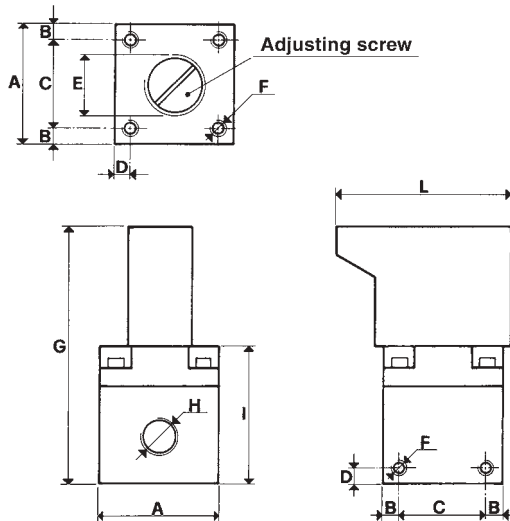


## [Small vacuum switch]



This vacuum switch having very small dimensions, provides an electric signal when a given adjustable vacuum degree is reached. The pressure differential existing between the set maximum value and the value of reset of the rest signal is  $50 \div 60$  mbar and it is not adjustable.

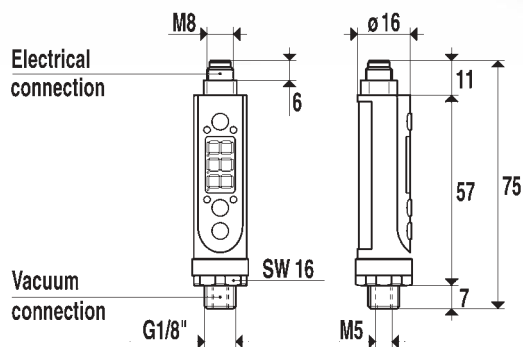
It is particularly suitable where an electrical signal is needed when a certain vacuum degree is reached, for safety, for starting a cycle, for checking the grip of the cups etc.

### Technical features :

#### Art. 12 02 10

- Adjustment range:  
from 930 to 10 mbar abs.
- Repeatability:  $\pm 1,5$  mbar.
- Contacts: one in commutation
- Contacts capacity: 3A at 250V A. C.
- Electrical connections:  
fast-on terminals mod. 110.
- Room temperature:  
from  $-25^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ .
- Protection: IP 55.

| Art.     | A  | B | C  | D | E           | F           | G    | H           | I  | L  |
|----------|----|---|----|---|-------------|-------------|------|-------------|----|----|
|          |    |   |    |   | $\emptyset$ | $\emptyset$ |      | $\emptyset$ |    |    |
| 12 02 10 | 30 | 4 | 22 | 4 | 14          | M4          | 64.5 | 1/8"        | 35 | 44 |



## [Digital vacuum switch]

This vacuum switch is a real innovation in the field of vacuum checking and measurement. Contained in a sturdy ABS-capsule, the vacuum switch is compact and extremely light; these features allow installation on the machine and close to the application.

The digital vacuum switch, accurately calibrated and compensated for temperatures, is able to give very precise measurements values.

The measured values are shown on the display, making vacuum gauges redundant.

Two LED, one red and one green, built into the small control panel, show the switch state of the two output digital signals. The two switch outputs are completely independent.

The switch point between 0 and -1 bar as well as the hysteresis from 0 to 100% of the set up value can be easily programmed by the means of the small push buttons incorporated in the small control panel. Also, other functions can be programmed, such as the comparison between two values, contacts N.O. and N.C., choice of the vacuum unit, lock of the values and the programmed functions, reversible display, etc.

This switch can be rotated freely, without unscrewing it from the vacuum connection, to orientate the display in the required position.

The vacuum connection is dual threaded: G 1/8" external and M5 internal.

The electrical connection is an M8 4-pin threaded plug and upon request the connection cable is available in PUR, with an axial or radial connector.

Digital vacuum switch are suitable for the measurement and the control of dry air and non-corrosive gases.

It is recommended for use in a vacuum circuit where determination of a safe vacuum level is required prior to the start of a production cycle, for the grip control of a vacuum cup(s), etc.

Also with the adjustable hysteresis, it is possible to control the compressed air for vacuum generators, allowing a considerable energy saving.

