

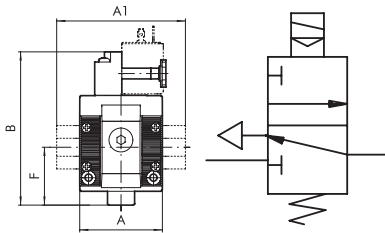
## Blocking valve

»SYNTESI« series

**PLUS**

Art. No. 144878

Type No. 5624V704



Exemplary illustration

This device separates the compressed air circuit from the main air supply. It is a three-way valve that relieves the downstream system in the closed position. This makes it useful for maintenance operations or when the air supply to a machine or piece of equipment needs to be shut off. Available in manual, pneumatic or electro-pneumatic versions. On request also available as assisted electro-pneumatic version (for applications where the inlet pressure is outside the electro-pneumatic valve operating range).

The version with manual control can be locked with up to two (size 1) and up to three (size 2) padlocks when the valve is in the closed position. Alternatively, a version with a  $\varnothing 7$  mm hole for a single lock is available on request.

On the front and back there is a port (G 1/8 for size 1 and G 1/4 for size 2) that can be used with pressure gauges, pressure switches or as an additional air outlet.

A silencer is not included in the delivery for manual and pneumatic actuated shut-off valves.

The coil, plug and silencer are not included in the delivery for electric actuated shut-off valves.

## Technical data

Series	Syntesi
Size	2
Min. input pressure	3 bar
Max. input pressure	10 bar
Temperature range	-10 to 50 °C
Input	G 1/2
Output	G 1/2
Exhaust air	G 1/4
Flow rate measurement 1	$P_2 = 6,3$ bar and pressure drop $\Delta_p = 0,5$ bar
Flow rate 1	3000 NI/min
Flow rate measurement 2	$P_2 = 6,3$ bar and pressure drop $\Delta_p = 1$ bar
Flow rate 2	4000 NI/min
Exhaust flow rate at 6.3 bar	2000 NI/min
Medium	Compressed air or other neutral gases
Housing	Technopolymer
Max. temperature range	50 °C
Input pressure	3 - 10 bar
A	60.5 mm
A1	- mm
B	113.0 mm
F	42.7 mm

## Commercial data

Customs tariff number	84812090
Country of origin	IT
eCl@ss 5.1.4	27291501
eCl@ss 9.0	27291390
UNSPSC_Code_v190501	40141603
UNSPSC_CodeDesc_v190501	Pneumatic valves

C1

# SYNTESI® SHUT-OFF VALVE

This device separates the compressed air circuit from the main air supply. It is a three-way valve that relieves the downstream system in the closed position. This makes it useful for maintenance operations or when the air supply to a machine or piece of equipment needs to be shut off. Manual, pneumatic, electro-pneumatic and assisted electro-pneumatic control versions are available. The last version must be used if the inlet pressure is outside the electro-pneumatic valve operating range, so for particularly low or high pressures. The version with manual control can be locked and you can enter up to two padlocks on size 1 and up to three on size 2 when the valve is in the closed position. As an alternative, a version with a single Ø7 hole is available for a single padlock. On the front and back there is a port (1/8" for size 1 and 1/4" size 2) that can be used with pressure gauges, pressure switches or as an additional air intake.



