

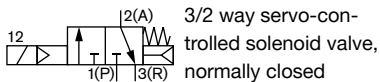


## 3/2-way solenoid valve for pneumatic applications

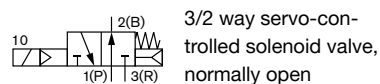
- Robust servo-piston valve
- Service-friendly manual override
- Single or block assembly
- Explosion-proof versions available

Type 5411 is a pilot operated 3/2-way solenoid valve with manual override as standard. The body includes a servo piston with the seat seals. Through pilot channels, the servo piston is either loaded with input pressure or released. A minimum pressure difference of 1 bar is required for switching. The vent port is integrated as a sintered bronze silencer directly in the valve body. The valves can be combined (up to 6 valves) on a single-channel manifold with common pressure supply.

### Circuit function C



### Circuit function D



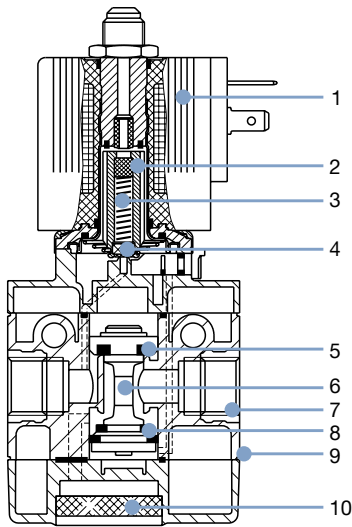
Technical data	
Orifice	DN6.0 mm
Port connection	G ¼
Body material	Polyamide (reinforced) with moulded-in brass threads
Coil material	Polyamide, Epoxy
Seal material	NBR
Medium	neutral medium, e.g. lubricated or unlubricated compressed air
Air pressure quality	ISO 8573-1:2010, class 7.4.4*
Medium Temperature	-10 °C to +60 °C
Medium pressure	1 to 10 bar
Ambient Temperature	max. 55 °C
Q <sub>in</sub> -Value air	900 l/min
Operating voltage	24 V DC 24/110/230 V, 50-60 Hz
Voltage tolerance	± 10 %
Power consumption	version with V DC voltage: 2 W version with V AC voltage: 11 VA (inrush), 6 VA (hold)
Response time	opening: 50 ms (Pressure rise 0 to 90 %) closing: 30 ms (Pressure drop 100 to 10 %)
Duty cycle	100 % ED continuously rated
Electrical connection	Tag connectors according to DIN EN 175301-803 (previously DIN 43650) Form A for cable plug Type 2508
Schutzart	IP65 with cable plug
Installation	As required, preferably with solenoid system upright; Air exhausted from the relief port with pressed sintered bronze silencer must not be impeded.

**Flow rate:** Q<sub>in</sub>-value air [l/min]: Measured at +20 °C, 6 bar pressure at valve inlet and 1 bar pressure difference.

**Pressure ranges [bar]:** Overpressure to the atmospheric pressure

\* To prevent freezing of the expanded compressed air, the pressure dew point must be at least 10 K lower than the temperature of the medium.

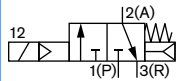
## Materials



Nr.	Element	Material
1	Coil	Standard: Polyamide, Epoxy Ex version: Epoxy
2	Stopper	1.4105
3	Magnet core	1.4105
4	Core Seal	FKM
5	Seal poppet	NBR
6	Poppet	Plastic
7	Moulded-in thread	Brass
8	Seal poppet	NBR
9	Body	Polyamide (reinforced)
10	Silencer	Sintered bronze

## Circuit function C and D

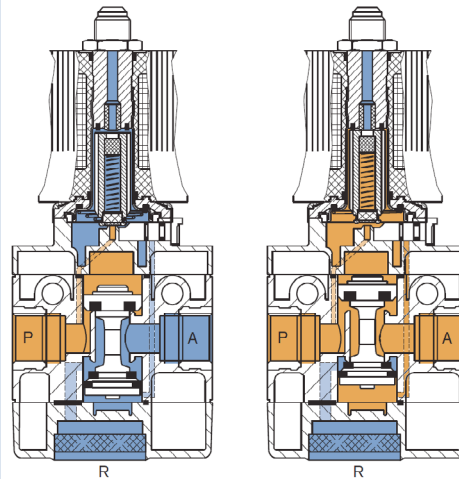
## Circuit function C

*Position power-off:*

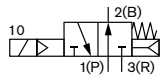
The space below the piston is normally relieved to the outside via the pilot valve. The compressed air from the connection (P) pushes the piston downward and closes the upper seat, the connection (A) is relieved via the lower seat.

*Position after switching on the current:*

The pilot valve opens the pilot bore and exposes the piston from below to pressure. Through the large surfaces on the actuation side, the piston is pushed up, closes the lower seat, and opens the connection from (P) to (A) through the upper seat.



