

# **PRESSURE SWITCHES**

# **VACUUM**

## Pressure switches - vacuum (electrical output)

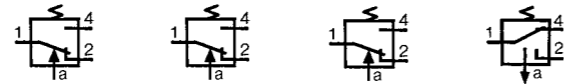


- › Conform to the Low Voltage Directive
- › Can be used without enclosure according to IEC 664-1 pollution group III

### Part numbers

| Pressure and vacuum switches | 81 513 552    | 81 513 502       | 81 513 501           | 81 513 522     |
|------------------------------|---------------|------------------|----------------------|----------------|
| Mounting                     | DIN rail      | DIN rail         | DIN rail             | DIN rail       |
| Actuators                    | Pressure with | Pressure without | Low pressure without | Vacuum without |
| Manual override              |               |                  |                      |                |

### Symbol



### Characteristics

| Pneumatic connection                                 | Push-in connection for semi-rigid tubing (NFE 49100)<br>Tapped BSP via connector | mm  | Ø 4 ext.         | Ø 4 ext.         | Ø 4 ext.         | Ø 4 ext.         |
|--|--|-----|------------------|------------------|------------------|------------------|
| Protection   | IEC 529  |     | IP 20            | IP 20            | IP 20            | IP 20            |
| Permissible fluid:                                   | air, inert gases and liquids   |     |                  |                  |                  |                  |
| Adjustment of switching pressure (* adjusted to 0.3) | bar  |     | 2 → 8            | 2 → 8            | 0.3 → 1.2 *      | -0.3 → -0.8      |
| Hysteresis   | at 1 bar   | bar | 0.5              | 0.5              | —                | —                |
|  | at 2 bars  | bar | 0.6              | 0.6              | —                | —                |
|  | at 4 bars  | bar | 0.8              | 0.8              | —                | —                |
|  | at 6 bars  | bar | 1                | 1                | —                | —                |
|  | max. 200 mb  |     | —                | —                | •                | —                |
| max. 250 mb  |  | —   | —                | —                | •                |                  |
| Pressure to break                                    |  |     | —                | —                | —                | —                |
| Mechanical life (operations)                         |  |     | 10 <sup>6</sup>  | 10 <sup>6</sup>  | 10 <sup>6</sup>  | 10 <sup>6</sup>  |
| Contact rating (V resistive)                         |  |     | 5A - 220-230 V   | 5A - 220-230 V   | 5A - 220-230 V   | 5A - 220-230 V   |
| Wire cross-section                                   | mm <sup>2</sup>  |     | 0.75             | 0.75             | 0.75             | 0.75             |
| Operating temperature                                | °C   |     | -10 → +70        | -10 → +70        | -10 → +70        | -10 → +70        |
| Weight   | g  |     | 48               | 46               | 46               | 46               |
| Standard electrical contact                          |  |     | V4 83 170 4   W2 | V4 83 170 4   W2 | V4 83 170 4   W2 | V4 83 170 4   W2 |
| UL and cUL approval                                  |  |     | MH15213 (R)      | MH15213 (R)      | MH15213 (R)      | MH15213 (R)      |

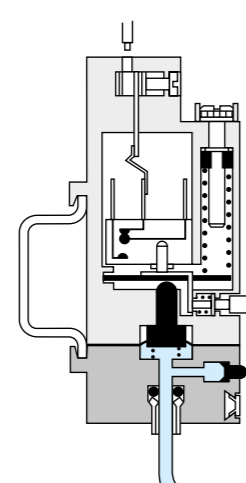
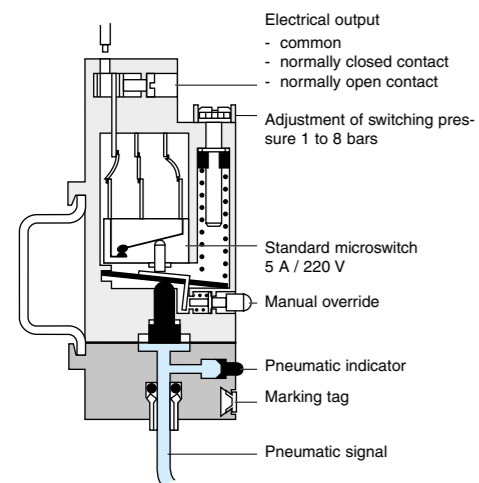
### Operation

Pressure operated

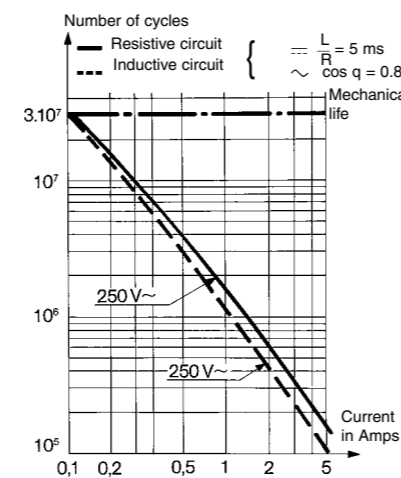
Vacuum operated

### Electrical life

(Crouzet microswitch "V4" ref 83 170 4-1-W2)



For continuous vacuum applications, please consult us.