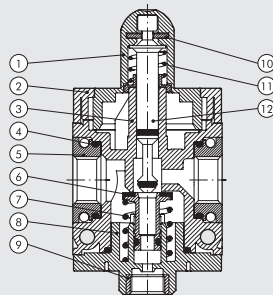
UNITS

Syntesi® SHUT-OFF VALVE

TECHNICAL DATA	V3V SY1			V3V SY2			
	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Threaded port	1/8"			1/4"			
Threaded discharge port	1/8"			1/4"			
Type of control	Manual - pneumatic - Elpn - Elpn pilot-assisted			Manual - Pneumatic - Cnomo elpn - Cnomo elpn pilot-assisted			
Max inlet pressure for pneumatic and solenoid pilot-assisted versions	bar	15		13			
	MPa	1.5		1.3			
	psi	217		188			
Inlet pressure for solenoid version	bar	3 - 10		3 - 10			
	MPa	0.3 - 1		0.3 - 1			
	psi	43 - 145		43 - 145			
Pilot pressure for pneumatic and solenoid pilot-assisted versions	bar	3 - 10		3 - 10			
	MPa	0.3 - 1		0.3 - 1			
	psi	43 - 145		43 - 145			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	800	1000	1100	2800	3000	3000
	scfm	28	35	39	99	106	106
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1100	1500	1600	3600	4000	4000
	scfm	39	53	57	127	141.5	141.5
Exhaust flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	500			2000		
	scfm	18			71		
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -10 to +50			From -10 to +50		
Padlockable knob					Included		
Weight	g	197	192	183	476	449	445
Fluid		Compressed air or other inert gases					
Mounting position		In any position			In any position		
Additional air take-off, for pressure gauges or fittings		1/8", front and rear			1/4", front and rear		
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	500			1500		
	scfm	18			53		
Wall fixing screws		No. 2 M4 screws			No. 2 M5 screws		
Bobbin capacity for electro-pneumatic version		12 VDC and 24 VDC = 2W; 24 VAC, 110 VAC and 220 VAC = 3.5 VA					
Hand operator of electro-pneumatic versions		Bistable: horizontal = OFF; vertical = ON					

## COMPONENTS

- ① Technopolymer knob
- ② Technopolymer hinge
- ③ Technopolymer body
- ④ NBR o-ring gasket
- ⑤ IN/OUT bushing made of OT58 nickel-plated brass or passivated aluminium for 3/4" - 1"
- ⑥ OT58 brass valve with NBR vulcanized gasket
- ⑦ Stainless steel valve spring
- ⑧ Technopolymer plug
- ⑨ OT58 brass threaded insert
- ⑩ Zinc-plated steel plate for knob locking (stainless steel for anti-corrosion version)
- ⑪ Stainless steel spring stem recovery
- ⑫ OT58 brass stem



V10 - Steel plate with Ø3.5 holes for locking with 2 padlocks (SY1) or 3 padlocks (SY2).

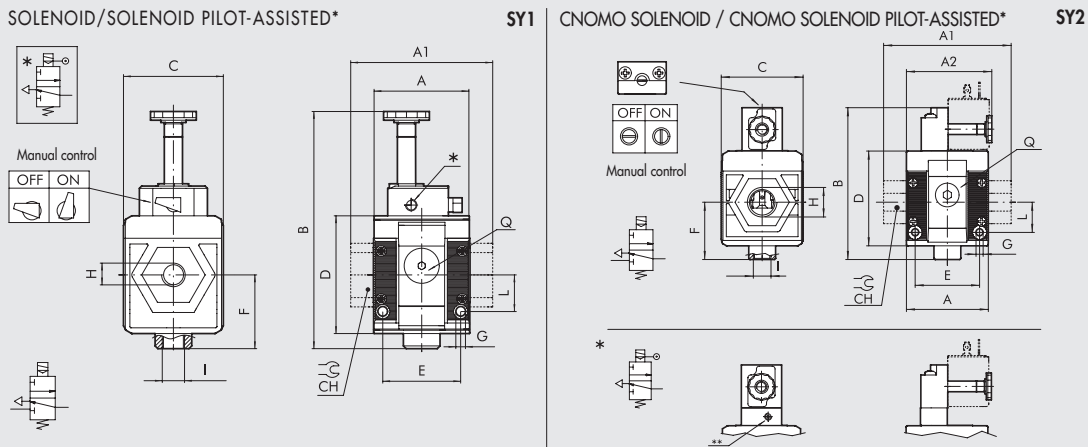
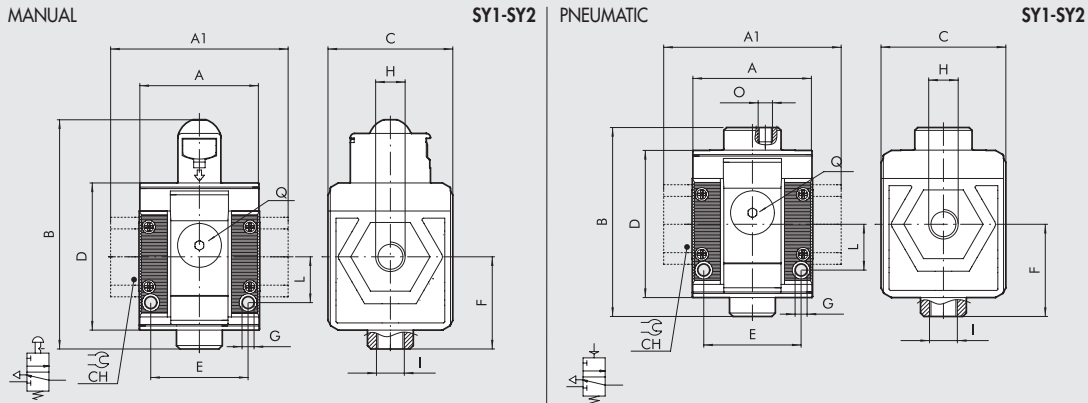


