

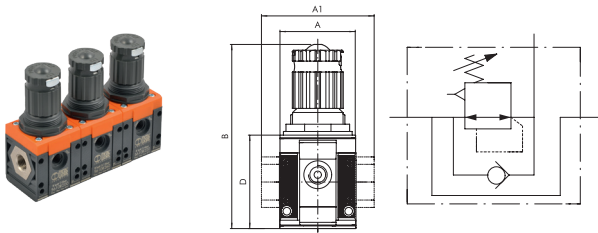
## In-series regulator

»SYNTESI« series

**PLUS**

Art. No. 140087

Type No. 5624R204



Exemplary illustration

In-series regulators are used to take the regulated air from the front and rear ports, while the pneumatic inlet and outlet ports are connected directly. It is possible for instance to assemble several regulators side by side, all supplied at the same pressure, and obtain different regulated pressures, regardless of the pressure of the previous module. The in-series regulators use the same construction principles as the standard »SYNTESI« series regulator, so the advantages are the same, such as compensation for upstream pressure changes, relief valve, rapid relief of the downstream pressure and push-lock type adjustment knobs which can be additionally secured with padlocks.

Pressure gauge not included in delivery!

## Technical data

Series	Syntesi
Size	2
Max. input pressure	13 bar
Temperature range	-10 to 50 °C
Control range	0 - 2 bar
Input	G 1/2
Output	G 1/2
Front and back port thread	G 1/4
Flow rate measurement 1	at $P_1 = 10$ bar, $P_2 = 6.3$ bar and pressure drop $\Delta_p = 0.5$ bar
Flow rate 1	540 NI/min
Flow rate measurement 2	at $P_1 = 10$ bar, $P_2 = 6.3$ bar and pressure drop $\Delta_p = 1$ bar
Flow rate 2	1000 NI/min
Medium	Compressed air or other neutral gases
Housing	Technopolymer
Sealant	NBR
Diaphragms	NBR 60 Shore (hardness) with polyester fabric insert
Spring bonnet	Technopolymer
A	60.5 mm
A1	- mm
B	139.0 mm
D	70.5 mm

## Commercial data

Customs tariff number	84811099
Country of origin	IT
eCl@ss 5.1.4	37011108
eCl@ss 9.0	37011108
UNSPSC_Code_v190501	41112404
UNSPSC_CodeDesc_v190501	Pressure regulator

**SYNTESI® IN-SERIES REGULATOR**


The in-series regulator is used to take air at a set pressure from the ports on the front and back of the body, while the pneumatic inlet and outlet ports are connected directly.

It is possible for instance to assemble several regulators side by side, all supplied at the same pressure, and obtain different regulated pressures, regardless of the pressure of the previous module.

The in-series regulator uses the same construction principles as the standard regulator, so the advantages are the same, such as compensation for upstream pressure changes, relief valve, rapid relief of the downstream pressure and a padlockable push-lock knob.



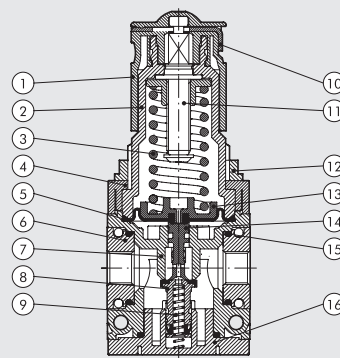
TECHNICAL DATA	IN-SERIES REGULATOR SY1			IN-SERIES REGULATOR SY2					
	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"		
Threaded inlet port, through	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"		
Utility threaded port		1/8"				1/4"			
Max. input pressure		bar	15			13			
		MPa	1.5			1.3			
		psi	217			188			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)		Nl/min	330			540			
		scfm	12			19			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)		Nl/min	500			1000			
		scfm	18			35			
Relief valve flow rate at 6.3 bar (0.63 MPa; 91 psi)		Nl/min	70			100			
		scfm	2.5			3.5			
Min/max temperature at 10 bar; 1 MPa; 145 psi		°C	From -10 to +50			From -10 to +50			
Full outflow with zero inlet pressure				Included					
Padlockable knob				Included					
Upstream pressure compensation				Included, via balanced valve					
Weight	g		193	188	179	546	519	515	503
Fluid			Compressed air or other inert gases						
Mounting position			In any position						
Wall fixing screws			No. 2 M4 screws			No. 2 M5 screws			
Notes on use			The pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value. On request version without overpressure exhaust						