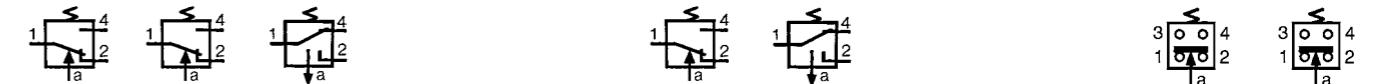


### Other information

- On request :
- Microswitch V4 ref. 83 170 0 i W2 high current
  - Microswitch V4 ref. 83 170 9 i W2 low current



| 81 513 516             | 81 513 510             | 81 513 527             | 81 513 533       | 81 513 523     | 81 509 080             | 81 509 085             |
|------------------------|------------------------|------------------------|------------------|----------------|------------------------|------------------------|
| Base mounted page 4/14 | Base mounted page 4/14 | Base mounted page 4/14 | 2 screws M4      | 2 screws M4    | Base mounted page 4/14 | Base mounted page 4/14 |
| Pressure without       | Pressure with          | Vacuum without         | Pressure without | Vacuum without | Pressure without       | Pressure with          |



| Ø 4 ext.         | Ø 4 ext.         | Ø 4 ext.         | —                | —                | —                  | —                  |
|------------------|------------------|------------------|------------------|------------------|--------------------|--------------------|
| IP 54            | IP 54            | IP 54            | 1/8 BSP IP 54    | 1/8 BSP IP 54    | Via sub-base IP 54 | Via sub-base IP 54 |
| 2 → 8            | 2 → 8            | -0.3 → -0.9      | 2 → 8            | -0.3 → -0.8      | 1.4 ± 0.5          | 1.4 ± 0.5          |
| 0.5              | 0.5              | —                | 0.5              | —                | —                  | —                  |
| 0.6              | 0.6              | —                | 0.6              | —                | —                  | —                  |
| 0.8              | 0.8              | —                | 0.8              | —                | —                  | —                  |
| 1                | 1                | —                | 1                | —                | —                  | —                  |
| —                | —                | •                | —                | •                | —                  | —                  |
| —                | —                | —                | —                | —                | 0.6 ± 0.2          | 0.6 ± 0.2          |
| 10 <sup>6</sup>  | 10 <sup>6</sup>  | 10 <sup>6</sup>  | 10 <sup>6</sup>  | 10 <sup>6</sup>  | 10 <sup>6</sup>    | 10 <sup>6</sup>    |
| 5A - 220-230 V   | 5A - 220-230 V   | 5A - 220-230 V   | 5A - 220-230 V   | 5A - 220-230 V   | 5A - 220-230 V     | 5A - 220-230 V     |
| 0.75             | 0.75             | 0.75             | 0.75             | 0.75             | 1.5                | 1.5                |
| -10 → +70        | -10 → +70        | -10 → +70        | -10 → +70        | -10 → +70        | -10 → +70          | -10 → +70          |
| 56               | 58               | 56               | 65               | 65               | 80                 | 80                 |
| V4 83 170 4   W2 | V4 83 170 4   W2 | V4 83 170 4   W2 | V4 83 170 4   W2 | V4 83 170 4   W2 | 83 133 004         | 83 133 004         |
| MH15213 (R)      | MH15213 (R)      | MH15213 (R)      | MH15213 (R)      | MH15213 (R)      |                    |                    |

### Electrical connections

81 513 501 - 81 513 502  
81 513 522 - 81 513 552

### Dimensions

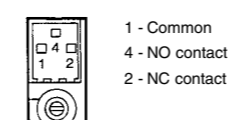
81 513 552 - 81 513 502  
81 513 501 - 81 513 522