V11 - Steel plate with a single Ø7 hole for docking with a single padlock (compatible with most of the padlocks available from the trade with a Ø5mm arch).



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**DIMENSIONS**



N.B.: Before assembling other Syntesi elements after the V3V, remember to mount the coil on the V3V itself.

UNITS

Syntesi® SHUT-OFF VALVE

	MANUAL				PNEUMATIC				SOLENOID / SOLENOID PILOT-ASSISTED			CNOMO SOLENOID / CNOMO SOLENOID PILOT-ASSISTED									
	SIZE 1			SIZE 2			SIZE 1			SIZE 2			SIZE 1		SIZE 2						
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	42			60.5			42			60.5			42			60.5					
A1	44			95			44			95			44			95					
A2	-			-			-			-			65			-					
B	80			109			66			94			104			-					
Cnomo	-			-			-			-			-			113					
Cnomo pilot ass.	-			-			-			-			-			126					
C	44			61			44			61			44			61					
CH	-			32   36			-			32   36			-			32   36					
D	51.5			70.5			51.5			70.5			51.5			70.5					
E	33.5			47.5			33.5			47.5			33.5			47.5					
F	32.2			42.7			32.2			42.7			32.2			42.7					
G	Hole for M4 screws			Hole for M5 screws			Hole for M4 screws			Hole for M5 screws			Hole for M4 screws			Hole for M5 screws					
I (exhaust)	1/8"			1/4"			1/8"			1/4"			1/8"			1/4"					
L	16			22.5			16			22.5			16			22.5					
O (pilot)	-			-			M5			1/8"			-			-					
Q (no. 2 additional air takes-off)	1/8"			1/4"			1/8"			1/4"			1/8"			1/4"					
** Pilot	-			-			-			-			M5			M5					

**KEY TO CODES**

56	1	1	V	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi 5X Syntesi anti-corrosion	1 Size 1  2 Size 2	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port  0 Without bushing 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port	V Shut-off valve	10 Manual with Ø3.5 hole for padlocks * 11 Manual with Ø7 hole for padlock ● 20 Pneumatic ● 30 Solenoid pilot-assisted ● 70 Solenoid	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port  0 Without bushing 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port

- \* Compatible with most of the padlocks available from the trade with a Ø5mm arch.
- Not available in the anti-corrosion version.

