet pressure, flow rate and size of the regulator***
- ***High resistance to shocks and vibrations***
- ***High sensibility to tripping***

The following characteristics have been added:

- ***Visual indication of the first stage position***
- ***Relay tightness (IP 68 (IP 66 for explosion proof and connector box))***
- ***Stainless steel mechanism***
- ***Second stage releasing with electrical contact***
- ***Ergonomical and reset key***
- ***Electrical contact internally protected by the release relay***
- ***Relay cap with possibility of leaded sealing***
- ***Tripping by increasing the maximum pressure (piston detection)***
- ***Possibility of minimum only tripping***

Incorporated in the Type OSE DN 25 through 150 is an automatic internal bypasse valve mechanism, which balances pressures on both sides of the plug when resetting. For sizes DN 200 and 250 the bypass is external.

APPLICATIONS

The OSE slam-shut valve serves to provide overpressure and/or underpressure protection in transmission networks, gas distribution systems and gas supply lines for industrial customers. The slam-shut can be used in networks with inlet pressure levels up to 100 bar. It's set range is from 10 mbar to 100 bar. It exists in sizes DN 25 to 250.

BENEFITS

- ***Flexibility***
  Interchangeable spring
- ***Security***
  Internal bypass (DN 25 to 150)
- ***Water Tight***
  Functions in the event of temporary immersion
- ***High Precision***
  Two-stage tripping mechanism
- ***Large Tripping Range***
  Interchangeable box

OPTIONS

- **Electrical Remote Sensing**:
  - Explosion proof version with 3-wire connection
  - Explosion proof version and connector box
  - Intrinsical safe tight-shut connector
- **Second Sensing Box** (max and/or min)*
- **Manual Push Button Trigger Switch****
- **Remote Control with Solenoid Valve**
- **Additional manometric device for extra pressure sensing**

In the case of high pressure applications, there is a choice between :

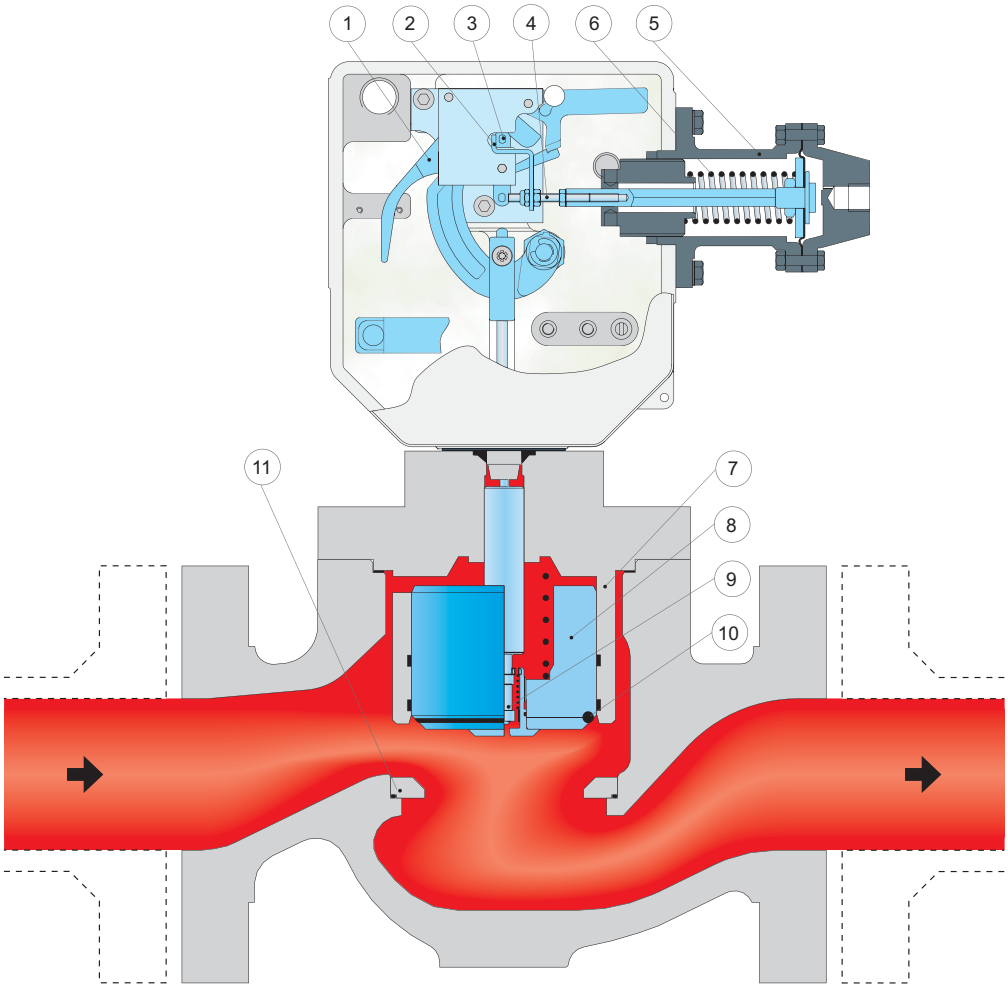
- **Detection by bellows**
  (high accuracy, max and/or min)
- **Detection by piston**
  (very high accuracy, max only or min only).

