

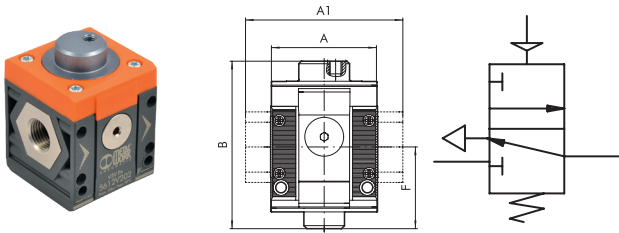
## Blocking valve

»SYNTESI« series

**PLUS**

Art. No. 144865

Type No. 5612V202



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                         | 1  |
| Max. input pressure          | 15 bar   |
| Temperature range            | -10 to 50 °C   |
| Input                        | G 1/4  |
| Output                       | G 1/4  |
| Exhaust air                  | G 1/8  |
| Flow rate measurement 1      | $P_2 = 6,3$ bar and pressure drop $\Delta_p = 0,5$ bar |
| Flow rate 1                  | 1000 NI/min  |
| Flow rate measurement 2      | $P_2 = 6,3$ bar and pressure drop $\Delta_p = 1$ bar   |
| Flow rate 2                  | 1500 NI/min  |
| Exhaust flow rate at 6.3 bar | 500 NI/min   |
| Medium                       | Compressed air or other neutral gases                  |
| Housing                      | Technopolymer  |
| A                            | 42.0 mm  |
| A1                           | - mm   |
| B                            | 66.0 mm  |
| F                            | 32.2 mm  |

## Commercial data

|                         |                  |
|-------------------------|------------------|
| Customs tariff number   | 84812090         |
| Country of origin       | IT               |
| eCl@ss 5.1.4            | 27292002         |
| eCl@ss 9.0              | 27292002         |
| UNSPSC_Code_v190501     | 40141603         |
| UNSPSC_CodeDesc_v190501 | Pneumatic valves |

# 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.



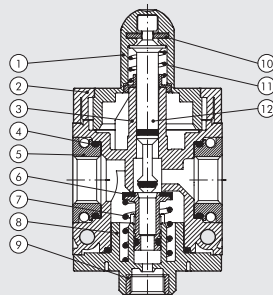
UNITS

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   |      |   |                      |       |       |
|  | MPa   | 1.5  |      |   |                      |       |       |
|  | psi   | 217  |      |   |                      |       |       |
| 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).



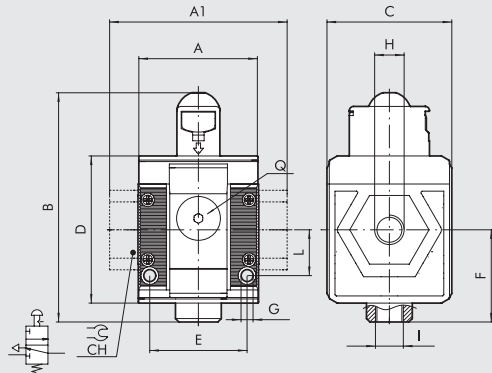
V11 - Steel plate with a single Ø7 hole for docking with a single padlock (compatible with most of the padlocks available from the trade with a Ø5mm arch).