**PURCHASE ORDER CODES HAVING A MORE FREQUENT USE**

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	NOTE
<b>Syntesi SY1 SHUT-OFF VALVE</b>		<b>Syntesi SY2 SHUT-OFF VALVE</b>		Anti-corrosion version 5X_----- Example 5X11V101 V3V SY1 1/8 anti-corrosion
5610V100	V3V SY1 manual without bushings	5620V100	V3V SY2 manual without bushings	
5611V101	V3V SY1 1/8 manual	5623V103	V3V SY2 3/8 manual	
5612V102	V3V SY1 1/4 manual	5624V104	V3V SY2 1/2 manual	
5613V103	V3V SY1 3/8 manual	5625V105	V3V SY2 3/4 manual	
		5626V106	V3V SY2 1 manual	
5610V200	V3V SY1 pneumatic without bushings	5620V200	V3V SY2 pneumatic without bushings	
5611V201	V3V SY1 1/8 pneumatic	5623V203	V3V SY2 3/8 pneumatic	
5612V202	V3V SY1 1/4 pneumatic	5624V204	V3V SY2 1/2 pneumatic	
5613V203	V3V SY1 3/8 pneumatic	5625V205	V3V SY2 3/4 pneumatic	
		5626V206	V3V SY2 1 pneumatic	
5610V300	V3V SY1 elpn pilot-assisted without bushings	5620V300	V3V SY2 elpn pilot-assisted Cnomo without bushings	
5611V301	V3V SY1 1/8 elpn pilot-assisted	5623V303	V3V SY2 3/8 elpn pilot-assisted Cnomo	
5612V302	V3V SY1 1/4 elpn pilot-assisted	5624V304	V3V SY2 1/2 elpn pilot-assisted Cnomo	
5613V303	V3V SY1 3/8 elpn pilot-assisted	5625V305	V3V SY2 3/4 elpn pilot-assisted Cnomo	
		5626V306	V3V SY2 1 elpn pilot-assisted Cnomo	
5610V700	V3V SY1 elpn without bushings	5620V700	V3V SY2 elpn without bushings	
5611V701	V3V SY1 1/8 elpn	5623V703	V3V SY2 3/8 elpn	
5612V702	V3V SY1 1/4 elpn	5624V704	V3V SY2 1/2 elpn	
5613V703	V3V SY1 3/8 elpn	5625V705	V3V SY2 3/4 elpn	
		5626V706	V3V SY2 1 elpn	

**NOTES**


**UNITS**

Syntesi SHUT-OFF VALVE

## GENERAL TECHNICAL DATA SYNTESI®

Syntesi® is an important milestone achieved by Metal Work, the result of thirty years' experience producing air-treatment units. It has been studied in minute detail to obtain the best possible performance in a reduced space and with limited weight. The capacity is much higher than that of other units of the same size.


This modular unit features a very simple yet effective system that requires no brackets, stay bolts or yoke for assembling the elements.

The basic version of Syntesi® incorporates numerous functions that are not provided or are only optional with traditional units. Examples are padlockable knobs, additional pneumatic ports on the front and back, flow options from left to right or vice versa, regulators with compensation system - which are accurate even when the upstream pressure changes, with rapid downstream pressure relief - full indelible marking, automatic condensate drain even in size 1, and 360° visual inspection of oil and condensate levels. The basic materials, technopolymer and nickel-plated brass have excellent corrosion resistance. An anti-corrosion version is available with stainless steel components (screws, plates) or Geomet®-treated ones (regulator springs).



UNITS

GENERAL TECHNICAL DATA Syntesi®

TECHNICAL DATA	SIZE 1			SIZE 2			
	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Threaded port							
Max. input pressure	bar	15			13		
	MPa	1.5			1.3		
	psi	217			188		
Flow rate	See catalogue of the various elements						
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C from -10 to +50			°C from -10 to +50			
Padlockable knob	The knobs of the regulators, filter regulators and standard sectioning valves can all be padlocked						
Fluid	Compressed air or other inert gases						
Mounting position	See catalogue of the various elements						
Direction of flow	Flow options right to left or vice versa						
Additional air take-off, for pressure gauges or fittings	1/8", front and rear, on all modules			1/4", front and rear, on all modules			
Wall fixing screws	No. 2 M4 screws			No. 2 M5 screws			
Certification for potentially explosive atmosphere according to ATEX 2014/34/EU rule	 II 3G Ex h IIC T5 Gc -10°C < Ta < 50°C II 3D Ex h IIIC T100 °C Dc						

### ANTI-CORROSION VERSION

- Differences compared to the standard version:
- stainless steel screws
  - stainless steel plate for R, FR, V3V knobs
  - Geomet®-treated regulator spring and filter-regulator

**FIXING TO FRONT PORTS**



Do not use a spanner for fixing taper threaded elements to the front ports. Mount by hand and apply a liquid sealant (not teflon®).

**ROTARY BUSHINGS**



3/4" and 1" bushings in Size 2 rotate freely to facilitate assembly operations.