CONNECTIONS

Inlet/Outlet:		ISO PN 100B2/50 B1/20 B (ANSI 600/300/150 RF)
Slam-shut sensing line (IS):		Tapped 1/4'' NPT
Slam-shut vent (E):		Tapped 1/4'' NPT
Sensing line (IS):		Minimum interior Ø 8 mm
Contact:	Type C1	3 m of 3-wire cable
	Type C2	Explosion proof
	Type C3	Intrinisical safe

* *In this type of configuration the first sensing box is set at max. only.*
** *Instead of a second sensing box.*

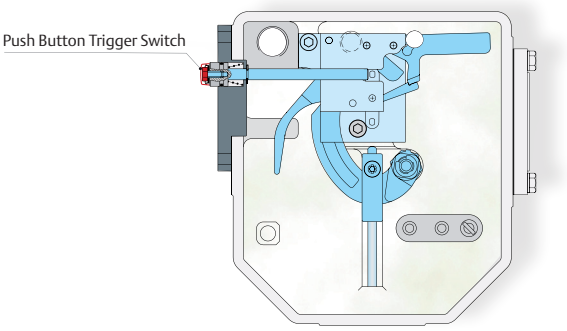
PRINCIPLE OF OPERATION



Type OSE Slam-Shut Valve DN 25 through DN 150 - Principle of Operation

When the pressure becomes too high (or too low), the stem of the manometric box (key 4) moves and triggers the release of the detection stage (key 3) which activates the power stage (key 1) causing the slam-shut plug (key 8) to close.

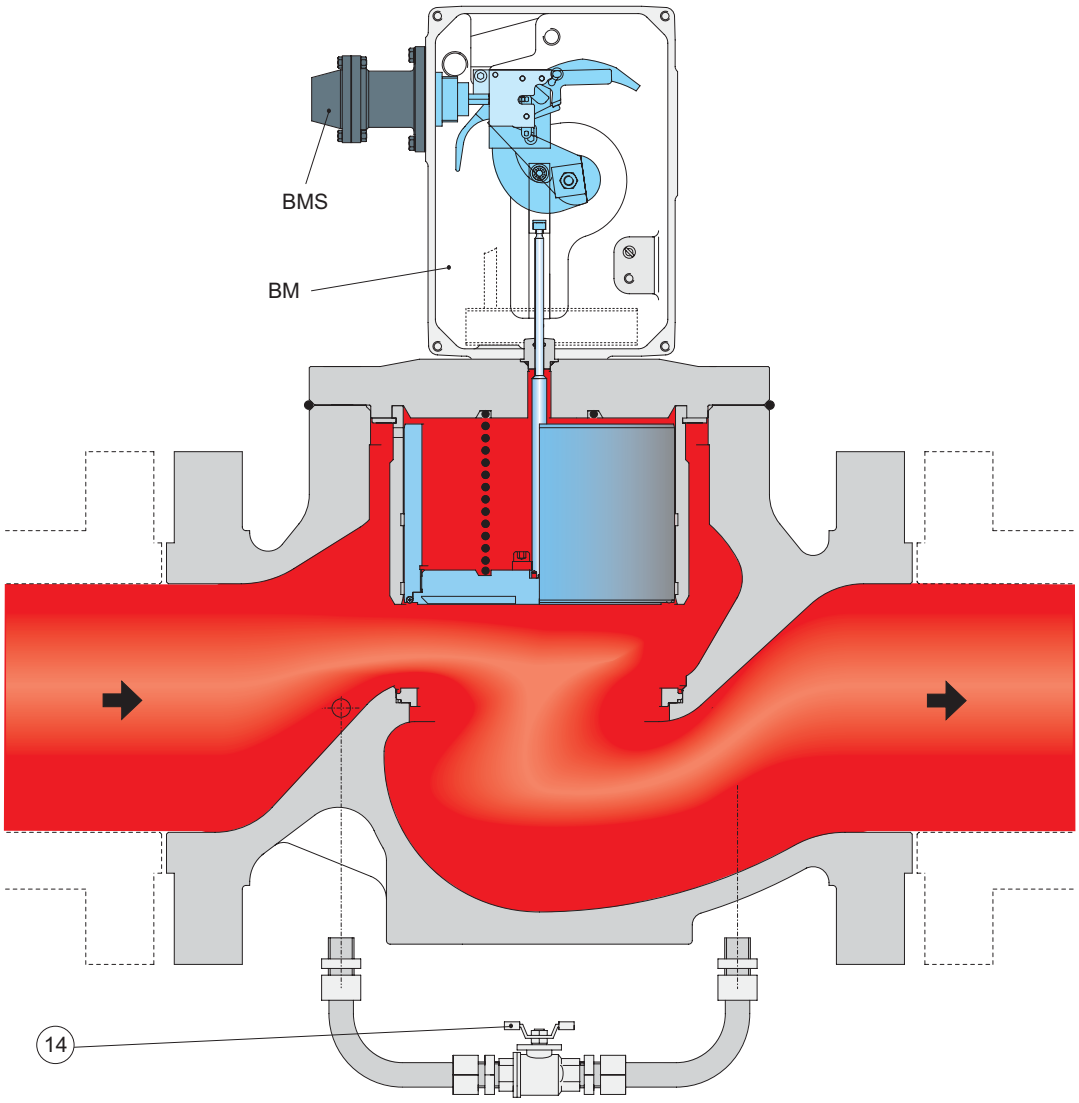
Tight shut-off is ensured by the valve seal ring (key 10) pushing on the seat (key 11). This shut-off progresses due to the “dash pot” effect between the stem (key 7) and the plug (key 8). A guide made from composite material avoids any risk of the plug jamming.