### ELECTRICAL FEATURES AND DATA

#### ART. 12 10 10

|                       |  |
|-----------------------|--|
| Adjustment range      | from 0 to -1 bar(g)                                  |
| Supply voltage        | 10.8 ÷ 30 VDC (protection against polarity reversal) |
| Current input         | ≤ 55 mA to programme; ≤ 35 mA during operation       |
| Switch outputs        | 2 digital PNP, NO or NC, max switch power 250 mA     |
| Display tolerance     | ± 1%   |
| Response time         | ≤ 2,5 ms   |
| Switch frequency      | 400 Hz   |
| Hysteresis            | Adjustable from 0 to 100% of the max set up value    |
| Repeatability         | ± 0,2% of measuring range                            |
| Display               | LED 3 digit 7segment display                         |
| Insulation resistance | < 100 MΩ at 500 VDC                                  |
| Proof voltage         | 1000 VDC -1 min                                      |
| Class of protection   | IP 65  |

### ENVIRONMENTAL CONDITIONS

|                          |                                 |
|--------------------------|---------------------------------|
| Position of installation | anywhere                        |
| Measuring fluids         | non-corrosive gases and dry air |
| Working temperature      | 0 ÷ +50°C                       |
| Storage temperature      | -20 ÷ +80 °C                    |
| Emitted interference     | according to EN 50081-1         |
| Interference immunity    | according to EN 50082-2         |

### MECHANICAL FEATURES AND DATA

|                      |                                     |
|----------------------|-------------------------------------|
| Container            | plastics ABS-PC                     |
| Connections          | nickel-plated brass                 |
| Weight               | ~ 25 g.                             |
| Electrical connector | M8-4 pin plug                       |
| Connection to fluid  | thread G 1/8" external, M5 internal |

### ACCESSORIES

|                             |  |
|-----------------------------|--|
| Electrical connection cable | with axial connector, mt 5 - PUR M8 x 1 x 0,25 mm - Item No. 00 12 20  |
| Electric connection cable   | with radial connector, mt 5 - PUR M8 x 1 x 0,25 mm - Item No. 00 12 21 |
| Kit for fixing to wall      | adaptor flange with bracket, OR and screws. - Item No. 00 12 22        |

# [Digital pressure switch]



Contained in a sturdy ABS-capsule, the pressure switch is compact and extremely light; these features allowing installation directly on the machine and close to the application.

The digital pressure switch, accurately calibrated and compensated for temperatures, offers a very precise measurement.

The measured values are shown on the display, making external pressure gauges redundant.

Two LED, one red and one green, installed in the small control panel, show the switch state of the two output digital signals. The two switch outputs are completely independent.

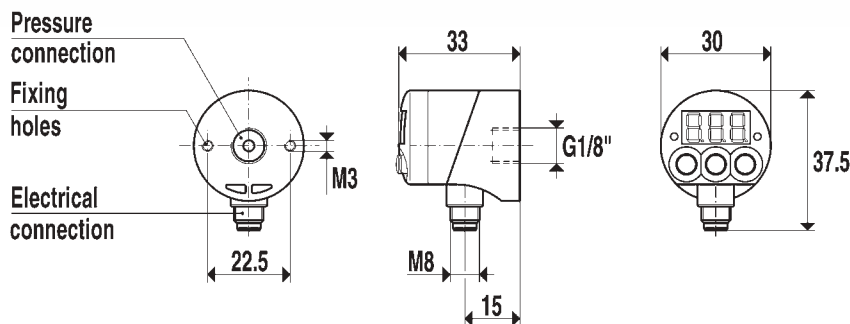
The switch point between 0 and 10 bar(g) as well as the hysteresis from 0 to 100% of the set value can be easily programmed by the means of the small push buttons incorporated in the small control panel. Also, other functions can be programmed, such as the comparison between two values, N.O. and N.C. contacts, unit of measurement choice, locking of the values and of the programmed functions, etc.

The pneumatic connection is a G 1/8 female thread.

The electrical connection is an M8 -4 pin threaded plug; upon request a connection cable is available in PUR, with an axial or radial connector.

This digital pressure switch is suitable for the measurement and the control of dry air and non-corrosive gases.

