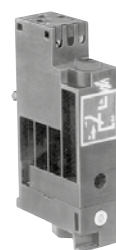


# **PRESSURE SWITCHES**

## **VACUUM**

### Pressure switches - vacuum (electrical output)

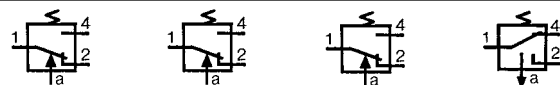


- › Conform to the Low Voltage Directive
- › Can be used without enclosure according to IEC 664-1 pollution group III

## 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   | Pressure   | Low pressure | Vacuum     |  |
| Manual override              | with       | without    | without      | without    |  |

**Symbol**



## Characteristics

|                                                      |                                                      |                 |                  |                  |                  |                  |
|------------------------------------------------------|------------------------------------------------------|-----------------|------------------|------------------|------------------|------------------|
| Pneumatic connection                                 | Push-in connection for semi-rigid tubing (NFE 49100) | mm              | Ø 4 ext.         | Ø 4 ext.         | Ø 4 ext.         | Ø 4 ext.         |
|                                                      | Tapped BSP via connector                             |                 | —                | —                | —                | —                |
| 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>5</sup>  | 10 <sup>6</sup>  | 10 <sup>6</sup>  | 10 <sup>5</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 I W2 | V4 83 170 4 I W2 | V4 83 170 4 I W2 | V4 83 170 4 I W2 |
| UL and cUL approval                                  |                                                      |                 | MH15213 (R)      | MH15213 (R)      | MH15213 (R)      | MH15213 (R)      |

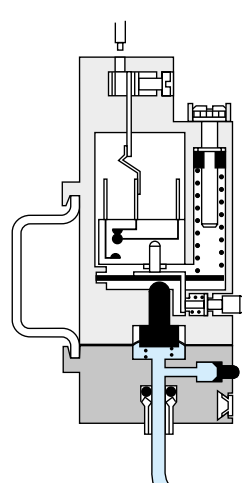
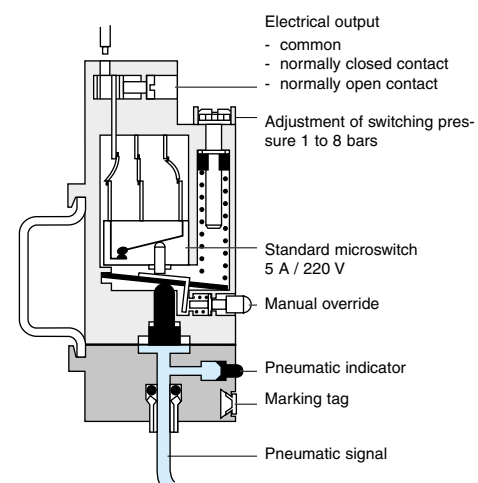
## Operation

Pressure operated

Vacuum operated

### Electrical life

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



**For continuous vacuum applications, please consult us.**

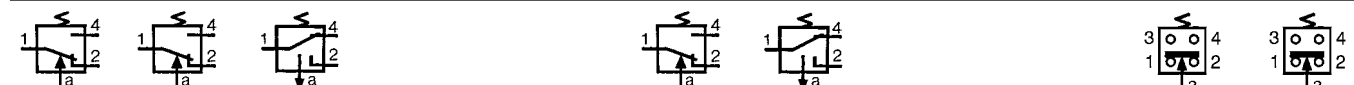
## Other information

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<br>page 4/14 | Base mounted<br>page 4/14 | Base mounted<br>page 4/14 |  | 2 screws M4         | 2 screws M4       |  | Base mounted<br>page 4/14 | Base mounted<br>page 4/14 |
| Pressure<br>without       | Pressure<br>with          | Vacuum<br>without         |  | Pressure<br>without | Vacuum<br>without |  | Pressure<br>without       | Pressure<br>with          |