**DIMENSIONS**

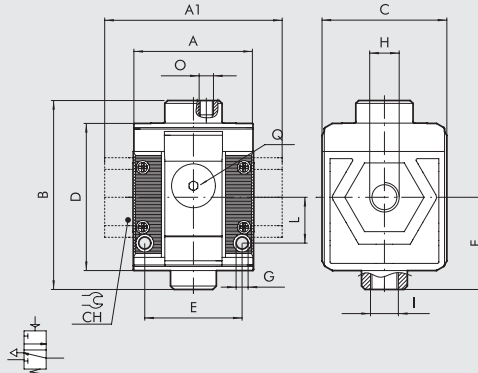
**MANUAL**

**SY1-SY2**



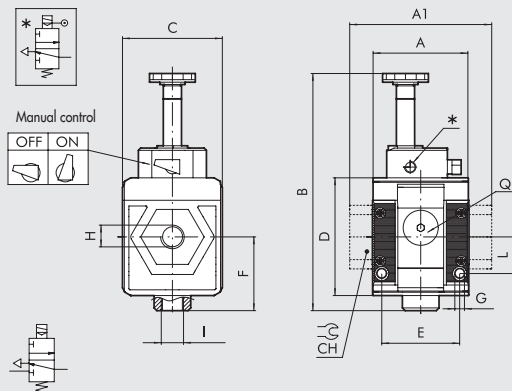
**PNEUMATIC**

**SY1-SY2**



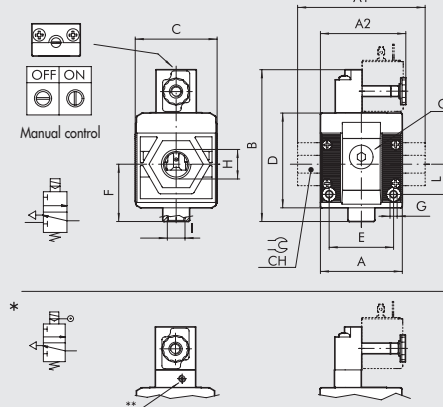
**SOLENOID/SOLENOID PILOT-ASSISTED\***

**SY1**



**CNOMO SOLENOID / CNOMO SOLENOID PILOT-ASSISTED\***

**SY2**



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                 |      |      |      |      |    |

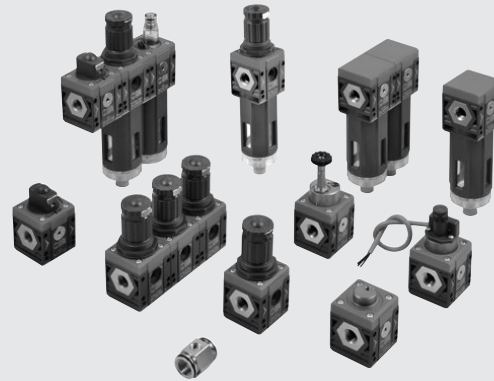


## GENERAL TECHNICAL DATA SYNTESI®

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<br>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.

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<br>5X Syntesi<br>anti-corrosion | 1 Size 1 | 0 Without bushing<br>1 1/8" port<br>2 1/4" port<br>3 3/8" port              | F Filter<br>D Depurator<br>C Active carbon filter<br>R Pressure regulator<br>B Filter-regulator<br>L Lubricator<br>● V Shut off valve<br>▲ A Progressive starter<br>▲ S Pressure switches<br>P Air take-off | Varies from element to element | 0 Without bushing<br>1 1/8" port<br>2 1/4" port<br>3 3/8" port              |
|  | 2 Size 2 | 0 Without bushing<br>3 3/8" port<br>4 1/2" port<br>5 3/4" port<br>6 1" port |   |                                | 0 Without bushing<br>3 3/8" port<br>4 1/2" port<br>5 3/4" port<br>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<br>5X Syntesi<br>anti-corrosion | 1 Size 1 | 1 1/8" port<br>2 1/4" port<br>3 3/8" port              | F Filter<br>D Depurator<br>C Active carbon filter<br>R Pressure regulator<br>B Filter-regulator<br>L Lubricator<br>● V Shut off valve<br>▲ A Progressive starter<br>▲ S Pressure switches<br>P Air Take-off | Varies from element to element | F Filter<br>D Depurator<br>C Active carbon filter<br>R Pressure regulator<br>B Filter-regulator<br>L Lubricator<br>● V Shut off valve<br>▲ A Progressive starter<br>▲ S Pressure switches<br>P Air Take-off | Varies from element to element | F Filter<br>D Depurator<br>C Active carbon filter<br>R Pressure regulator<br>B Filter-regulator<br>L Lubricator<br>● V Shut off valve<br>▲ A Progressive starter<br>▲ S Pressure switches<br>P Air Take-off | Varies from element to element | 1 1/8" port<br>2 1/4" port<br>3 3/8" port<br>4 1/2" port<br>5 3/4" port<br>6 1" port |
|  | 2 Size 2 | 3 3/8" port<br>4 1/2" port<br>5 3/4" port<br>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

|   | <b>Art. No.</b> | <b>Type No.</b> |
|---|-----------------|-----------------|
| Mounting bracket, size 1, standard and anti-corr. | 145658          | 9200716X        |
| Adapter for DIN rail, size 1 and size 2           | 145660          | 9200718X        |
| Connecting nipple kit, size 1                     | 144695          | 9210000         |
| Connecting element 90°, size 1                    | 145502          | 9210009         |
| Size adapter, size 1 - size 2, incl. 4 screws     | 145504          | 9210006         |
| Fastening screw, size 1                           | 145507          | 9210030         |

## Spareparts

|                                       | <b>Art. No.</b> | <b>Type No.</b> |
|---------------------------------------|-----------------|-----------------|
| Threaded port bushing, size 1, G 1/4, | 144689          | 9210002         |