It is recommended when a signal is required to indicate that a certain pressure level has been achieved, a safety circuit, to start a work cycle or to keep the working pressure inside pre-selected values, etc.



## ELECTRICAL FEATURES AND DATA

ART. 12 25 10

|                       |  |
|-----------------------|--|
| Adjustment range      | from 0 to 10 bar (g)                                 |
| Supply voltage        | 10.8 ÷ 30 VDC (protection against polarity reversal) |
| Current input         | ≤ 55 mA to programme; ≤ 35 mA during operation       |
| Switch outputs        | 2 digital PNP, NO or NC, max switch power 250 mA     |
| Display tolerance     | ± 1%   |
| Response time         | ≤ 2,5 ms   |
| Switch frequency      | 400 Hz   |
| Hysteresis            | Adjustable from 0 to 100% of the max set up value    |
| Repeatability         | ± 0,2% of measuring range                            |
| Display               | LED 3 digit, 7 segment display                       |
| Insulation resistance | <100 M Ω at 500 VDC                                  |
| Proof voltage         | 1000 VDC -1 min                                      |
| Class of protection   | IP 65  |

## ENVIRONMENTAL CONDITIONS

|                          |                                 |
|--------------------------|---------------------------------|
| Position of installation | anywhere                        |
| Measuring fluids         | non-corrosive gases and dry air |
| Working temperature      | 0 ÷ +50 °C                      |
| Storage temperature      | -20 ÷ +80 °C                    |
| Emitted interference     | conforme alla norma EN 50081-1  |
| Interference immunity    | conforme alla norma EN 50082-2  |

## MECHANICAL FEATURES AND DATA

|                      |                      |
|----------------------|----------------------|
| Container            | plastic ABS-PC       |
| Connections          | nickel-plated brass  |
| Weight               | ~45 g.               |
| Electrical connector | M8-4 pin plug        |
| Connection to fluid  | G 1/8" female thread |

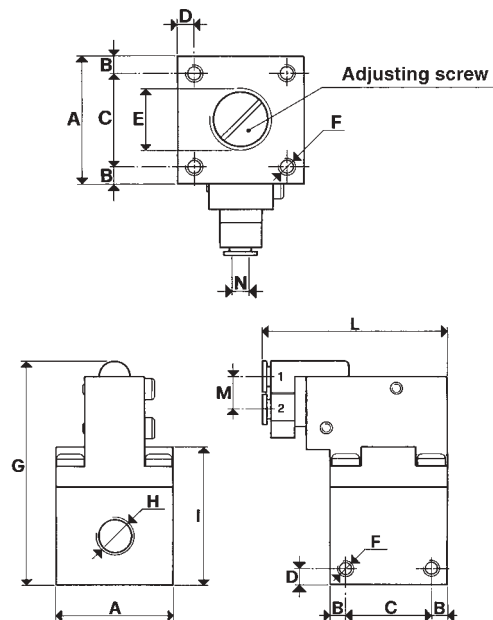
## ACCESSORIES

|                                    |  |
|------------------------------------|--|
| <b>Electrical connection cable</b> | with an axial connector, mt 5 - PUR M8 x 1 x 0,25 mm - Item No. 00 12 20 |
| <b>Electrical connection cable</b> | with a radial connector, mt 5 - PUR M8 x 1 x 0,25 mm - Item No. 00 12 21 |
| <b>Kit for fixing to wall</b>      | adaptor flange with bracket, spacers and screws. - Item No. 00 12 23     |





## [Pneumatic vacuum switches]



These vacuum switches having very small dimensions, either give or remove a pneumatic signal, according to the model, when a given adjustable vacuum degree is reached.

The pressure differential existing between the set maximum value and the value of reset of the rest signal is not adjustable.

They are particularly suitable to control vacuum generators and to operate pneumatic control valves.

### Technical features:

#### Art. 12 01 30

- Adjustment range:  
from 930 mbar to 50 mbar (a).
- Fixed differential: 70 mbar.
- Repeatability:  $\pm 5$  mbar.
- Signal: normally closed, on commutation.
- Supply pressure: 2 ÷ 8 bar (g).
- Microvalve maximum capacity: 50 l/min.
- Room temperature: from  $-10^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ .

