

Distillation plant with 60 liters reactor  
made in borosilicate glass 3.3

Distillation plant with 60 liters reactor  
made in Aisi 316L

**Soffieria Sestese S.r.l.**

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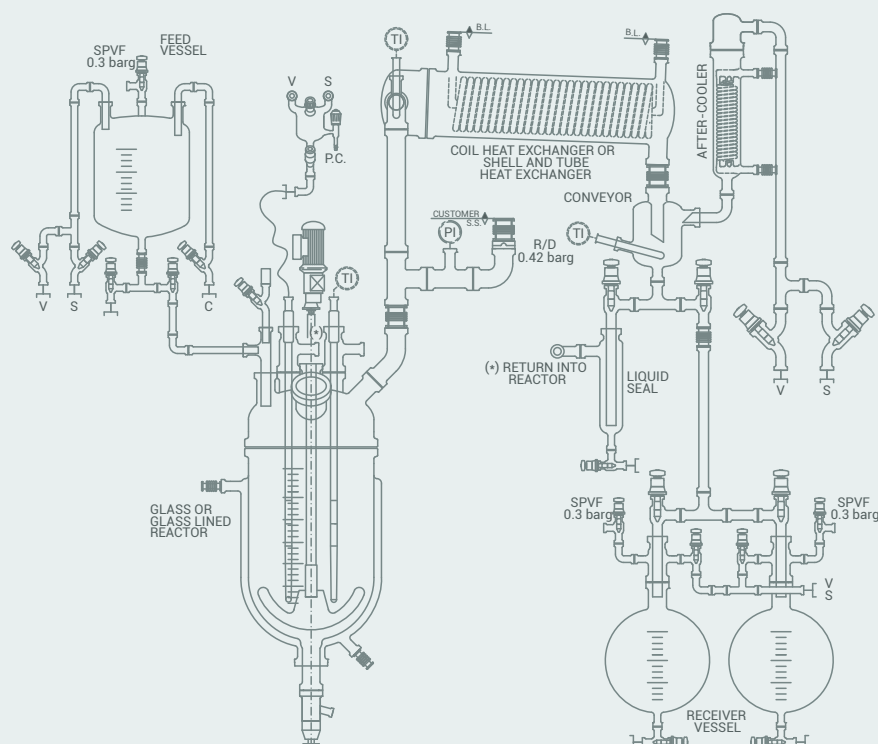
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**LEGEND**

V: Vacuum

S: Vent

C: Load



DESCRIPTION		SUR25	SUR50	SUR100	SUR200
Reactor Volume	lt.	25	50	100	200
Heat Exchanger	m <sup>2</sup>	0.7	1.5	2.5	4.0
After Cooler	m <sup>2</sup>	0.2	0.3	0.5	0.7
<b>JACKET DESIGN PRESSURE</b>					
Glass Reactor	barg	-1 ÷ +0.72	-1 ÷ +0.72	-1 ÷ +0.72	-1 ÷ +0.72
Glass-Lined Reactor	barg	-1 ÷ +10	-1 ÷ +10	-1 ÷ +10	-1 ÷ +10
<b>VESSEL DESIGN PRESSURE</b>					
Glass Reactor	barg	-1 ÷ +0.72	-1 ÷ +0.72	-1 ÷ +0.72	-1 ÷ +0.72
Glass-Lined Reactor	barg	-1 ÷ +1	-1 ÷ +1	-1 ÷ +1	-1 ÷ +1
<b>PLANT WORKING TEMPERATURE</b>					
Glass Reactor	°C	-20 ÷ +135	-20 ÷ +135	-20 ÷ +135	-20 ÷ +135
Glass-Lined Reactor	°C	-20 ÷ +135	-20 ÷ +135	-20 ÷ +135	-20 ÷ +135
<b>PLANT DESIGN TEMPERATURE</b>					
Glass Reactor	°C	-25 ÷ +150	-25 ÷ +150	-25 ÷ +150	-25 ÷ +150
Glass-Lined Reactor	°C	-25 ÷ +150	-25 ÷ +150	-25 ÷ +150	-25 ÷ +150
Plant working pressure	barg	+0.5	+0.5	+0.5	+0.5
<b>PLANT DIMENSIONS FRAME</b>					
Depth	mm	800	900	1100	1400
Height	mm	2400	2500	2800	3400
Width	mm	2100	2300	2500	2900
Feed Vessel	lt.	10	20	50	100
Receiver Vessel	nxlt.	2x10	2x20	2x50	2x100
Vapour Line Column	DN	50	80	100	100
Rupture Disc	barg	0.49	0.49	0.49	0.49
Stirrer Drive	kW	0.18	0.37	0.55	0.75
Stirrer Speed	rpm	29 ÷ 169	29 ÷ 169	29 ÷ 169	29 ÷ 169