### Pressure switch with connector

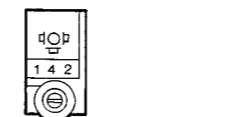
81 513 516 - 81 513 510  
81 513 527

### 81 516 082

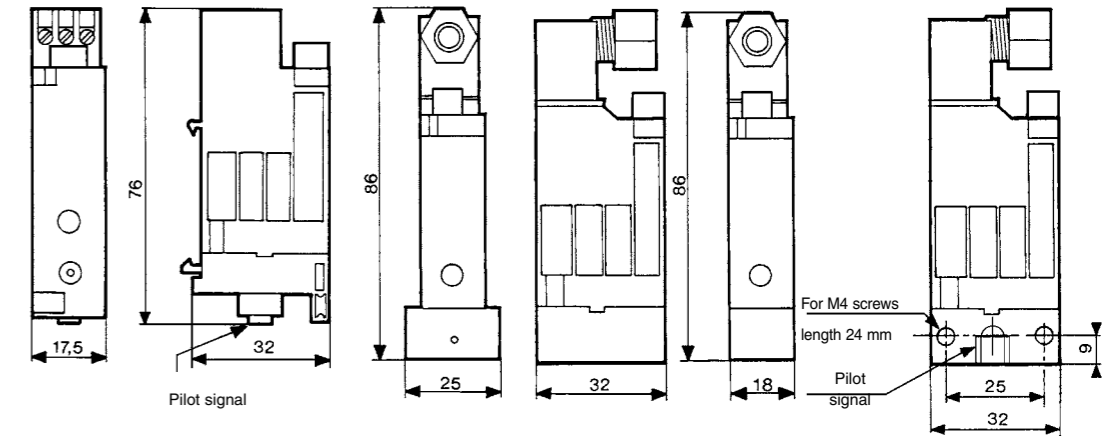
81 513 533  
81 513 523



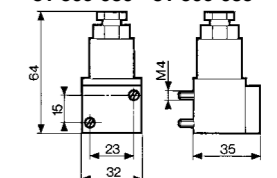
81 513 510  
81 513 516 - 81 513 527



81 513 533  
81 513 523 - 81 513 533



### 81 509 080 - 81 509 085

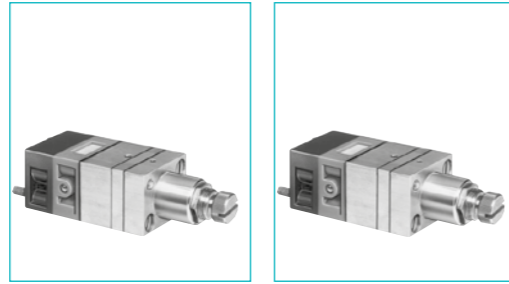


## Adjustable pressure switches (manostats) (pneumatic output)

100 % pneumatic



Also available in **ATEX** version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive



Part numbers (and adjustment ranges)

| Adjustment range | 50 → 500 mb<br>0.1 → 2.5 b<br>2 → 8 b | 81 505 140<br>81 505 150<br>81 505 160 | 81 502 140<br>81 502 150<br>81 502 160 |
|------------------|---------------------------------------|--|--|
| Version          |                                       | Positive output                        | Negative output                        |
| Accuracy         | 50 → 500 mb<br>0.1 → 2.5 b<br>2 → 8 b | 10 %<br>4 %<br>4 %                     | 10 %<br>4 %<br>4 %                     |

Symbol

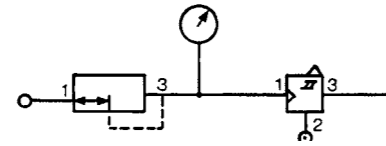


Characteristics

| Orifice diameter                  | mm                                    | 2.5                       | 2.5                       |
|-----------------------------------|---------------------------------------|---------------------------|---------------------------|
| Flow at 4 bars                    | NI/min                                | 170                       | 170                       |
| Hysteresis                        | 50 → 500 mb<br>0.1 → 2.5 b<br>2 → 8 b | 60 mb<br>100 mb<br>320 mb | 60 mb<br>100 mb<br>320 mb |
| Connection - sub-base pages 54/55 |                                       |                           |                           |
| Operating temperature             | °C                                    | -5 → +50                  | -5 → +50                  |
| Mechanical life                   | operations                            | 3 x 10 <sup>6</sup>       | 3 x 10 <sup>6</sup>       |
| Weight                            | g                                     | 160                       | 160                       |

Connections

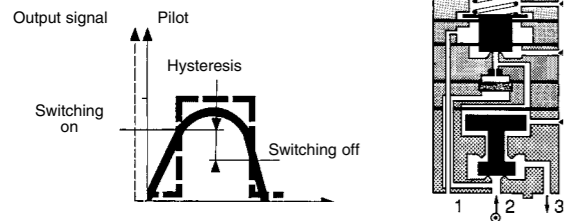
Example of pressure threshold adjustment (mini-regulator - manostat)



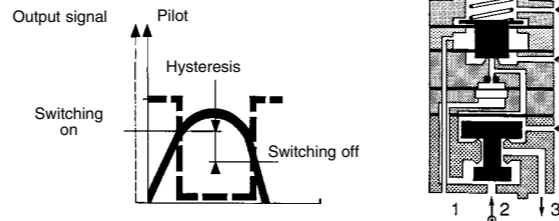
Principle of operation

The manostats provide an on or off output signal when the input signal reaches a predetermined pressure threshold.

