



SCN



Slam Shut
Valves



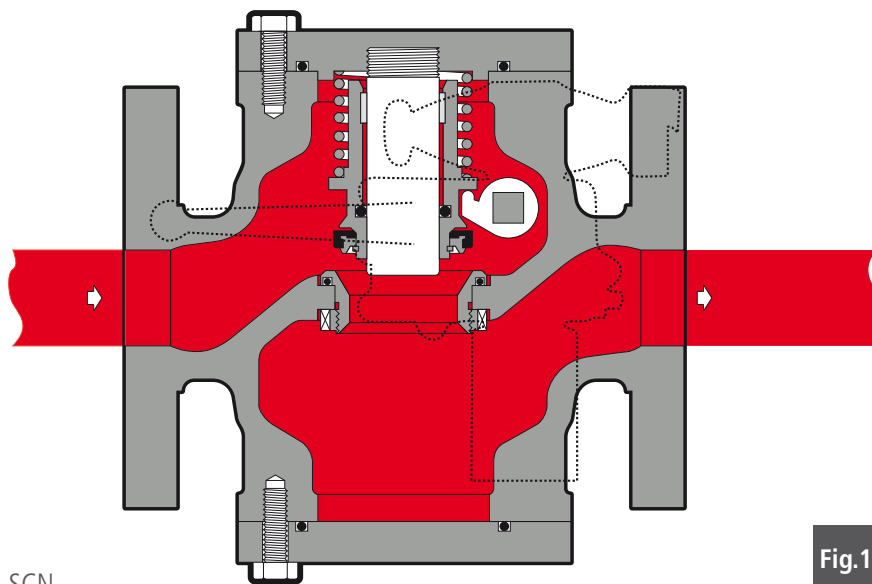
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Introduction

SCN is a compact safety device (SAV) which quickly intercept gas flow whenever the pressure under monitoring reaches a pre-set limits, or whenever manually required by operator on site or through a remote command (optional device).



SCN

Fig.1

Main Features

SCN is a slam-shut valve with self operated actuation and manual resetting, it is an ideal product for distribution networks, industrial and chemical engineering applications. **SCN** is suitable for natural gas and all non-corrosive gaseous media.

Its "top entry" design allows an easy maintenance without removing the body from the pipeline.

- Intervention for overpressure and/or underpressure;
- Manual push-button control at installation point;
- 3 way solenoid valve for remote control (available on request);
- Manual re-setting;
- Internal by-pass for pressure equalization before resetting
- Possible installation in any position although installation on horizontal pipes is recommended.



SCN

Designed
With Your
Needs In Mind

- Compact Design
- Easy Maintenance
- Top Entry
- Fast Response Time
- High Accuracy
- Wide size range
- Third Party Certified Safety Device
- Integral By-Pass



Main Features

- Design pressure: up to 18.9 bar (275,5 psi)
- Design temperature: -20 °C to +60 °C (-14 to + 140 °F)
- Ambient temperature: -20 °C to + 60 °C (-4 to + 140 °F)
- Range of intervention for the pressure increase W_{ho} : 0,01 to 5 bar (4" w.c. to 72,5 psi)
- Range of intervention for the pressure decrease W_{hu} : 0,005 to 2,7 bar (2" w.c. to 36,25 psi) (depending on installed pressure controller)
- Accuracy class AG: $\pm 5\%$ to 10% for over pressure, $\pm 10\%$ to 20% for under pressure
- Available size DN: 1" - 1" ^{1/4} - 1" ^{1/2} - 2" - 2" ^{1/2} - 3" - 4" - 6" - 8"
- Flanging: class ANSI 150 - RF or FF according to ANSI16.5 and PN16 according to ISO 7005

Materials

Body	Cast steel ASTM A216 gr. WCB for all sizes - Spheroidal ductile iron DN $\leq 6"$
Valve seat	X12CrS13 UNI 6901-AISI 416 for DN 1" to 3" Carbon steel chromium-plated for DN 4" to 8"
Plug	X12CrS13 UNI 6900-71-AISI 416 for DN 1" to 3" Carbon steel chromium-plated for DN 4" to 8"
Plug gasket	Nitrile rubber vulcanized on metal
Seals	Nitrile rubber seal
Diaphragm casings	Die cast aluminium GD-AI SI 13 Fe UNI 5079-74
Press. controller diaphragm	Nitrile rubber vulcanized
Compression fitting	According to DIN 2353 in zinc-plated carbon steel

The characteristics listed above are referred to standard products. Special characteristics and materials for specific applications may be supplied upon request.