Distillation plant with 50 liters glass lined reactor and glass cover



## Plant for pilot and kilolab

Soffieria Sestese offers a glass lined steel plant, reactors and appropriate glass distillation overhead show reliable and best performance in the daily operation in Pilot Plants and kilolabs worldwide. They are tailored to different processes, temperature and pressure ranges, allow processing of most different chemicals. The condenser arrangement can be vertical or horizontal. Larger system with fully glass lined reactors use shell and tube type heat exchanger in the glass overhead.

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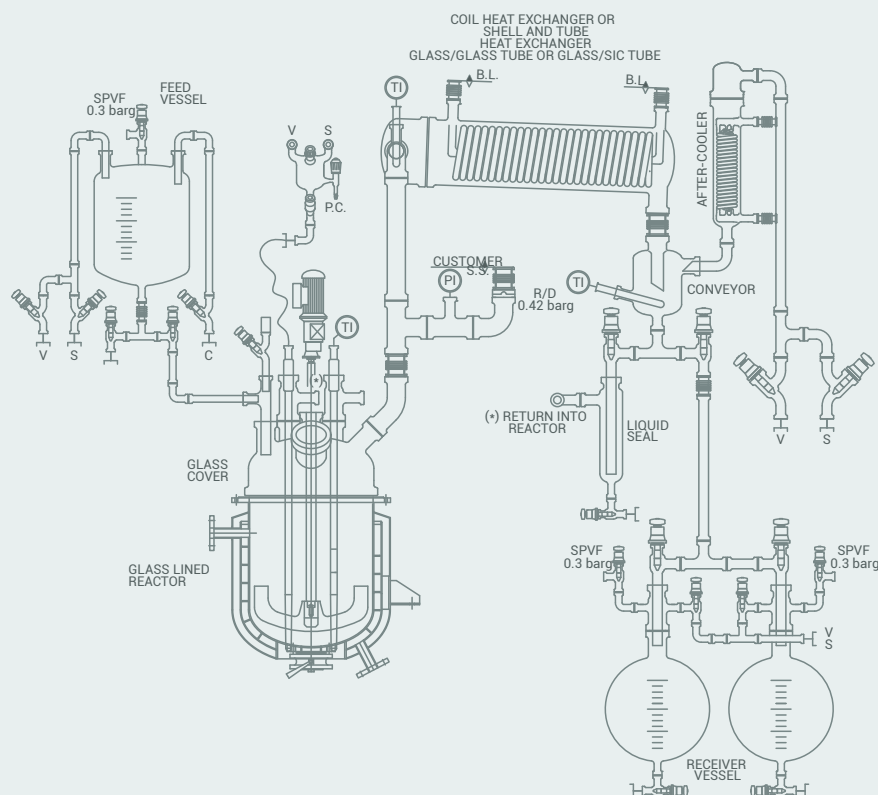
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Soffieria Sestese plants are well-suited to a wide range of tasks:

- Distillation
- Evaporation
- Multicomponent reactions
- Gas dispersion below liquid surface
- Rectification
- Extraction/phase separation in reactor vessel

**APPROVALS AND CERTIFICATES**

CE declarations of conformity (PED/ATEX) as well as declarations on FDA conformity are part of the documentation to validate our equipment for GMP applications.