**UNITS**

Syntesi® IN-SERIES REGULATOR

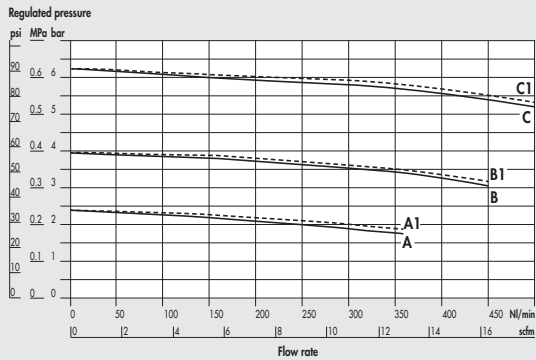
**COMPONENTS**

- ① Technopolymer adjusting knob
- ② Technopolymer bell
- ③ Steel adjusting spring (with Geomet® treatment for anti-corrosion version)
- ④ Technopolymer flange
- ⑤ Rolling diaphragm
- ⑥ IN/OUT bushing made of OT58 nickel-plated brass or passivated aluminium for 3/4" - 1"
- ⑦ Technopolymer body
- ⑧ OT58 brass valve, with NBR vulcanized gasket
- ⑨ Stainless steel valve spring
- ⑩ Zinc-plated steel plate for knob locking (stainless steel for anti-corrosion version)
- ⑪ OT58 brass adjusting screw
- ⑫ Technopolymer ring nut
- ⑬ Technopolymer plate
- ⑭ Technopolymer rod
- ⑮ NBR o-ring gaskets
- ⑯ Technopolymer plug

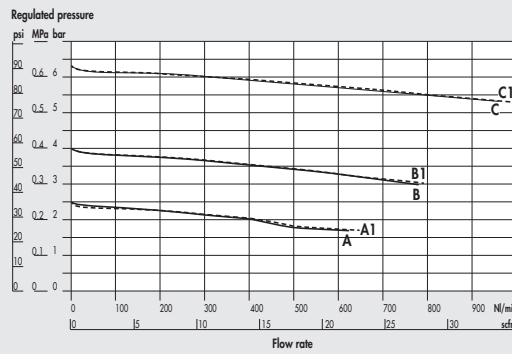


**FLOW CHARTS**

IN-SERIES REGULATOR Syntesi® SY1 1/4"-1/8"-3/8"



IN-SERIES REGULATOR Syntesi® SY2 3/8" - 1/2" - 3/4" - 1"

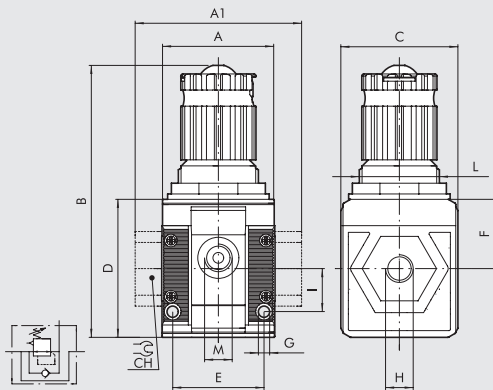


A = P In 7 bar - P Out 2.5 bar  
B = P In 7 bar - P Out 4 bar  
C = P In 7 bar - P Out 6.3 bar

A1 = P In 10 bar - P Out 2.5 bar  
B1 = P In 10 bar - P Out 4 bar  
C1 = P In 10 bar - P Out 6.3 bar