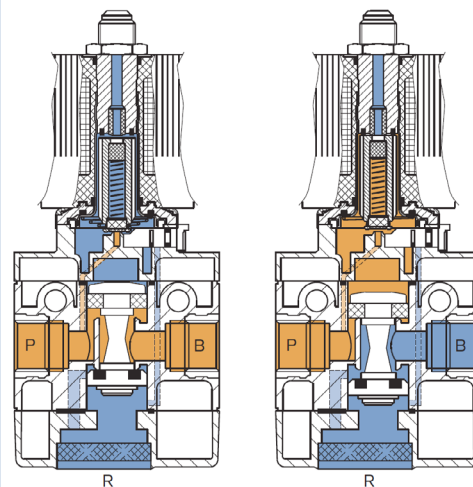
## Circuit function D

*Position power-off:*

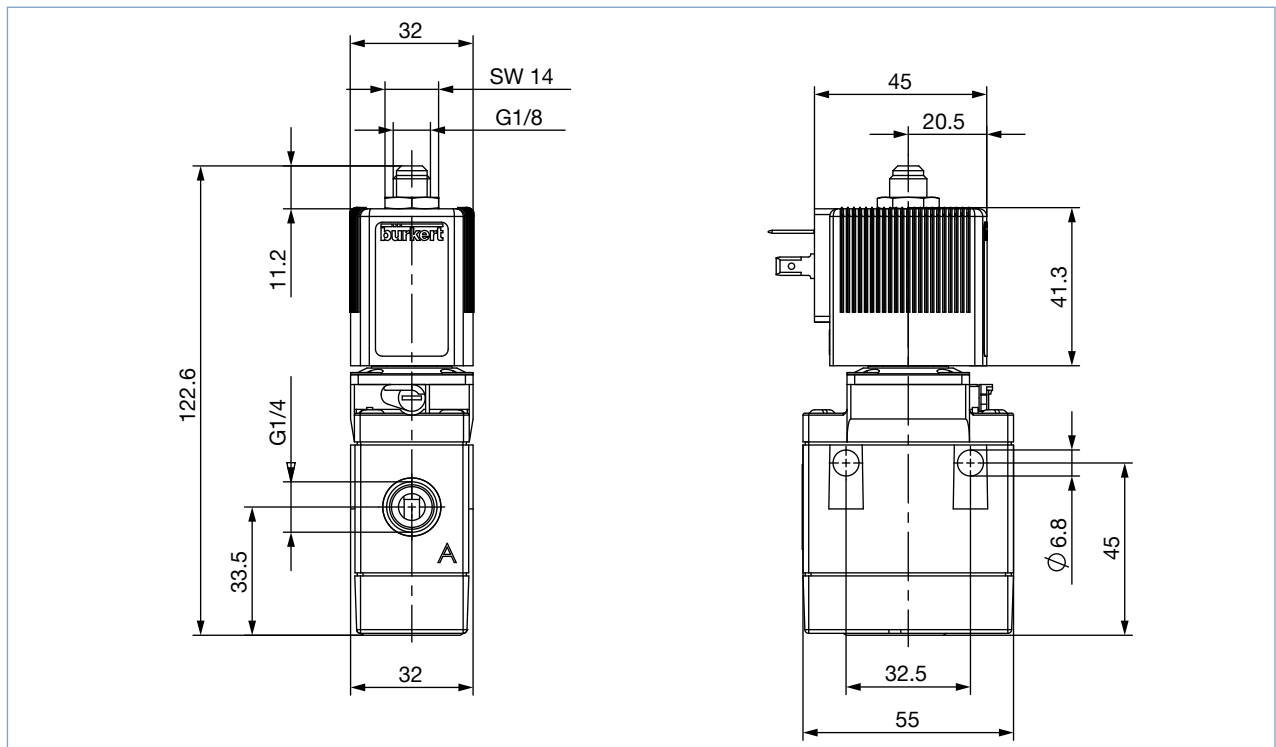
Without current, the space below the piston is relieved to the outside via the pilot valve. The compressed air from port (P) pushes the piston down and closes the upper seat, port (A) is relieved above the lower seat.

*Position after switching on the current:*

When switching on, the pilot valve opens the control bore and applies pressure to the servo piston from below. Due to the large surfaces on the actuating side, the piston is pushed upwards, closes the lower seat and opens the connection from (P) to (A) via the upper seat.