**REACTOR WITH GLASS COVER / TECHNICAL SPECIFICATIONS**

DESCRIPTION		<b>SUR/GL400</b>	<b>SUR/GL630</b>
Reactor Volume	lt.	400	600
Heat Exchanger	m <sup>2</sup>	4.0	6.0
After Cooler	m <sup>2</sup>	1.0	1.5
Jacket Design Pressure	barg	-1 ÷ +10	-1 ÷ +10
Vessel Design Pressure	barg	-1 ÷ +1	-1 ÷ +1
Plant Working Temperature	°C	-20 ÷ +135	-20 ÷ +135
Plant Design Temperature	°C	-25 ÷ +150	-25 ÷ +150
Plant Working Pressure	barg	+0.5	+0.5
Feed Vessel	nxlt.	2x50	1x100
Receiver Vessel	nxlt.	2x50	2x100



Distillation plant with 2,500 liters glass lined reactor



## Plant for pilot and kilolab

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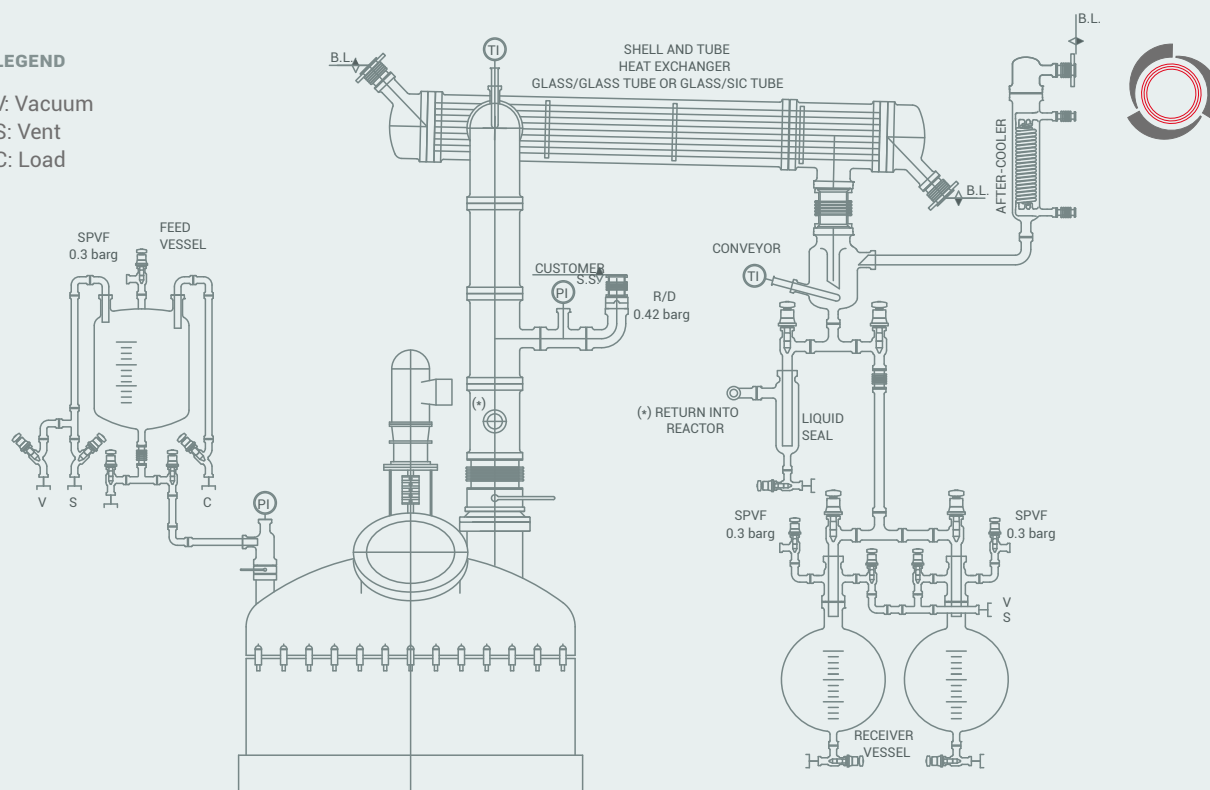
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**REACTOR WITH GLASS LINED COVER / TECHNICAL SPECIFICATIONS**