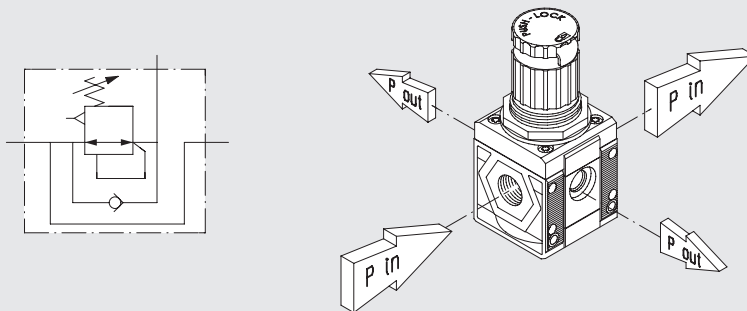
**UNITS**

**DIMENSIONS**



	SIZE 1			SIZE 2		
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"   1"
A	42					60.5
A1	-		44	-		95   95
B	102					139
C	44					61
CH	-			-		32   36
D	51.5					70.5
E	33.5					47.5
F	25.8					38.2
G	Hole for M4 screws			Hole for M5 screws		
I	16					22.5
L	M30x1.5					M38x2
M (use)	1/8"					1/4"

**FUNCTION DIAGRAM**





**KEY TO CODES**

56	1	1	R	24	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	IN-SERIES REGULATOR SETTING RANGE	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	R Pressure regulator	● 20 0 to 2 bar + 22 0 to 4 bar 24 0 to 8 bar 26 0 to 12 bar	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

● Not available in the anti-corrosion version. + Anti-corrosion version available only in size 1.

**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 IN-SERIES REGULATOR</b>		<b>Syntesi SY2 IN-SERIES REGULATOR</b>		<b>Anti-corrosion version</b>
5610R240	In-series REG SY1 08 without bushings	5620R240	In-series REG SY2 08 without bushings	<b>5X</b> _____
5610R260	In-series REG SY1 012 without bushings	5620R260	In-series REG SY2 012 without bushings	<b>Example</b>
5611R241	In-series REG SY1 1/8 08	5623R243	In-series REG SY2 3/8 08	<b>5X11R241</b> In-series REG SY1 1/8 08 anti-corrosion
5611R261	In-series REG SY1 1/8 012	5623R263	In-series REG SY2 3/8 012	
5612R242	In-series REG SY1 1/4 08	5624R244	In-series REG SY2 1/2 08	
5612R262	In-series REG SY1 1/4 012	5624R264	In-series REG SY2 1/2 012	
5613R243	In-series REG SY1 3/8 08	5625R245	In-series REG SY2 3/4 08	
5613R263	In-series REG SY1 3/8 012	5625R265	In-series REG SY2 3/4 012	
		5626R246	In-series REG SY2 1 08	
		5626R266	In-series REG SY2 1 012	

**NOTES**

UNITS

Syntesi® IN-SERIES REGULATOR

## 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**



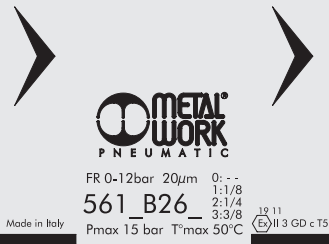
Do not use a spanner for fixing taper threaded elements to the front ports. Mount by hand and apply a liquid sealant (not teflon®).

**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**

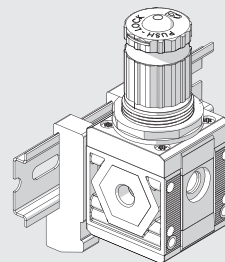


**Using a bracket**



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.