OSE - Version with Push Button Trigger Switch (Option)

Type OSE Slam-Shut Valve

PRINCIPLE OF OPERATION (cont'd)



Type OSE Slam-Shut Valve with External Bypass DN 200 and DN 250 - Principle of Operation

Rearming remains manual. It consists of two phases: one phase to balance pressure (inlet and outlet) using the automatic integral bypass for DN 25 through DN 150 (key 9) or external bypass for sizes DN 200 and DN 250 (key 14) and a second phase which opens the plug.

The automatic integral bypass avoids the risk of the plug remaining open, which can occur with an external bypass. It is possible to change the flow direction by simply turning the mechanism box. The bypass valve used for DN 200 and DN 250 should be closed after the pressure balance on inlet and outlet is obtained.

Changing to different maximum slam-shut settings is effected by adjusting the spring (key 6) of the manometric box (key 5), changing the spring (nine standard sizes), or by changing the manometric box (six sizes).

Changing to minimum slam shut setting is effected by simply adjusting the hook (key 2) on the stem (key 4) of the manometric box.

CHARACTERISTICS

Operating Pressure: Pu — 100 bar max

Set Pressure Range: Wdu-Wdo — 0.010 to 100 bar

Sizes inlet/outlet : DN — 25, 50, 80, 100, 150, 200 and 250

Temperature Range: (depending on bolts materail) θ — - 20 to + 60° C / - 30 to + 71° C

Accuracy: AG — ± 2,5 % / ± 5 % (piston)

Response Time: ta — < 1 second

Flow Cooefficent (Cg)

Basis

Natural Gas
Density: 0.74 kg/m³
Temperature : 0 °C

Example

Pu : 50 bar
dP : 0.2 bar
Q : 10000 (m³/h(n))

Input

Pu : Inlet pressure (bar)
dP : Pressure drop (bar)
Q : Maximum flow (m³/h(n))

Result

Cg : 3300
DN : 80

Flow Coefficient (ΔP max)

DN	Cg	C1	ΔP max (bar)	
			Valve open	Valve closed
25	505	35	> 25	100
50	2110	35	> 25	
80	4670	35	25	
100	7860	32	10	
150	14850	33	6	
200	28830	34.6	8.2	
250	42180	35.5	4.6	
Internal Bypass (DN 25 to 150)	25	35	100	
External Bypass (DN 200 to 250)	133	32.8		