DESCRIPTION		SUR/GL1000	SUR/GL1600	SUR/GL2500	SUR/GL4000
Reactor Volume	lt.	1,000	1,600	2,500	4,000
Heat Exchanger	m <sup>2</sup>	8.0	12.5	16.0	20.0
After Cooler	m <sup>2</sup>	2.0	2.5	4.0	5.0
Jacket Design Pressure	barg	-1 ÷ +10	-1 ÷ +10	-1 ÷ +10	-1 ÷ +10
Vessel Design Pressure	barg	-1 ÷ +1	-1 ÷ +1	-1 ÷ +1	-1 ÷ +1
Plant Working Temperature	°C	-20 ÷ +135	-20 ÷ +135	-20 ÷ +135	-20 ÷ +135
Plant Design Temperature	°C	-25 ÷ +150	-25 ÷ +150	-25 ÷ +150	-25 ÷ +150
Plant Working Pressure	barg	+0.5	+0.5	+0.5	+0.5
Feed Vessel	nxlt.	2x100	1x200	2x200	2x200
Receiver Vessel	nxlt.	2x100	2x200	2x200	2x200
Vapour Line Column	DN	150	200	300	300
Rupture Disc	barg	0.42	0.42	0.42	0.42
Stirrer Drive	kW	3.0	4.0	5.5	7.5
Stirrer Speed	rpm	29 ÷ 169	29 ÷ 169	29 ÷ 169	29 ÷ 169



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Wet scrubbers are gas cleaning equipment where the dirty gas stream is brought into contact with a scrubbing liquid.

The scrubber design depends on the industrial process conditions and the nature of the air pollutants involved. Wet scrubbers can be designed to collect particulates and/or gaseous pollutants by capturing particles in liquid droplets and by dissolving pollutant gases into the liquid.

Special version on request.



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## Technical Data

- Frame in stainless steel AISI304
  - Packed column (with Raschig rings) in borosilicate glass 3.3, size DN50 ÷ 600
  - Spherical vessel in borosilicate glass 3.3, capacity 10 ÷ 200 litres with:
    - quick closure
    - rupture disk
    - discharge valve in borosilicate glass 3.3
    - pressure/vacuum gauge
  - Coil type heat exchanger in borosilicate glass 3.3
  - Regulating valves in borosilicate glass 3.3
  - Recirculating pump (ATEX)
  - PTFE gasket
  - Operating pressure: -1.0 ÷ +0.5 barg
  - Exhaust gas temperature: -60 ÷ +135°C
  - Scrubbing liquid temperature: 0 ÷ 80°C
  - Certificates: ATEX, CE
- 

