



SCN



Slam Shut  
Valves



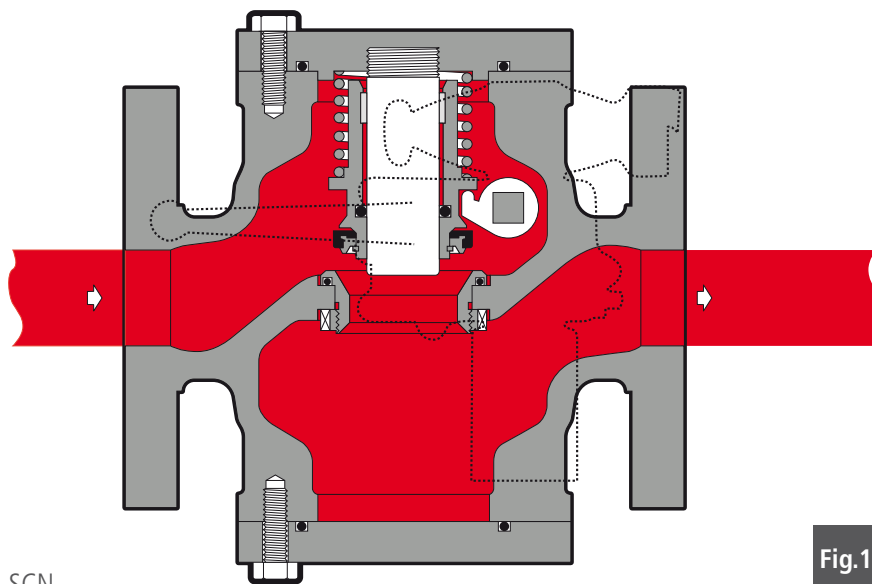
SCN



> Slam shut valves

## 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" <sup>1/4</sup> - 1" <sup>1/2</sup> - 2" - 2" <sup>1/2</sup> - 3" - 4" - 6" - 8"
- Flanging: class ANSI 150 - RF or FF according to ANSI16.5 and PN16 according to ISO 7005

## Materials

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



SCN

### 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:

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

$\Delta p$  = pressure loss in bar  
 $P_u$  = absolute inlet pressure in bar  
 $Q$  = flow rate inlet  $\text{Stm}^3/\text{h}$   
 $K_G$  = 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**

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

# SCN



> Slam shut valves

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 Stm<sup>3</sup>/h

Pd = outlet pressure in barg.

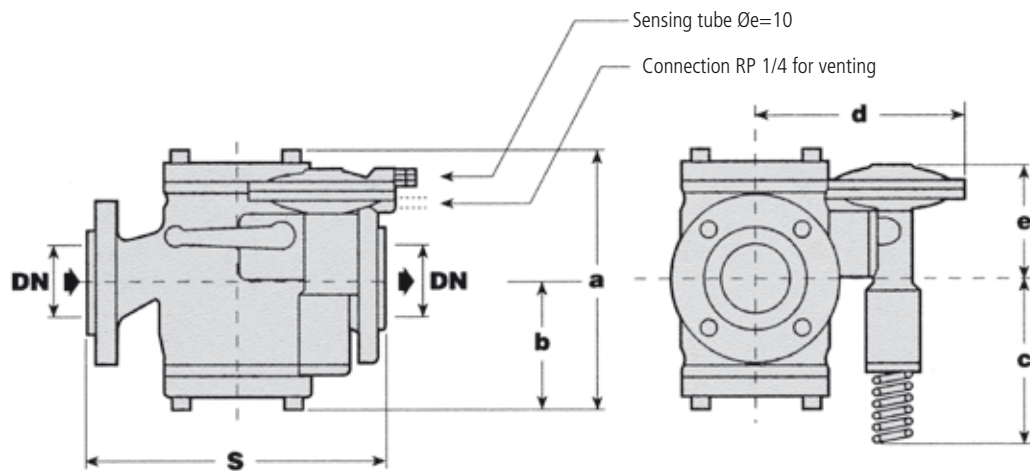
**Table 3: Pressure switches**

Type	SCN 91	SCN 92
<b>Overpressure range. (OPSO).</b>	0,025 to 1,1	0,7 to 5
<b>Under pressure range (UPSO).</b>	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:

- a) 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;
- 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 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
--	----	----	----	----	----	----	----	-----	-----

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



Pietro Fiorentini S.p.A.  
via E.Fermi 8/10  
I-36057 Arcugnano (VI)  
Italy

via Rosellini 1  
I-20124 Milano  
Italy

Tel. +39 0444 968.511  
Fax. +39 0444 960.468

Tel. +39 02 696.14.21  
Fax. +39 02 688.04.57

[www.fiorentini.com](http://www.fiorentini.com)

The data are not binding. We reserve the right to make eventual changes without prior notice.

CT-s513-E July 2008