Pietro Fiorentini®

SCN

Slam Shut Valves

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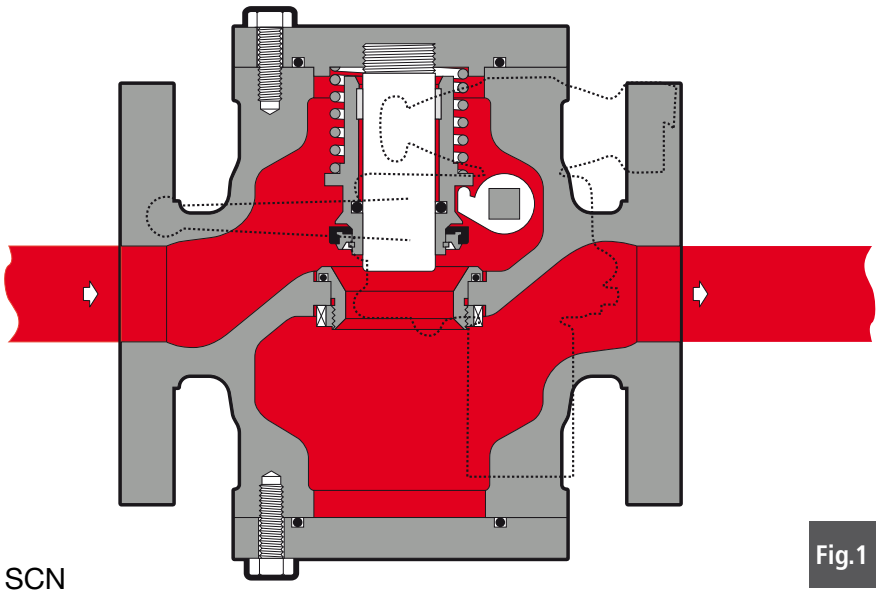
Introduction

SCN is a compact safety device (SAV) which quickly shuts off 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

The **SCN** is a slam-shut valve with self operated actuation and manual resetting. It is an ideal product for distribution systems, industrial, and chemical engineering applications.
SCN is suitable for natural gas and all non-corrosive gases.
Its “top entry” design allows an easy maintenance without removing the body from the pipeline.

- Intervention for overpressure (OPSO) and/or underpressure (UPSO);
- Manual push-button control at installation point;
- 3 way solenoid valve for remote control (available on request);
- Manual re-setting;
- Internal bypass 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**

SCN

FEATURES

Functional features:*

Maximum inlet pressure up to:	275 PSIG for Steel Body and 246 PSIG for Ductile Iron
Range of tripping for overpressure:	Who: 4" W.C. to 72.5 PSIG
Range of tripping for underpressure:	Who: 4" W.C. to 36.55 PSIG
Minimum ambient temperature:	Execution up to -40°F (to specify in the request).
Maximum ambient temperature:	+140°F
Flowing gas temperature:	up to -4°F + 140°F
Accuracy class AC:	AG: ± 5% to 10% for over pressure, ± 10% to 20% for under pressure
Look-up pressure class SG:	up to 10

Design features:

Nominal dimensions DN:	1” - 1 1/4" - 1” 1/2 - 2” - 2”1/2 - 3” - 4” - 6” - 8”
Flanged connections:	UNI PN 16; class 150 RF

Materials: **

Body:	Cast steel ASTM A 216 WCB (all DN). Spheroidal ductile iron GS 400 – 18 ISO 1083 DN 150 ≤ (6”) included.
Covers:	Diameter from 375 to 630 Drop-forged carbon steel / from 658 to 817 Alluminium
Diaphragmcse:	Die cast aluminum GD-Al SI 13 Fe UNI 5079-74
Valve Seat & Valve:	X12CrS13 UNI 6901-AISI 416 for DN 1" to 3" Carbon steel chromium-plated for DN 4" to 8"
Seals:	Nitril rubber Vulcanized
Connection fittings:	In zinc-plated carbon steel according to DIN 2353; Stainless steel on request

REMARK: * Different functional features available on request.
** The materials indicated above refer to the standard models.
Different materials can be provided according to specific needs.

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:

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

Δp = pressure loss in bar
Pu = 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 coefficent in the table with:

$$K_G1 = K_G \times \sqrt{\frac{175\ .8}{S\ \times\ (273\ .16\ +\ t)}}$$

Table 1: KG valve

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"
KG coefficient	549	717	1,116	1,788	2,603	4,086	6,122	13,680	21,700

Table 2 lists the correction factors Fc for a number of gases at 60 °F.

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 131ft./sec.
The gas speed at the outlet flange may be calculated by means of the following formula:

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

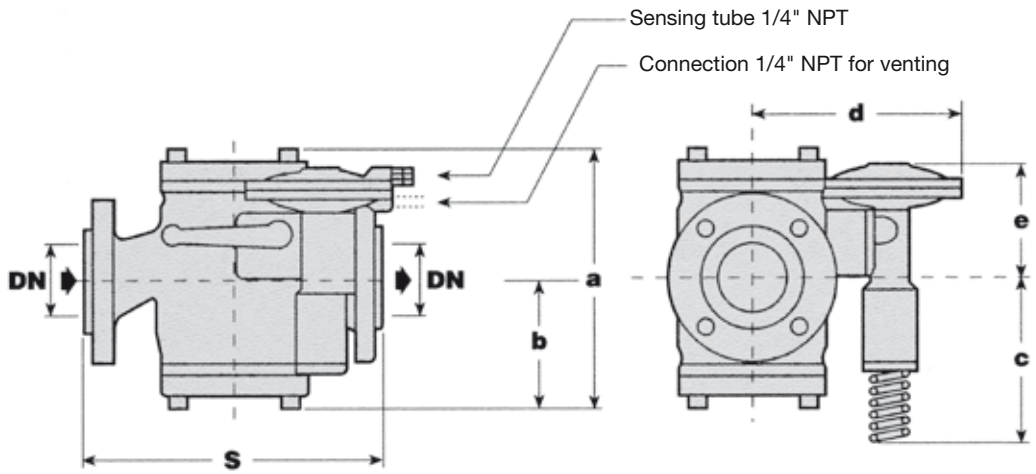
where:
V = gas speed in m/sec Q = gas flow rate in Stm³/h
DN = nominal size of regulator in mm
Pd = outlet pressure in barg.

Table 3: Pressure switches

Type	SCN 91	SCN 92
Overpressure range. (OPSO).	.39 to 15.9	10.15 to 72.5
Under pressure range (UPSO).	.145 to 13	3.6 to 44.96
Press. in PSIG		

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

a) 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;
b) 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 ≥ four times the diameter of the outlet pipe; beyond the take-off, there must be a further length of pipe ≥ twice the same diameter.



Overall dimensions in inches

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	7.25	7.88	8.75	10.0	10.88	11.75	13.88	17.75	21.38
a	9.5	9.5	10.6	10.6	13.0	13.0	15.75	16.6	19.7
b	4.73	4.73	5.31	5.31	6.5	6.5	7.9	8.27	9.85
c	5.3	5.3	5.5	5.5	5.11	5.11	4.33	3.54	3.15
d	6.3	6.3	6.69	6.69	7.67	7.67	6.3	6.88	180
e	4.14	4.14	4.73	4.73	5.11	5.11	5.7	6.5	6.88

Weights in Pounds

	55	55	77	94	103	112	204	254	596

Face to face dimensions S according to ANSI, IEC 534-3, and EN 334

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