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## Application Fields

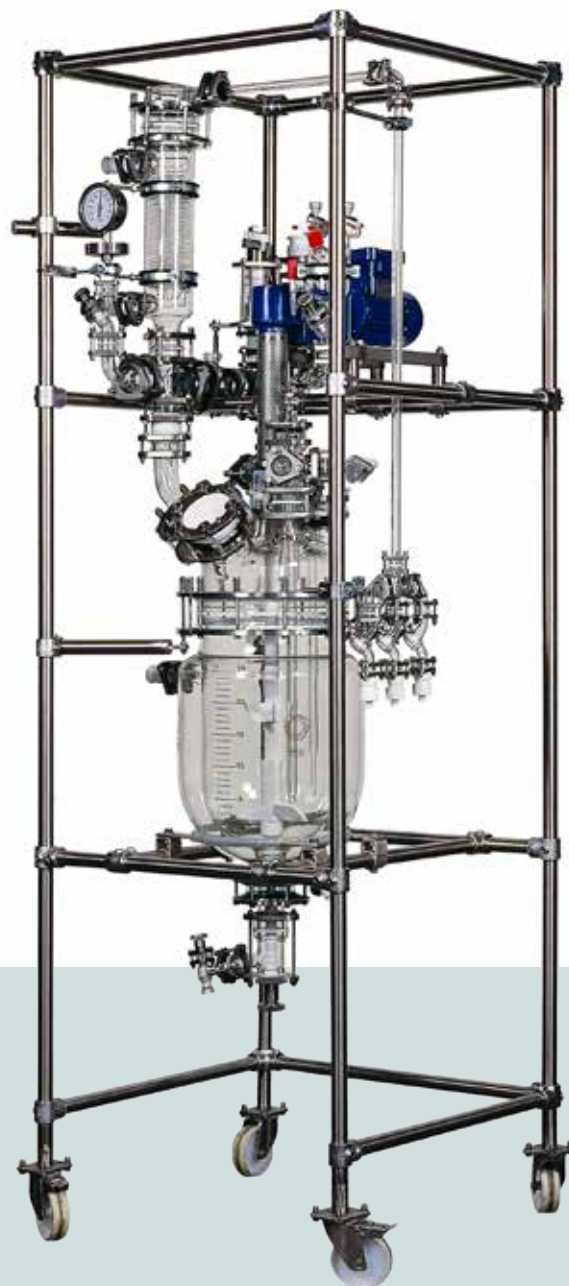
- Neutralizing of exhaust gas
  - Scale-up studies
- 

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## Optional

- Different packed columns
  - Production scale columns
-





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Mixing vessels are dynamic reservoirs frequently used for dissolving, mixing and stirring in conjunction with others process plant such as reactor.

The vessels can be supplied with a jacket (optional); this improves dissolving and crystallization process.

Special version can be ordered on request.



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## Technical Data

- Frame: AISI304 stainless steel
  - Vessel: borosilicate glass 3.3, capacity 10 ÷ 200 liters
  - Cover: borosilicate glass 3.3 equipped with:
    - adjustable motor stirrer (ATEX) with dry running mechanical seal
    - quick closure
    - rupture disk
    - feeding valve
    - pressure/vacuum gauge
  - Discharge valve: borosilicate glass 3.3
  - PTFE gasket
  - Operating pressure: -1.0 ÷ +0.5 barg
  - Operating temperature: -25 ÷ +135°C
  - Certificates: ATEX, CE, cGMP
- 

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## Application Fields

- Conditioning
  - Dissolving
  - Extraction
  - Crystallization
- 

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## Optional

- Jacketed vessel in borosilicate glass 3.3
  - Coil type heat exchanger in borosilicate glass 3.3
  - C.I.P. capable
-



30 liters Nutsche Filter  
Jacketed, with Lift System;  
amber-coated version,  
rapid closure on cover  
in borosilicate glass 3.3

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The Glass Nutsche Filter product by Soffieria Sestese is designed to separate solids from liquids and it allows operating under pressure or under vacuum.

The filter is made of borosilicate glass 3.3 and PTFE and mounted in a mobile frame in AISI 304 stainless steel to facilitate the access to the laboratory.

Special version can ordered on request.