#### Art. 12 02 30

- Adjustment range:  
from 900 mbar to 40 mbar (a).
- Fixed differential: 100 mbar.
- Repeatability:  $\pm 5$  mbar.
- Signal: normally open, on commutation.
- Supply pressure: 2 ÷ 8 bar (g).
- Microvalve maximum capacity: 50 l/min.
- Room temperature: from  $-10^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ .

| Art.     | A  | B | C  | D | E           | F           | G  | H           | I  | L  | M | N           |
|----------|----|---|----|---|-------------|-------------|----|-------------|----|----|---|-------------|
|          |    |   |    |   | $\emptyset$ | $\emptyset$ |    | $\emptyset$ |    |    |   | $\emptyset$ |
| 12 01 30 | 30 | 4 | 22 | 4 | 14          | M4          | 57 | 1/8"        | 35 | 47 | 8 | 4           |
| 12 02 30 | 30 | 4 | 22 | 4 | 14          | M4          | 57 | 1/8"        | 35 | 47 | 8 | 4           |

# [Vacuum regulators]



## Distinctive features

Vacuum regulators are used to adjust the preset vacuum degree, they keep it constant (secondary depression) regardless of the oscillations of the vacuum degree of the net (primary depression) and of the capacity.

Their operation is with a membrane-piston and they take advantage of the pressure differential existing between the secondary depression and the atmospheric pressure.

Unlike vacuum adjusting valves, regulators do not introduce air into the circuit, thus permitting to produce more grip points with different vacuum values, from only one depression source.

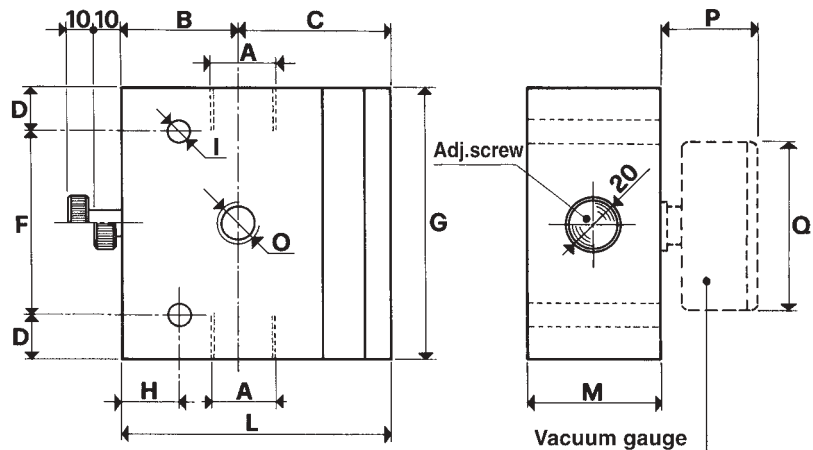
## Technical features:

- Operation: membrane-piston regulator.
- Adjustable operating pressure: from 800 to 1 mbar abs.
- Capacities: from 2 to 160 cum/h.
- Room temperature: from -10°C to +80°C.
- Mounting: any position.

## Applications

The main use of the vacuum regulators is on the centralized plants where, independently of the vacuum degree of the plant, every grip can be adjusted within that value.

It is also necessary every time that the working depression has to be lower than the primary depression.