## Dimensions - standard version [mm]



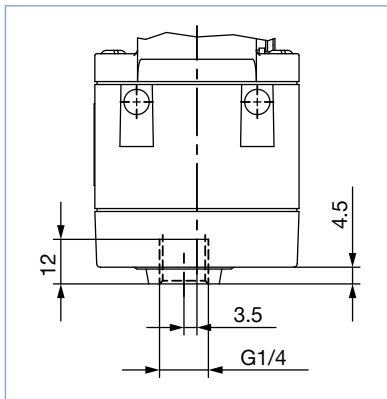
## Ordering chart - standard versions

## Version with manual override, NBR seal

Circuit function	Orifice [mm]	Port connection	$Q_{Nn}$ value air [l/m]	Pressure range [bar]	Power consumption [W]	Voltage/Frequency [V/Hz]	Article no.
<p>3/2 way servo-controlled solenoid valve, normally closed</p>	6	G ¼	900	1-10	2	024/DC	134607
						024/50-60	134608
						110/50-60	134609
						230/50-60	134610
<p>3/2 way servo-controlled solenoid valve, normally open</p>	6	G ¼	900	1-10	2	024/DC	134611
						024/50-60	134612
						110/50-60	134613
						230/50-60	134614

**Note:** To switch a pressure difference of 1 bar is required. NPT ¼ connection on request.

## Version with vent connection R facing downwards



## Type 5411 – ATEX/IECEX version



The approval Ex m is achieved by the mounting of an approved push-over coil. The cable connection and the cable are non-detachable and sealed together with the valve. The valves can be used individually or in blocks.

Technical data	
Body material	Polyamide
Seal material	NBR
Medium	neutral medium, e.g. lubricated or unlubricated compressed air
Air pressure quality	ISO 8573 - 1:2010, class 7.4.4*
Medium temperature	- 10 °C to +60 °C
Ambient temperature	
Single mounting	-30 °C to +60 °C
Block mounting	-30 °C to +50 °C
Port connection	G 1/4
Operating voltage	24/110/230 V UC
Voltage tolerance	+10 %
Duty cycle	100 % ED continuously rated
Electrical connection	3 m cable, moulded Junction box (without fuse), moulded
Protection class	IP65
Type of protection	
with moulded cable	PTB 14 ATEX 2023 X / IECEx PTB 14.0049 X II 2G Ex mb IIC T5 Gb II 2D Ex mb IIIC T 100 °C Db
with junction box	EPS 16 ATEX 1046 X / IECEx EPS 16.0021 X II 2G EX eb mb IIC T5 Gb II 2D EX mb tb IIIC T100 °C Db
Installation	As required, preferably with actuator upright

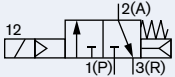

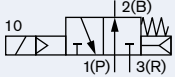

\*To prevent freezing of the expanded compressed air, the pressure dew point must be at least 10 K lower than the temperature of the medium.



## Ordering charts - ATEX/IECEx versions

## Version with manual override, NBR seal and moulded cable (3 m)

The maximum fluid temperature may never exceed the permissible temperature class (T4 135 °C, T5 100 °C, T6 85 °C) minus 5 K.

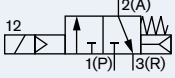


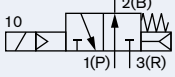
Circuit function	Orifice [mm]	Port connection	Q <sub>Nn</sub> value air l/m	Pressure range [bar]	Power consumption [W]	Voltage/Frequency [V/Hz]	Article no.
<b>C</b>  3/2 way servo-controlled solenoid valve, normally closed	6	G ¼	900	1-10	3	024/UC	566767 
						110/UC	x
						230/UC	x
<b>D</b>  3/2 way servo-controlled solenoid valve, normally open	6	G ¼	900	1-10	3	024/UC	331882 
						110/UC	x
						230/UC	x

**Note:** To switch a pressure difference of 1 bar is required.

x: Article on request

## Version with manual override, NBR seal and junction box (with or without fuse)

The maximum fluid temperature may never exceed the permissible temperature class (T4 135 °C, T5 100 °C, T6 85 °C) minus 5 K.

Circuit function	Orifice [mm]	Port connection	Q <sub>Nn</sub> value air l/m	Pressure range [bar]	Power consumption [W]	Voltage/Frequency [V/Hz]	Article no.
<b>C</b>  3/2 way servo-controlled solenoid valve, normally closed	6	G ¼	900	1-10	3	024/UC	288806 
						048/UC	x
						110/UC	x
						230/UC	295864 
<b>D</b>  3/2 way servo-controlled solenoid valve, normally open	6	G ¼	900	1-10	3	024/UC	x
						048/UC	x
						110/UC	x
						230/UC	x