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#### Technical Data

- Mobile frame in stainless steel AISI304
  - Lift system for easy cleaning and filter change by means linear guide
  - Filter body is made of borosilicate glass 3.3, capacity 5 ÷ 200 liters
  - Removable borosilicate glass 3.3 cover equipped with 7 nozzles:
    1. adjustable height manual stirrer with dry running mechanical seal
    2. quick closure
    3. rupture disk
    4. feeding valve
    5. vent valve
    6. pressure/vacuum gauge
    7. C.I.P. capable
  - PTFE filter plate
  - Bottom valve: borosilicate glass 3.3 and PTFE
  - Materials in compliance with FDA and GMP directives
  - Operating pressure: -1.0 ÷ +1.0 barg (depending on capacity)
  - Operating temperature: -60 ÷ +150°C
  - Certificates: ATEX, CE, cGMP
- 

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#### Application Fields

- Chromatography
  - Crystallization
  - Drying
  - Filtration
  - Ion exchange
  - Solid phase synthesys
- 

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#### Optional

Jacketed filter body in borosilicate glass 3.3

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Series of spare parts made of borosilicate glass 3.3

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Soffieria Sestese proposes two types of glass coating with different formulation and characteristics.



### 1. Fragment retentive coating for packaging glass or drain off protection for 3.3 borosilicate glass

**Hydrolux is an UV curing water based coating for glass with the specifications:**

- Drain off protection
- Fragment retention

Hydrolux is a highly transparent coating 200 ÷ 300 µm film thicknesses, applied by spraying. The permissible operating temperature is 140°C, but it can also go up to 230°C for short time periods. Above 140°C the coating turn amber color, but this has no adverse effect on its protection function.

**Hydrolux has the following properties:**

- Autoclaving 1 (one) hour at 134°C with 5 (five) cycles unchanged
- Dishwasher proof with thermal 50 (fifty) washing cycles disinfection at 53°C unchanged

**Resistant to the following media:**

- Water 5 (five) minutes at room temperature unchanged
- 20% hydrochloric acid 5 (five) minutes at room temperature unchanged
- 20% sulphuric acid 5 (five) minutes at room temperature unchanged
- Acetone 5 (five) minutes at room temperature unchanged
- 2 – propanol 5 (five) minutes at room temperature unchanged
- Carbon tetrachloride 5 (five) minutes at room temperature unchanged

Resistance to special loads should be tested.

### 2. Conductive coating for 3.3 borosilicate glass

When some component or whole borosilicate glass 3.3 plant have to operate in areas classified at high risk of explosion according to the directive ATEX 99/92/CE, its very important to take into consideration the risk of the electrostatic charges. According to the normative CLC/TR 50404 : 2003, the borosilicate glass 3.3 is a dissipative material with small values of surface resistivity 10<sup>10</sup> Ω.

**Soffieria Sestese proposes, to improve the characteristics of conductivity proper of the borosilicate glass 3.3, a conductive polymeric covering with the following characteristics:**

- Wet film thickness 4 ÷ 6 µm
- Surface Resistivity 10<sup>6</sup> Ohm (in accordance IEC Standard 93; VDE 0303; ASTM D 257)
- Transmission at 550 nm > 95% (for 4 ÷ 12 µm wet film thickness)
- Viscosity: 25 mPa
- pH value: 8
- Max admissible temperature: 140°C

The conductive coating is applied by spraying to desiccation UV and usually, in action combined with Hydrolux to increase the mechanical characteristics of the borosilicate glass 3.3.



SSCH Standard Backing Plastic Flange DN25

Conical SCRP Backing Plastic Flange DN25

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Backing plastic flanges used in pipeline glass construction consist of one-piece unit suitable for operating temperature of up to 200°C on the product side and for the full range of operating pressures.

Soffieria Sestese produces two types of backing flanges, our standard SSCH type and conical SCRCP type.

### 1. SSCH Standard Backing Plastic Flanges Type

This type of backing flange is the most widely used as it has optimum resistance to corrosion, is lightweight and it is able to dissipate electrostatic charges.

SBEIL insert for backing plastic flange, must be required separately.

### 2. Conical SCRCP Backing Plastic Flanges Type

This type of backing flange has optimum resistance to corrosion, it is able to dissipate electrostatic charges and it is lightweight.