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Calculation of the pressure drop

The following formula can be used to calculate pressure losses of the slam shut valve with the obturator at full open position:

$$\Delta p = \frac{K_G \times P_u - \sqrt{(K_G^2 \times P_u^2) - 4Q^2}}{2 \times K_G}$$

Δp = pressure loss in bar

P_u = absolute inlet pressure in bar

Q = flow rate inlet Stm^3/h

K_G = flow coefficient

Pressure loss calculated as above is referred to natural gas with specific gravity of 0.61 (air=1) temperature of 15 °C at valve inlet, for gases with different specific gravity S and temperatures t °C, pressure loss can still be calculated with the above formula, replacing the value of the flow coefficient in the table with:

$$K_{G1} = K_G \times \sqrt{\frac{175.8}{S \times (273.16 + t)}}$$

Table 1: K_G valve coefficient

Nominal diameter (mm)	25	32	40	50	65	80	100	150	200
Size (inches)	1"	1" 1/4	1" 1/2	2"	2" 1/2	3"	4"	6"	8"
K_G coefficient	549	717	1116	1788	2603	4086	6122	13680	21700

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Table 2 lists the correction factors Fc for a number of gases at 15 °C.

Table 2: Correction factors Fc

Type of gas	Relative density	Fc Factor
Air	1.0	0.78
Propane	1.53	0.63
Butane	2.0	0.55
Nitrogen	0.97	0.79
Oxygen	1.14	0.73
Carbon dioxide	1.52	0.63

Caution:

in order to get optimal performance, to avoid premature erosion phenomena and limit noise emissions, it is recommended to check that the gas speed at the outlet flange does not exceed 40 m/sec.

The gas speed at the outlet flange may be calculated by means of the following formula:

$$V = 345.92 \times \frac{Q}{DN^2} \times \frac{1 - 0.002 \times Pd}{1 + Pd}$$

where:

V = gas speed in m/sec

DN = nominal size of regulator in mm

Q = gas flow rate in Stm³/h

Pd = outlet pressure in barg.

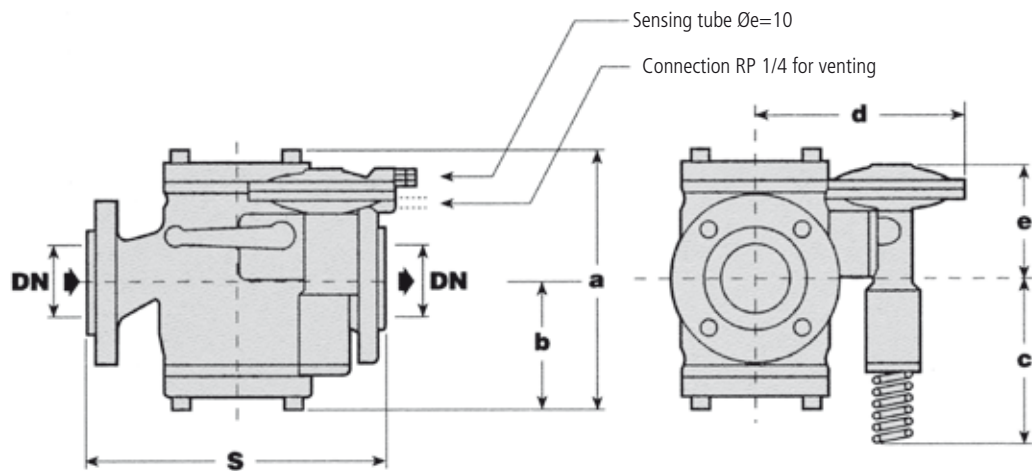
Table 3: Pressure switches

Type	SCN 91	SCN 92
Overpressure range. (OPSO).	0,025 to 1,1	0,7 to 5
Under pressure range (UPSO).	0,01 to 0,9	0,25 to 3,1
Press. in bar		

Installation

To ensure proper operation and the declared performance, the following should be observed when installing the **SCN** slam shut valves:

- filtering: the gas flowing in the piping must be adequately filtered. It is also recommended that the piping upstream from the regulator is clean and avoids impurities;
- sensing line: for correct operation, the sensing line nipple must be appropriately positioned. Between the valve and the downstream take-off there must be a length of straight pipe \geq four times the diameter of the outlet pipe; beyond the take-off, there must be a further length of pipe \geq twice the same diameter.



Overall dimensions in mm

Size (mm)	25	32	40	50	65	803"	100	150	200
Inches	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"
S	183	183	223	254	277	298	352	451	543
a	240	240	270	270	330	330	400	420	500
b	120	120	135	135	165	165	200	210	250
c	150	150	140	140	130	130	110	90	80
d	160	160	170	170	195	195	160	175	180
e	105	105	120	120	130	130	145	165	175

Weights in Kgf

	25	25	33	42	46	51	92	160	270
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Face to face dimensions S according to IEC 534-3 and EN 334



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