**Note:** To switch a pressure difference of 1 bar is required.

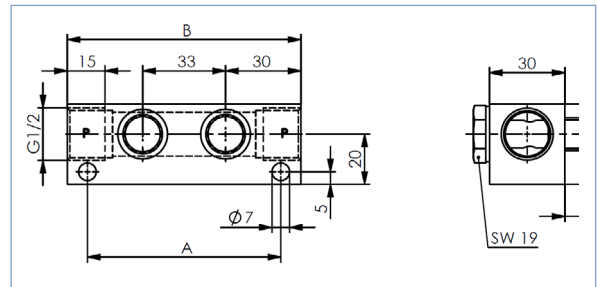
x: Article on request

## Ordering chart for accessories

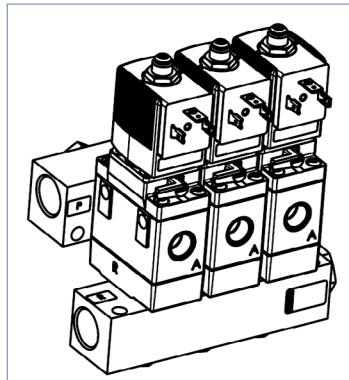
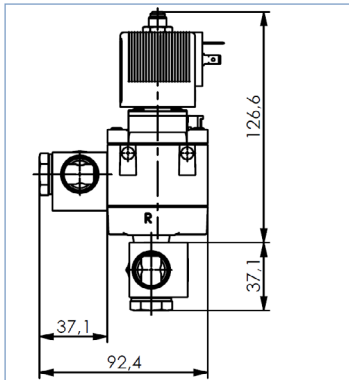
### Single-channel manifold blocks

For common pressure port P, made of aluminium with banjo bolts and seals (a common balanced pressure port R is possible)

Manifold	Hole spacing A	Total length B	Article no.
2 valves	77	93	005811
3 valves	110	126	005717
4 valves	143	159	005843
5 valves	176	192	005776
6 valves	209	225	005718

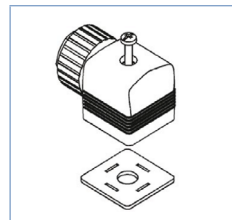


### Example of block mounting



### Cable plug Type 2508 acc. to EN 175301 - 803 Form A (previously DIN 43650)

Description	Voltage	Article no.
Standard cable plug	0 - 250 V AC/DC	008376
with LED	12 - 24 V AC/DC	008360
with LED	100 - 120 V AC/DC	008361
with LED and varistor	12 - 24 V AC/DC	008367
with LED and varistor	100 - 120 V AC/DC	008368
with LED and varistor	200 - 240 V AC/DC	008369



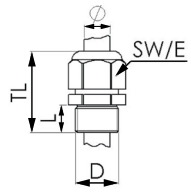


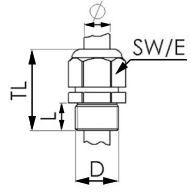


#### Note:

The delivery of a cable plug includes the flat seal and fixing screw. A wide selection of further cable plugs is available. Please refer to data-sheet Type 2508.

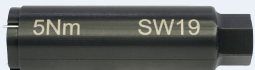

**Ex-Cable gland**

(Polyamide version included in delivery / surcharge applied for brass nickel plated version.)



Photo	Description	Ex Approvals		Article no	Drawing										
		Certification	Identification												
	Brass. nickelplated, 6-13 mm	PTB 04 ATEX 1112 X, IECEx PTB 13.0027X	II 2 G Ex e IIC Gb, II 2 D Ex tb IIIC Db IP68	773278 	 <table border="1"> <tr><td>TL</td><td>29-37 mm</td></tr> <tr><td>L</td><td>6 mm</td></tr> <tr><td>D</td><td>20</td></tr> <tr><td>SW</td><td>24 mm</td></tr> <tr><td>E</td><td>27 mm</td></tr> </table>	TL	29-37 mm	L	6 mm	D	20	SW	24 mm	E	27 mm
TL	29-37 mm														
L	6 mm														
D	20														
SW	24 mm														
E	27 mm														
	Polyamide, 7-13 mm	PTB 13 ATEX 1015 X, IECEx PTB 13.0034X	II 2 G Ex e IIC Gb, II 2 D Ex tb IIIC Db IP68	773277 	 <table border="1"> <tr><td>TL</td><td>36-45 mm</td></tr> <tr><td>L</td><td>10 mm</td></tr> <tr><td>D</td><td>20</td></tr> <tr><td>SW</td><td>24 mm</td></tr> <tr><td>E</td><td>28 mm</td></tr> </table>	TL	36-45 mm	L	10 mm	D	20	SW	24 mm	E	28 mm
TL	36-45 mm														
L	10 mm														
D	20														
SW	24 mm														
E	28 mm														

**Special tool to turn the junction box**

(not included in delivery)

Photo	Description	Article no.
	Set SC02-AC10 Special wrench Service Manual	293488 

**Fuse for terminal box**

Voltage [V]	Max. current [A]	Article no.
24	0.4	153734 
230	0.63	153717 

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