SCRIP insert for backing plastic flange, must be required separately.

#### SSCH STANDARD BACKING / SPECIFICATIONS

DN	EXTERNAL DIAMETER	HOLE CENTRES	NO. HOLES & DIAMETER	THICKNESS	CODE
15	64	50	3×Ø7.0	13	SSCHE015/K
25	105	85	4×Ø9.5	17	SSCHD025/K
40	132	110	4×Ø9.5	20	SSCHD040/K
50	147	125	4×Ø9.5	24	SSCHD050/K
80	184	160	8×Ø9.5	28	SSCHD080/K
100	204	180	8×Ø9.5	28	SSCHD100/K
150	265	240	8×Ø9.5	34	SSCHD150/K
200	321	295	8×Ø9.5	34	SSCHD200/K
300	428	400	12×Ø9.5	35	SSCHD300/K

#### CONICAL SCRCP BACKING / SPECIFICATIONS

DN	EXTERNAL DIAMETER	HOLE CENTRES	NO. HOLES & DIAMETER	THICKNESS	CODE
15	70	50	3×Ø7	11	SCRCP015
25	90	70	3×Ø9	16	SCRCP025
40	109	86	3×Ø9	19	SCRCP040
50	122	98	3×Ø9	22	SCRCP050
80	160	133	6×Ø9	27	SCRCP080
100	204	178	6×Ø9	28	SCRCP100
150	280	254	6×Ø9	28	SCRCP150
200	321	295	8×Ø9	34	SCRCP200
300	428	400	12×Ø9	35	SCRCP300

AVAILABLE ON STOCK

Complete range of backing flanges in Silumin, Stainless Steel, Cast Iron and inserts in different type and material as well.





Pneumatic On/Off angle valves  
DN40 and DN15



Pneumatic control valves DN50 and DN15  
with electro-pneumatic I/P positioner

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These pneumatic valves are made of borosilicate glass 3.3 and PTFE plug, glass structure is similar to the manual operating valves.



## 1. Pneumatic On/Off valves

On/Off valves with body in borosilicate glass 3.3 and sealing with bellows and trim (plug/seat) in PTFE. The pneumatic valves comes in different geometric shapes (straight or angle or bottom outlet valves) and in different nominal diameter.

### Pneumatic actuator with cylinder in stainless steel AISI 304:

- Single action (spring push to close - Normally closed N.C.)
- Single action (spring push to open - Normally open N.O.)
- Double action (no spring - D.E.)
- Supply pressure 6 bar (min. 4 bar - max. 8 bar)

### SPECIFICATIONS

SIZE VALVE	DN15	DN25	DN40	DN50
Size Actuator	Ø 20	Ø 32	Ø 50	Ø 50

### Optional

- Double seal in accordance with TA – Luft
- Kit for modify type of actuator (by N.C. – N.O. – Double Acting)

## 2. Pneumatic control valves

Control valves with pneumatic diaphragm actuator, body in borosilicate glass 3.3 and sealing with bellows and trim (plug/seat) in PTFE. Diaphragm actuators have compressed air applied to a flexible membrane called the diaphragm. These types of actuators are single acting, in that air is only supplied to one side of the diaphragm, and they can be either direct acting (spring to open) or reverse acting (spring to close).

All the parts to contact with the process are in borosilicate glass 3.3 or PTFE.

### Pneumatic diaphragm actuator in stainless steel AISI 304:

- Yoke / Plate in stainless steel AISI 304
- Spring to open - spring to close
- Electro-pneumatic I/P positioner SMC Model IP8000, input 4 ÷ 20 mA
- Hazardous area type EEx ib IIC T5 ÷ T6
- Supply pressure 2 bar (max 3 bar)

### SPECIFICATIONS

SIZE VALVE	DN25	DN40	DN50
Size Actuator	Ø 140	Ø 205	Ø 205

### Optional

- Double seal in accordance with TA – Luft
- Electro-pneumatic I/P Digital positioner SMC Model IP8001, input 4 ÷ 20 mA, with HART transmission mode
- Hazardous area type EEx ia IIC T4
- 3/2 way N.C. solenoid valve 24 VDC, hazardous area type EEx ia IIC T6

Safety valve is basically a plunger which closes a passageway by spring pressure. If the opposite pressure exceeds the pressure of the spring, the plunger is pushed back from the opening allowing gases / vapour pressure to be released to vent.