**LASER MARKING**



The following is marked indelibly on the body:

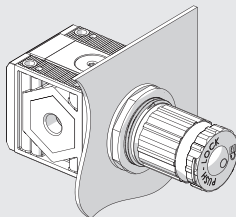
- Metal Work trademark
- Code
- Maximum pressure and temperature
- Degree of filtration or pressure range, where relevant
- Week and year of manufacture
- ATEX category
- Made in Italy

**MOUNTING OPTIONS**

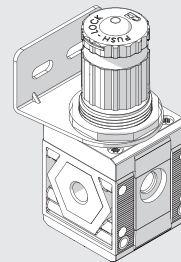
**On the wall, using two screws**



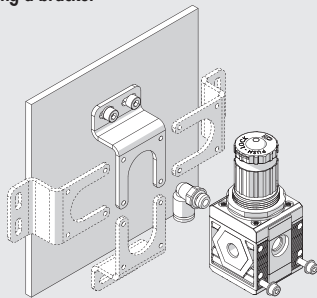
**On a panel**



**Using knob bracket**

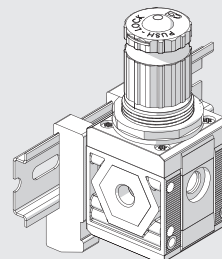


**Using a bracket**



The bracket can be secured in any position, and the fittings can be mounted on the pressure gauge air intake at the back of the unit.

**On a DIN EN50022 bar with the opposite adaptor**



UNITS

GENERAL TECHNICAL DATA Synthesi®

MODULARITY AND FLEXIBILITY

UNITS

GENERAL TECHNICAL DATA Syntesi®





The various elements of Syntesi® A can be connected to the air feed and delivery circuit using pneumatic nickel brass or passivated aluminium ports® and can be fixed together using nipples®.

The nipples and ports are easy to remove by unscrewing the two front screws®. This solution has numerous advantages:

- Reduced overall dimensions.
- Free composition of multiple elements, without the need for brackets, stay bolts or yoke.
- The threads for the fittings are metallic, allowing high tightening torques, also for tapered threads.
- Maximum flexibility: a unit can be transformed at any time by adding an element or replacing a port with another one, e.g. 1/4" instead of 1/8".
- The air intake port can be the same or different from the outlet port, as desired.

Standard Syntesi® ports are: 1/8", 1/4", 3/8" for size 1; 3/8", 1/2", 3/4", 1" for size 2.

It may be necessary to use a vice to insert the bushes into size 2.

The nipples have different functions:

- Nipple® joins two elements of the same size together.
- Size adaptor® can be used to connect an element in the Syntesi® 2 series with one in the Syntesi® 1 series.
- The 90° adaptor® can be used to connect two 90° angled elements. For example, it can help directing the regulator knob or the control knob of a sectioning valve towards the user.
- The two-way air intake® is a simple and cost-effective system which, besides connecting two elements together, has 2 opposing threaded air intakes.
- The adaptor for Regtronic® can be used to fix the Regtronic 1/4" proportional valve to a Syntesi® size 1 element.

**Additional ports®.** On the front and back of ALL Syntesi® elements there is a port (1/8" for size 1, 1/4" for size 2) that can be used for pressure gauges®, pressure switches® or, given the high flow rate, as additional air take-off®. These ports are downstream of the element, so, for example, a regulator port can supply air at a set pressure or a filter port can supply filtered air (not valid for activated carbon filter and depurator).

**Wall fixing.** Only two through screws® are needed. No bulky brackets or additional flanges are required. The bracket® can be used to separate the unit from the fixing wall, e.g. to mount a fitting to the rear port.

**Fixing on a DIN EN50022 bar.** Can be done using the bracket kit®.

**Regulator fixing bracket®.** Regulators and filter-regulators can also be fixed using a steel bracket® that embraces the bell.

**Padlockable knob®.** The knobs of regulators, filter-regulator and sectioning valves can all be padlocked. The steel plate is included in the supply. You can insert up to two 3 mm diameter padlocks® on size 1 and three padlocks on size 2. As an alternative, the sectioning valve can have a steel plate suitable for a single 6 mm diameter padlock.