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Set Pressure Ranges

Recommended Outlet Pressure Pd		BMS		SPRING	MAX ONLY			MIN INTERVAL Set Point Pd(3) (bar)
					Wdso Ranges (bar)			
		Size(1)	PMS Box (bar)	Wire Diameter (mm)	Max. low pt possible	Recommended Range(2)		
						Max. low pt	Max. high pt	
0.011	0.027	162	5	2.0	0.010	0.015	0.035	0.004
0.027	0.062			2.5	0.025	0.040	0.080	0.005
0.062	0.108			3.0	0.045	0.080	0.140	0.010
0.108	0.185			3.5	0.070	0.070	0.240	0.014
0.185	0.292			4.0	0.115	0.140	0.380	0.018
0.292	0.577			5.0	0.140	0.300	0.750	0.050
0.577	1.083			5.5	0.250	0.600	1.3	0.080
1.083	1.917			6.5	0.450	1.2	2.3	0.170
1.917	4.250	071	16	4.5	1.0	2.0	5.1	0.350
4.250	9.167			5.5	2.1	4.0	11.0	0.700
9.167	13.333			6.5	4.0	8.0	16.0	1.6
13.333	18.333	027	100	5.5	16.0	16.0	22.0	3.0
18.333	33.333			6.5	22.0	22.0	40.0	6.5
33.333	45.833	017	100	5.5	40.0	40.0	55.0	7.0
45.833	83.333			6.5	55.0	55.0	100.0	12.0
13.333	18.333	236	35	5.5	5.5	11.0	22.0	1.0
18.333	29.167			6.5	8.3	16.0	35.0	2.5
29.167	60.000	315	72	5.0	17.5	35.0	72.0	5.0

This table is based on a setpoint equal to 1.3 Pd for a Pd up to 1 bar, and 1.2 Pd for a Pd from 1 bar.

(1) Boxes 162 and 071 are equipped with a diaphragm, 027 and 017 are equipped with a piston, and 236 and 315 are equipped with bellows.

(2) The recommended set point range permits a guarantee of the accuracy (AG).

(3) Respecting the minimum interval between the Wdso setting and the Pd permits a guarantee of resistance to shocks.

For max and min, or min only, contact FRANCEL.

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Type OSE Slam-Shut Valve

MATERIALS

Valve Assembly

Body	A 352 LCC Steel
Connecting Part	A 350 LF2 Zinc Plated Steel
Plug	Stainless Steel
Seat	Stainless Steel
Bypass	Stainless Steel
Spring	Zinc Plated Steel
O-rings	Nitrile
Stem	Stainless Steel
Packing Gland	Bronze

Type OS2 Release Relay

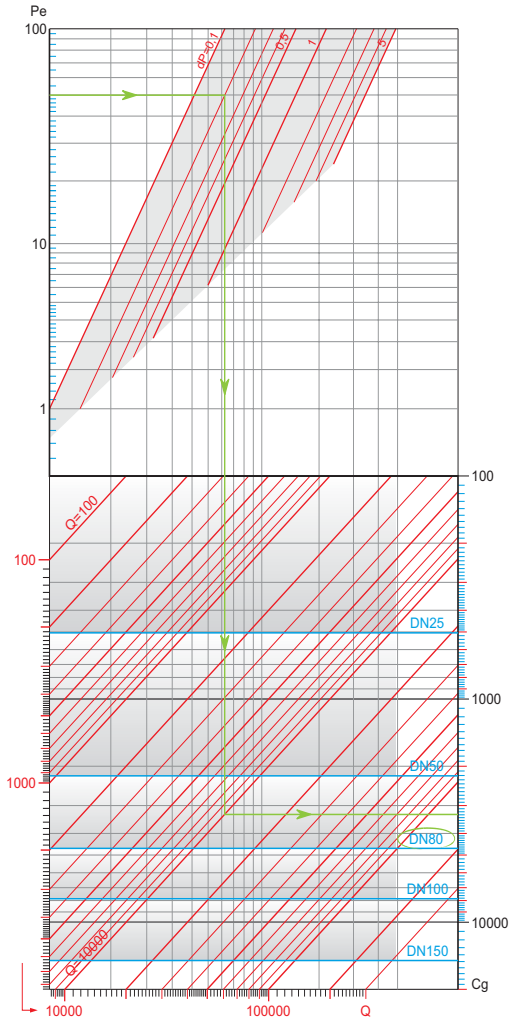
Mechanism Box

Box	Chromium Plated Aluminium
Cover	Chromium Plated Aluminium
Mechanism	Stainless Steel / Brass
Flat rings	Propyene
Truarc rings	Nitrile