Positive output

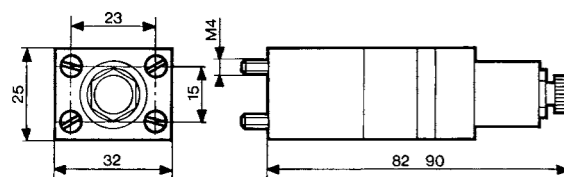


Negative output



Dimensions

81 502 140 - 81 502 150 - 81 502 160  
81 505 140 - 81 505 150 - 81 505 160



Other information Pressure switches with electrical output on request.

ATEX version products are available in the following catalogues: **Pneumatic products for explosive atmospheres** or on our website [www.crouzet.com](http://www.crouzet.com)

## Adjustable vacuum switches (vacuostat)

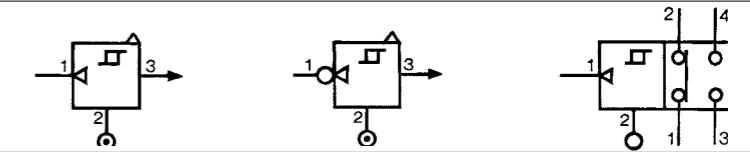
- 100 % pneumatic
- For vacuum -0,1 → -0,9 Bar



Part numbers

|  | 81 505 110      | 81 502 110      | 81 508 110        |
|--|-----------------|-----------------|-------------------|
|  | Positive output | Negative output | Electrical output |

Symbol

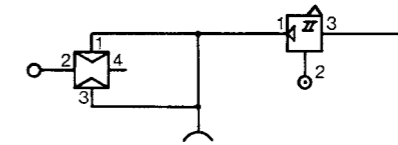


Characteristics

| Adjustment range                  | b          | -0.1 → -0.9         | -0.1 → -0.9         | -0.1 → -0.9         |
|-----------------------------------|------------|---------------------|---------------------|---------------------|
| Flow at 6 bars                    | NI/min     | 170                 | 170                 | 170                 |
| Hysteresis                        | mb         | 80                  | 80                  | 80                  |
| Connection - sub-base pages 54/55 |            |                     |                     |                     |
| Operating temperature             | °C         | -5 → +50            | -5 → +50            | -5 → +50            |
| Mechanical life                   | operations | 3 x 10 <sup>6</sup> | 3 x 10 <sup>6</sup> | 3 x 10 <sup>6</sup> |
| Weight                            | g          | 160                 | 160                 | 180                 |

Connections

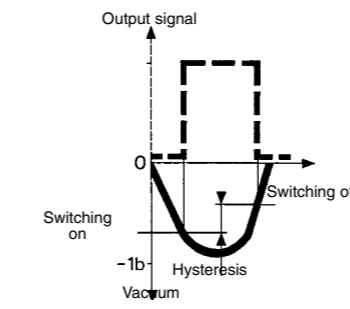
Example of use: Vacuum handling (vacuum generator, vacuum pad, vacuostats).



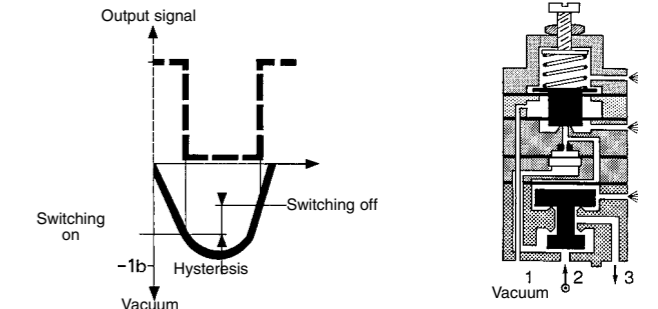
Principle of operation

Vacuostats provide an on or off output signal when the input signal reaches a predetermined pressure threshold.