**Safety valve®.** The unit can incorporate a series 70 SAFE AIR® safety valve.

**Flowmeter series FLUX 1-2®.** The unit can incorporate a series FLUX 1 or FLUX 2 flow meter.

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# SYNTESI® KEY TO CODES

## KEY TO CODES SINGLE ELEMENT

56	1	1	F	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi 5X Syntesi anti-corrosion	1 Size 1	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port	F Filter D Depurator C Active carbon filter R Pressure regulator B Filter-regulator L Lubricator ● V Shut off valve ▲ A Progressive starter ▲ S Pressure switches P Air take-off	Varies from element to element	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port
	2 Size 2	0 Without bushing 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port			0 Without bushing 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port

- The anti-corrosion version of this element is only available with manual actuation.
- ▲ Not available in the anti-corrosion version.

## KEY TO CODES UNIT COMPOSED OF TWO OR THREE ELEMENTS

56	1	1	V	10	B	24	L	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT 1	TYPE	ELEMENT 2	TYPE	ELEMENT 3	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi 5X Syntesi anti-corrosion	1 Size 1	1 1/8" port 2 1/4" port 3 3/8" port	F Filter D Depurator C Active carbon filter R Pressure regulator B Filter-regulator L Lubricator ● V Shut off valve ▲ A Progressive starter ▲ S Pressure switches P Air Take-off	Varies from element to element	F Filter D Depurator C Active carbon filter R Pressure regulator B Filter-regulator L Lubricator ● V Shut off valve ▲ A Progressive starter ▲ S Pressure switches P Air Take-off	Varies from element to element	F Filter D Depurator C Active carbon filter R Pressure regulator B Filter-regulator L Lubricator ● V Shut off valve ▲ A Progressive starter ▲ S Pressure switches P Air Take-off	Varies from element to element	1 1/8" port 2 1/4" port 3 3/8" port 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port
	2 Size 2	3 3/8" port 4 1/2" port 5 3/4" port 6 1" port							

- The anti-corrosion version of this element is only available with manual actuation.
- ▲ Not available in the anti-corrosion version.

UNITS

Syntesi® KEY TO CODES

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## Accessories

	Art. No.	Type No.
Mounting bracket, size 2, standard and anti-corr.	145659	9200717X
Adapter for DIN rail, size 1 and size 2	145660	9200718X
Connecting nipple kit, size 2	144696	9210010
Connecting element 90°, size 2	145503	9210019
Size adapter, size 1 - size 2, incl. 4 screws	145504	9210006
Fastening screw, size 2	145508	9210031
Solenoid, 30 mm x Ø 8 mm, 24 V DC, 4 W	145478	W0210010100
Solenoid, 30 mm x Ø 8 mm, 24 V AC, 50/60 Hz	145479	W0210011100
Solenoid, 30 mm x Ø 8 mm, 110 V AC, 50/60 Hz	145480	W0210012100
Solenoid, 30 mm x Ø 8 mm, 230 V AC, 50/60 Hz	145481	W0210013100
Plug connector, 30 mm, type A	145490	W0970520033
Plug connector LED, 24 V, 30 mm, type A	145491	W0970520034
Plug connector LED, 110 V, 30 mm, type A	145492	W0970520035
Plug connector LED, 230 V, 30 mm, type A	145493	W0970520036
Plug connector LED, varistor 24 V, 30 mm, type A	145494	W0970520037
Plug connector LED, varistor 110 V, 30 mm, type A	145495	W0970520038
Plug connector LED, varistor 230 V, 30 mm, type A	145496	W0970520039
Knurled nut, for coil 22 mm, IP 65	145501	0222100100
Solenoid kit 30 mm, 24 V DC, ATEX II 2 GD	145482	0227606913
Solenoid kit 30 mm, 24 V DC, ATEX II 2 GD	145483	0227606915
Solenoid kit 30 mm, 24 V AC, ATEX II 2 GD	145484	0227608013
Solenoid kit 30 mm, 24 V AC, ATEX II 2 GD	145485	0227608015
Solenoid kit 30 mm, 110 V AC, ATEX II 2 GD	145486	0227608023
Solenoid kit 30 mm, 110 V AC, ATEX II 2 GD	145487	0227608025
Solenoid kit 30 mm, 230 V AC, ATEX II 2 GD	145488	0227608033
Solenoid kit 30 mm, 230 V AC, ATEX II 2 GD	145489	0227608035

## Spareparts

	Art. No.	Type No.
Threaded port bushing, size 2, G 1/2	144692	9210012
CNOMO control, with bistable manual control	145657	9453922