### Technical characteristics

- The valves are made of borosilicate glass 3.3 body and PTFE plunger
- The valves are designed to meet the requirements of DNV Business Assurance and are supplied with inspection certificate 3.1



### TECHNICAL SPECIFICATIONS

DN	DISCHARGE COEFFICIENT K <sub>D</sub>	FLOW DIAMETER (mm)	FLOW CROSS SECTION (mm <sup>2</sup> )	SET PRESSURE RANGE (bar g)	CODE
15	0.559	15	176	0.5 ÷ 1.0	SSVF015
25	0.559	25	490	0.5 ÷ 1.0	SSVF025

(Other sizes and setting pressure on request)

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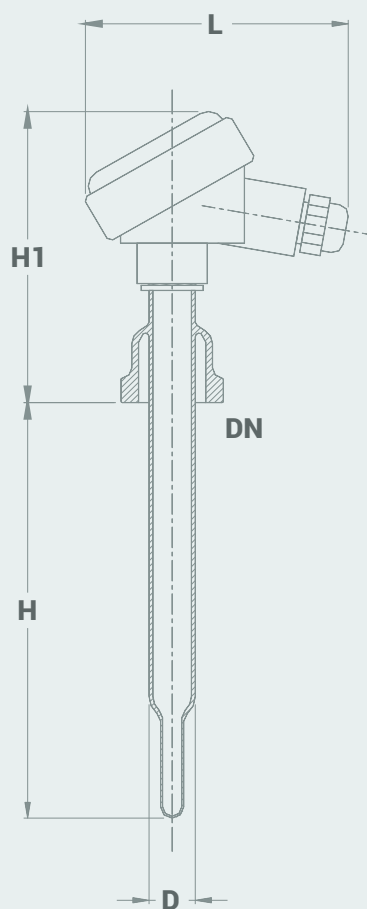


The working principle for metal resistance sensors, normally called thermoresistances, is based on the variation of the electrical resistance of a metal with variations in the surrounding temperature.

In the industrial field the materials most frequently used are platinum and nickel which, due to their high resistivity and stability, permit the production of thermoelements which are highly reproducible, with excellent dynamic characteristics and can be produced in very small size.

### Technical Data

- Temperature range:  $-50 \div + 200^{\circ}\text{C}$
- Output signal:  $4 \div 20 \text{ mA}$
- Type of explosion protection: EEx ia IIG T6C
- Materials:
  - thermometer in platinum sensitive element on a ceramic substrate
  - protective cover borosilicate glass 3.3
  - connection head in polyamide



### TECHNICAL SPECIFICATIONS

DN	H	H1	L	D	CODE	
					WITHOUT TRANSMITTER	WITH TRANSMITTER
25	100	140	110	22	SWID <b>025/100/3</b>	SWID <b>T025/100/3</b>
25	150	140	110	22	SWID <b>025/150/3</b>	SWID <b>T025/150/3</b>
25	200	140	110	22	SWID <b>025/200/3</b>	SWID <b>T025/200/3</b>
25	300	140	110	22	SWID <b>025/300/3</b>	SWID <b>T025/300/3</b>
40	200	140	110	22	SWID <b>040/200/3</b>	SWID <b>T040/200/3</b>
40	300	140	110	22	SWID <b>040/300/3</b>	SWID <b>T040/300/3</b>
40	500	140	110	22	SWID <b>040/500/3</b>	SWID <b>T040/500/3</b>