Art. 09 03 10

Art. 09 03 15 per 11 01 10

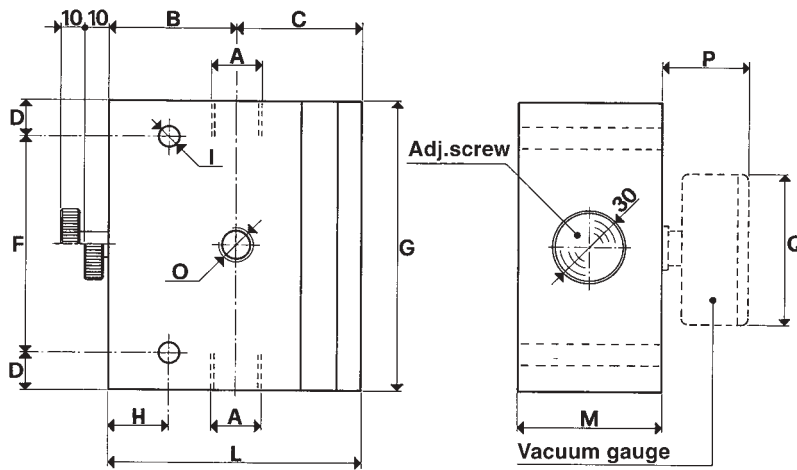
11 02 10

| Art.     | A      | Max cap. | B  | C    | D  | F   | G   | H  | I   | L     | M  | O    | P  | Q  |
|----------|--------|----------|----|------|----|-----|-----|----|-----|-------|----|------|----|----|
|          | Ø      | cum/h.   |    |      |    |     |     |    | Ø   |       |    | Ø    |    | Ø  |
| 11 01 10 | 1/4"   | 006      | 47 | 42.0 | 10 | 040 | 060 | 20 | 6.5 | 089.0 | 40 | 1/8" | 30 | 40 |
| 11 02 10 | 3/8"   | 010      | 47 | 42.0 | 10 | 040 | 060 | 20 | 6.5 | 089.0 | 40 | 1/8" | 30 | 40 |
| 11 03 10 | 1/2"   | 020      | 53 | 52.0 | 15 | 055 | 085 | 25 | 8.5 | 105.0 | 50 | 1/4" | 36 | 63 |
| 11 04 10 | 3/4"   | 040      | 55 | 55.5 | 15 | 070 | 100 | 30 | 8.5 | 110.5 | 50 | 1/4" | 36 | 63 |
| 11 05 10 | 1"     | 080      | 60 | 58.0 | 15 | 090 | 120 | 30 | 8.5 | 118.0 | 60 | 1/4" | 36 | 63 |
| 11 06 10 | 1 1/2" | 160      | 54 | 77.5 | 15 | 130 | 160 | 20 | 8.5 | 131.5 | 99 | 1/4" | 36 | 63 |

N.B. - The vacuum gauge is supplied only upon request.



# [Regulators for low vacuum]



Art. 09 03 10

## Distinctive features

Vacuum regulators are used to adjust the preset vacuum degree, they keep it constant (secondary depression) regardless of the oscillations of the vacuum degree of the net (primary depression) and of the capacity.

Their operation is with a membrane-piston and they take advantage of the pressure differential existing between the secondary depression and the atmospheric pressure.

Unlike vacuum adjusting valves, regulators do not introduce air into the circuit, thus permitting to produce more grip points with different vacuum values, from only one depression source.

## Technical features:

- Operation: membrane-piston regulator.
- Adjustable operating pressure: from 980 to 1 mbar abs.
- Capacities: from 20 to 160 cum/h.
- Room temperature: from -10°C to +80°C.
- Mounting: any position.

## Applications

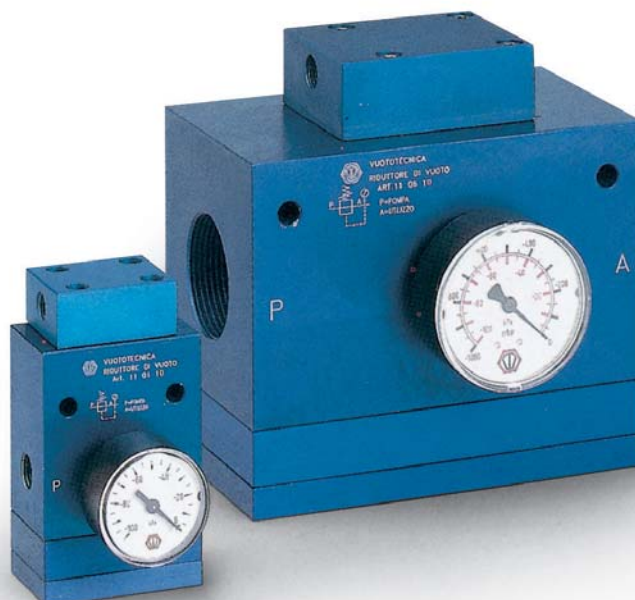
The main use of the vacuum regulators is on the centralized plants where, independently of the vacuum degree of the plant, every grip can be adjusted within that value.