Positive output

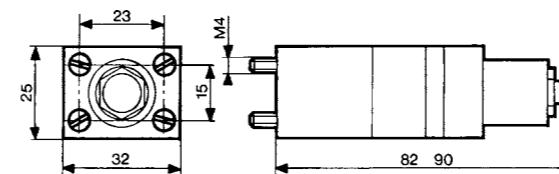


Negative output

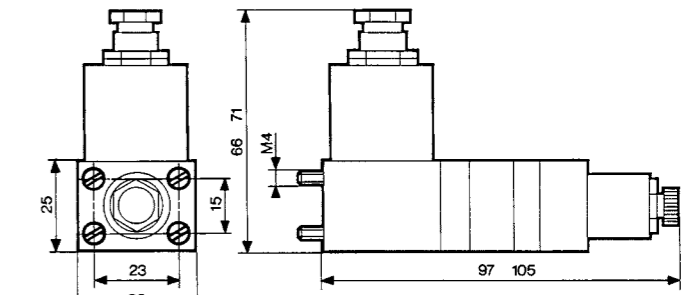


Dimensions

81 502 110 - 81 505 110




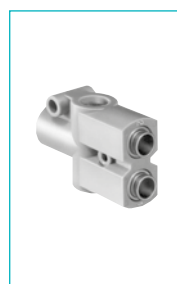
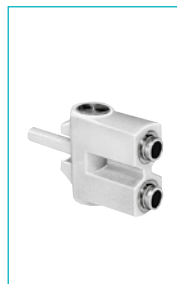
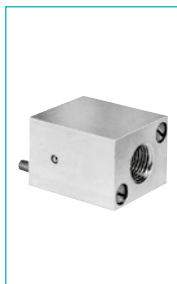
81 508 110



# Vacuum handling components

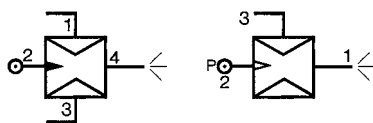
- › Sur le principe du Venturi
- › Facilement raccordable

 Also available in **ATEX** version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive



## Part numbers

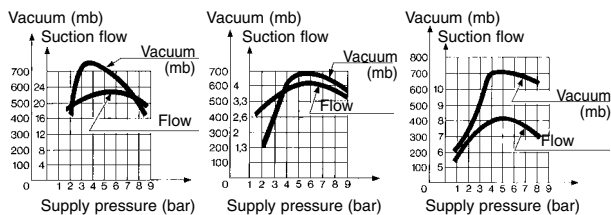
|                   |  |                              |                              |
|-------------------|--|------------------------------|------------------------------|
| Vacuum generators | <b>81 535 301</b><br>Sub-base mounting | <b>81 545 001</b><br>Plug-in | <b>81 545 005</b><br>Plug-in |
|-------------------|--|------------------------------|------------------------------|



## Characteristics

|  |  |       |        |       |
|--|--|-------|--------|-------|
| Push-in connectors for semi-rigid tubing (NFE 49100) | Male/Female/Female (MFF)<br>Female/Female/<br>Female (FFF) | —     | Ø 4 mm | —     |
| Operating pressure                                   | bar  | 2 → 8 | 2 → 8  | 2 → 8 |
| Vacuum pad material                                  |  | —     | —      | —     |
| Weight   | g  | 80    | 13     | 25    |

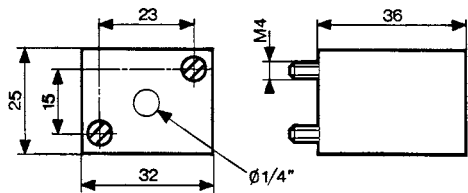
Detection of the pressure decrease can be achieved by the use of manostats (see pages 38/39)



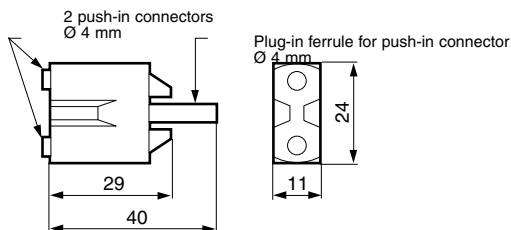
## Dimensions

### 81 535 301

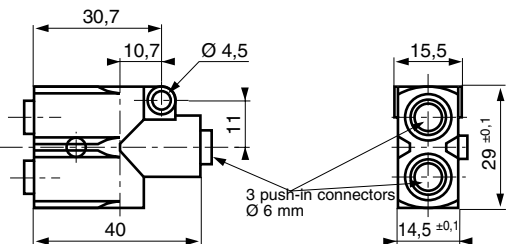
Sub-base mounting 81 531... and 81 532...



### 81 545 001



### 81 545 005



ATEX version products are available in the following catalogues: **Pneumatic products for explosive atmospheres** or on our website [www.crouzet.com](http://www.crouzet.com)