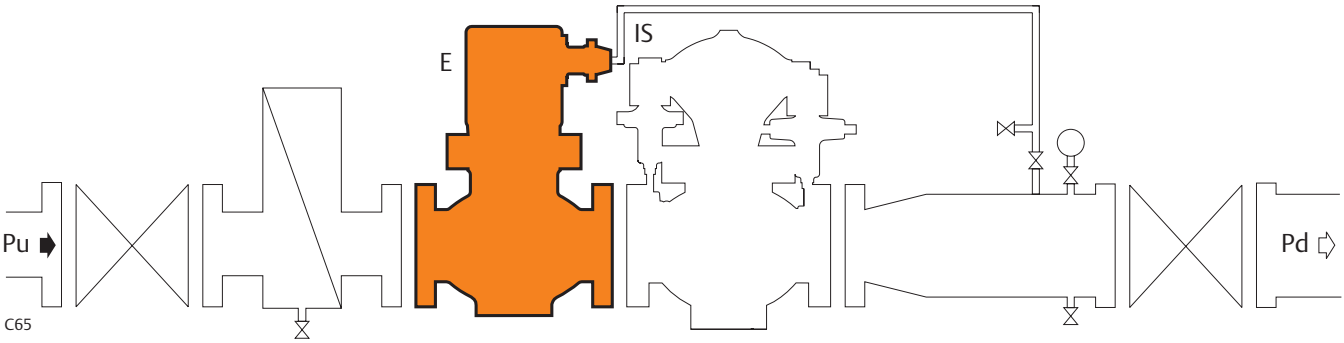
Manometric Box

Spring Case	Stainless Steel
Spring Box	Chromium Plated Aluminium
Diaphragm	Nitrile mesh
Piston	Stainless Steel
Bellows	Stainless Steel
Spring	Zinc Plated Steel
Adjustment screw	Zinc Plated Steel

SIZING



INSTALLATION

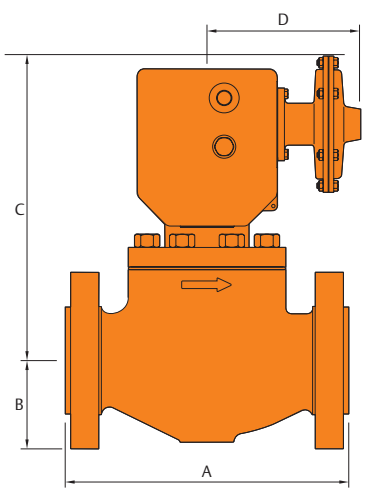


Install the slam-shut valve on horizontal pipeline.

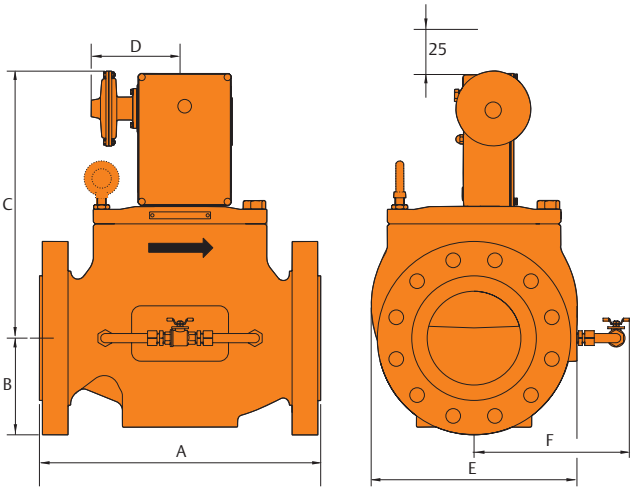
The safety manometric box impulse should be connected before the outlet valve on the on the straight run of pipeline.

If the remote alert option is applicable it must be electrically connected

DIMENSIONS & WEIGHTS



Type OSE DN 25 through DN 150



Type OSE DN 200 and DN 250

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DN	ANSI	DIMENSIONS						WEIGHTS (kg)
		A	B	C Max	D	E	F	
25	150	185	54	334	220	116		14.0
	300	197	62			124		16.0
	600	210						17.0
50	150	254	76	346		152		26.0
	300	267	83			165		29.0
	600	287						32.0
80	150	298	95	380		190		43.0
	300	318	105			210		48.0
	600	337						55.0
100	150	353	114	420		229		74.0
	300	368	127			154		82.0
	600	394	137			273		98.0
150	150	451	140	424		357		150.0
	300	473	159					166.0
	600	508	178					202.0
200	150	543	171.5	579		446	336	294
	300	568	190.5					321
	600	610	209.5					356
250	150	673	203	667		498	363	469
	300	708	222					504
	600	752	254					577

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