It is also necessary every time that the working depression has to be lower than the primary depression.

| Art.     | A<br>Ø | Max cap.<br>cum/h. | B  | C    | D  | F   | G   | H  | I<br>Ø | L     | M   | O<br>Ø | P  | Q<br>Ø |
|----------|--------|--------------------|----|------|----|-----|-----|----|--------|-------|-----|--------|----|--------|
| 11 03 50 | 1/2"   | 20                 | 53 | 52   | 15 | 90  | 120 | 25 | 8.5    | 105   | 60  | 1/4"   | 36 | 63     |
| 11 05 50 | 1"     | 80                 | 60 | 58   | 15 | 90  | 120 | 30 | 8.5    | 118   | 100 | 1/4"   | 36 | 63     |
| 11 06 50 | 1 1/2" | 160                | 54 | 77.5 | 15 | 130 | 160 | 20 | 8.5    | 131.5 | 99  | 1/4"   | 36 | 63     |

N.B. - The vacuum gauge is supplied only upon request.

# Vacuum regulators with pneumatic adjustment



## Distinctive features

Vacuum regulators are used to adjust the vacuum degree and to keep it constant at the preset value (secondary depression) independently of the capacity and of the oscillations of the vacuum degree of the pump or of the pumpset (primary depression).

Unlike vacuum adjusting valves, regulators do not introduce air into the circuit, this permits to produce more grip points at different vacuum values, from one only depression source.

Their operating principle is based on the contrasting action between a pneumatic cylinder with short stroke and a fluctuating piston driven by the pressure differential existing between the secondary depression and the atmospheric pressure.

In order to adjust the vacuum degree of the regulator it is necessary to operate on the pressure of the compressed air for feeding the pneumatic cylinder: higher is the pressure, higher is the vacuum degree, and vice versa.

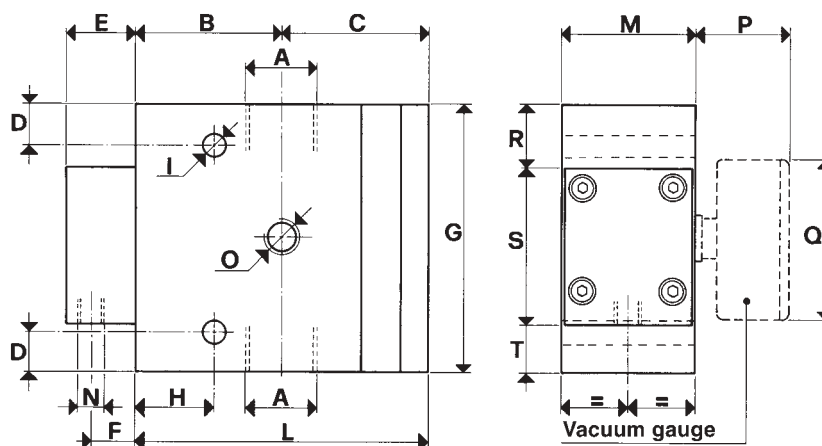
## Technical features:

- Supply pressure: from 0 to 3 bar(g) for the regulators Art. 11 .. 30; from 0 to 7 bar(g) for the regulators Art. 11 .. 80.
- Adjustable working pressure: from 800 to 1 mbar abs. for the regulators Art. 11 .. 30; from 980 to 1 mbar abs. for the regulators Art. 11 .. 80.
- Capacities: from 2 to 160 cum/h;
- Room temperature: from -10°C to +80°C.
- Mounting: any position.

## Applications

Vacuum regulators are generally used on the centralized plants, where, independently of the vacuum degree of the plant, every vacuum point can be adjusted to its own value.

It is also necessary every time that the working depression has to be lower than the primary depression and to be kept constant.