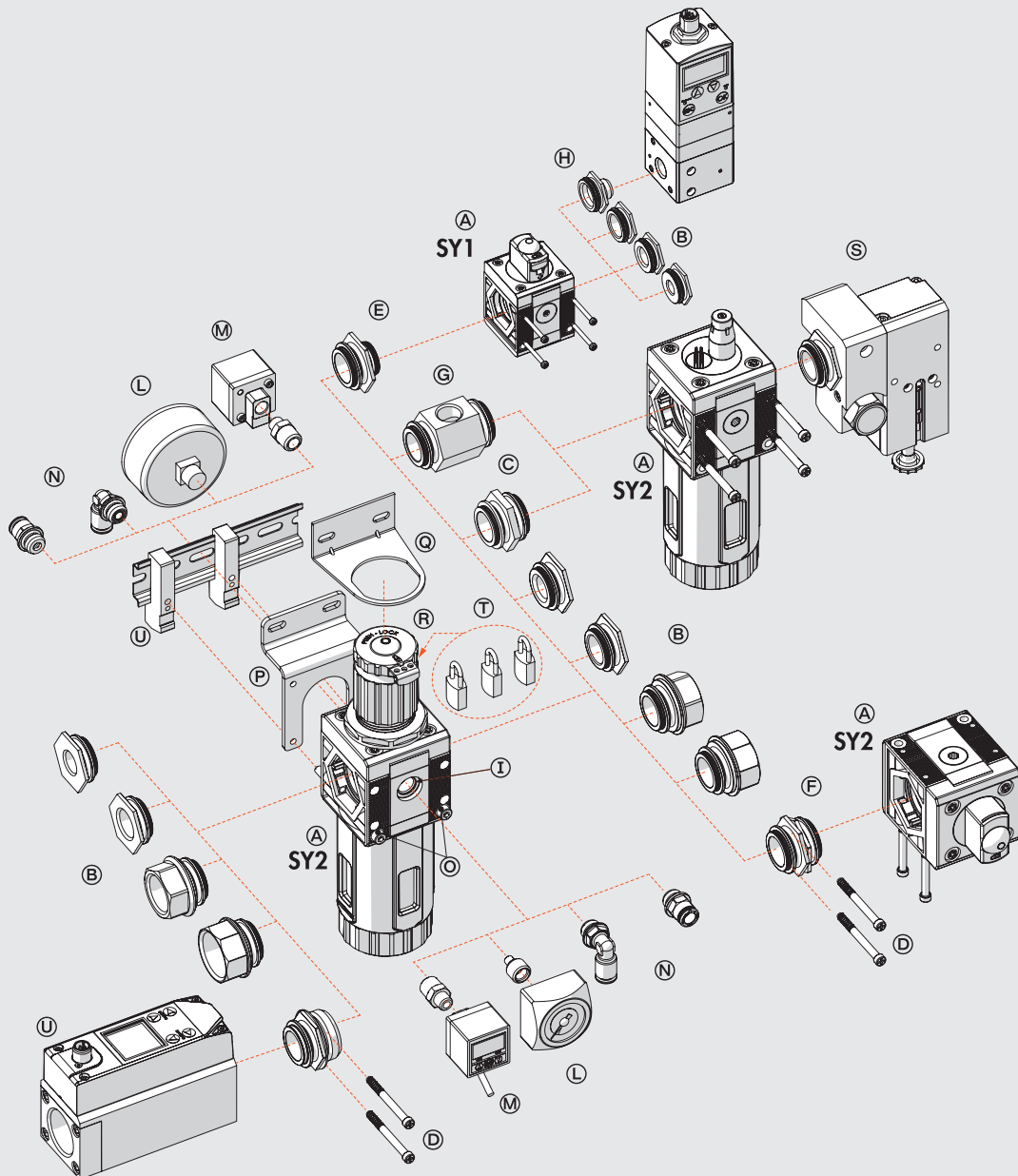
**On a DIN EN50022 bar with the opposite adaptor**



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.

C1

# 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

C1.8

## Accessories

	Art. No.	Type No.
Neck bracket, for size 2, and others	145469	9400701
Mounting bracket, size 2, standard and anti-corr.	145659	9200717X
Adapter for DIN rail, size 1 and size 2	145660	9200718X
Pressure gauge, G1/4 rear centric, 0-12 bar, Ø63mm	145474	9900101
Adapter for pressure gauges, G 1/4 ET, G 1/8 IT	145477	9210005
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
Padlock	145509	9062401

## Spareparts

	Art. No.	Type No.
Spring, size 2, 0 - 2 bar	145637	9210195
Regulator cap (bell), size 2, 0 - 2 bar	145645	9210220
Valve poppet for pressure regulator, size 2	145650	9210230
Threaded port bushing, size 2, G 1/2	144692	9210012