Art. 09 03 10

Art. 09 03 15 per 11 01 30

11 02 30

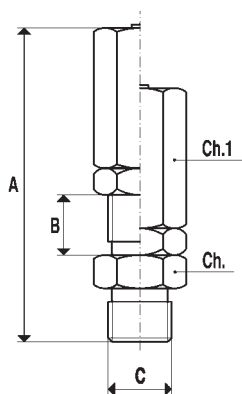
| Art.     | A      | Max cap. | B  | C    | D  | E  | F    | G   | H  | I   | L     | M   | N    | O    | P  | Q  | R    | S  | T    |
|----------|--------|----------|----|------|----|----|------|-----|----|-----|-------|-----|------|------|----|----|------|----|------|
|          | Ø      | cum/h.   |    |      |    |    |      |     |    | Ø   |       |     | Ø    | Ø    | Ø  |    |      |    |      |
| 11 01 30 | 1/4"   | 6        | 47 | 42   | 10 | 20 | 10.5 | 60  | 20 | 6.5 | 89    | 40  | 1/8" | 1/8" | 30 | 40 | 9    | 45 | 6    |
| 11 02 30 | 3/8"   | 10       | 47 | 42   | 10 | 20 | 10.5 | 60  | 20 | 6.5 | 89    | 40  | 1/8" | 1/8" | 30 | 40 | 9    | 45 | 6    |
| 11 03 30 | 1/2"   | 20       | 53 | 52   | 15 | 26 | 16.5 | 85  | 25 | 8.5 | 105   | 50  | 1/8" | 1/4" | 36 | 63 | 16.5 | 58 | 10.5 |
| 11 04 30 | 3/4"   | 40       | 55 | 55.5 | 15 | 26 | 16.5 | 100 | 30 | 8.5 | 110.5 | 50  | 1/8" | 1/4" | 36 | 63 | 24   | 58 | 18   |
| 11 05 30 | 1"     | 80       | 60 | 58   | 15 | 26 | 16.5 | 120 | 30 | 8.5 | 118   | 60  | 1/8" | 1/4" | 36 | 63 | 34   | 58 | 28   |
| 11 06 30 | 1 1/2" | 160      | 54 | 77.5 | 15 | 30 | 19.5 | 160 | 20 | 8.5 | 131.5 | 99  | 1/4" | 1/4" | 36 | 63 | 37.5 | 80 | 42.5 |
| 11 03 80 | 1/2"   | 20       | 53 | 52   | 15 | 26 | 16.5 | 120 | 25 | 8.5 | 105   | 60  | 1/8" | 1/4" | 36 | 63 | 34   | 58 | 28   |
| 11 05 80 | 1"     | 80       | 60 | 58   | 15 | 26 | 16.5 | 120 | 30 | 8.5 | 118   | 100 | 1/8" | 1/4" | 36 | 63 | 34   | 58 | 28   |
| 11 06 80 | 1 1/2" | 160      | 54 | 77.5 | 15 | 30 | 19.5 | 160 | 20 | 8.5 | 131.5 | 99  | 1/4" | 1/4" | 36 | 63 | 37.5 | 80 | 42.5 |

N.B. - The vacuum gauge is supplied only upon request.

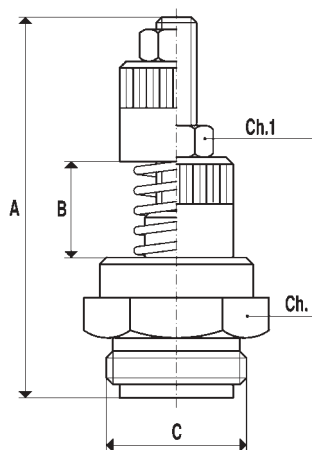




## [Vacuum relief valves]



Art. 04 01 10



Art. 04 02 10  
04 03 10  
04 04 10

When these valves reach a certain precalibrated vacuum degree, they introduce atmospheric air into the circuit to avoid the increase of the set value and to keep it constant.

They can be used as regulators only on circuits having only one vacuum generator and only one use (or more uses but all working at the same vacuum degree).

In most cases they are used as safety valves on tanks or containers not tested at the high depressions and on lifting systems with cups.

The vacuum degree adjustment is obtained turning the knurled bush in the two directions; thanks to its fine thread, a very accurate calibration is assured.

| Art.     | Vac. adj. mbar (a) | A  | B    | C<br>Ø | Ch | Ch1 | Max cap. cum/h |
|----------|--------------------|----|------|--------|----|-----|----------------|
| 04 01 10 | 670÷1              | 45 | 6.5  | 1/8"   | 12 | 12  | 4              |
| 04 02 10 | 670÷1              | 57 | 15.0 | 1/2"   | 24 | 10  | 20             |
| 04 03 10 | 670÷1              | 60 | 12.0 | 3/4"   | 30 | 17  | 40             |
| 04 04 10 | 670÷1              | 65 | 12.0 | 1"     | 35 | 17  | 70             |