| $\varnothing$ 4 ext.   | $\varnothing$ 4 ext.   | $\varnothing$ 4 ext.         |  | —                      | — —                          |  | —                       | —                       |
|------------------------|------------------------|------------------------------|--|------------------------|------------------------------|--|-------------------------|-------------------------|
| IP 54                  | IP 54                  | IP 54                        |  | 1/8 BSP<br>IP 54       | 1/8 BSP<br>IP 54             |  | Via sub-base<br>IP 54   | Via sub-base<br>IP 54   |
| ●<br>$2 \rightarrow 8$ | ●<br>$2 \rightarrow 8$ | ●<br>$-0.3 \rightarrow -0.9$ |  | ●<br>$2 \rightarrow 8$ | ●<br>$-0.3 \rightarrow -0.8$ |  | ●<br>$1.4 \pm 0.5$      | ●<br>$1.4 \pm 0.5$      |
| 0.5                    | 0.5                    | —                            |  | 0.5                    | —                            |  | —                       | —                       |
| 0.6                    | 0.6                    | —                            |  | 0.6                    | —                            |  | —                       | —                       |
| 0.8                    | 0.8                    | —                            |  | 0.8                    | —                            |  | —                       | —                       |
| 1                      | 1                      | —                            |  | 1                      | —                            |  | —                       | —                       |
| —                      | —                      | —                            |  | —                      | —                            |  | —                       | —                       |
| —                      | —                      | ●                            |  | —                      | ●                            |  | —                       | —                       |
| —                      | —                      | —                            |  | —                      | —                            |  | —                       | —                       |
| $10^6$                 | $10^6$                 | $10^6$                       |  | $10^6$                 | $10^6$                       |  | $0.6 \pm 0.2$<br>$10^6$ | $0.6 \pm 0.2$<br>$10^6$ |
| 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                     |
| $-10 \rightarrow +70$  | $-10 \rightarrow +70$  | $-10 \rightarrow +70$        |  | $-10 \rightarrow +70$  | $-10 \rightarrow +70$        |  | $-10 \rightarrow +70$   | $-10 \rightarrow +70$   |
| 56                     | 58                     | 56                           |  | 65                     | 65                           |  | 80                      | 80                      |
| V4 83 170 4 I W2       | V4 83 170 4 I W2       | V4 83 170 4 I W2             |  | V4 83 170 4 I W2       | V4 83 170 4 I W2             |  | 83 133 004              | 83 133 004              |
| MH15213 (R)            | MH15213 (R)            | MH15213 (R)                  |  | MH15213 (R)            | MH15213 (R)                  |  |                         |                         |

### Electrical connections

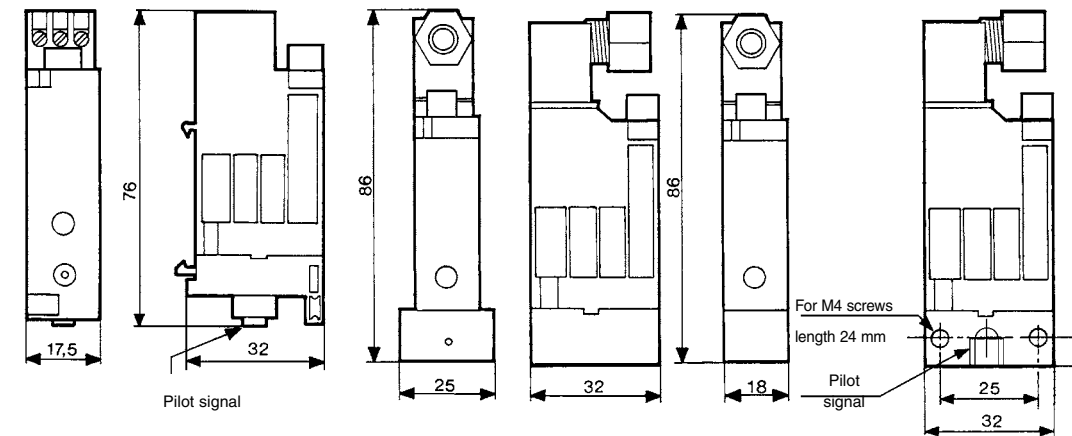
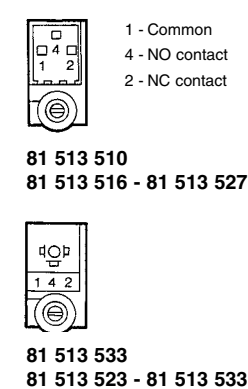
81 513 501 - 81 513 502  
81 513 522 - 81 513 552

## Dimensions

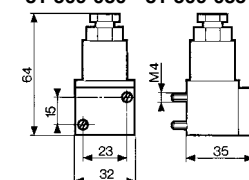
81 513 552 - 81 513 502  
81 513 501 - 81 513 522

Pressure switch with connector  
**81 513 516 - 81 513 510**  
**81 513 527**

81 516 082  
81 513 533  
81 513 523



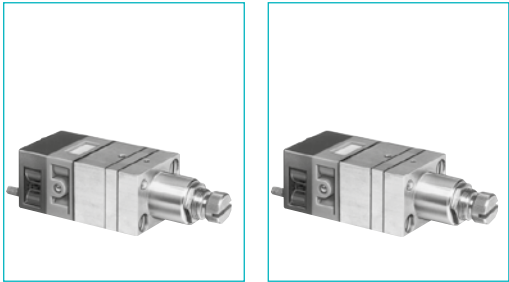
81 509 080 - 81 509 085



## 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 | 81 505 140      | 81 502 140      |  |
|                                      | 0.1 → 2.5 b | 81 505 150      | 81 502 150      |  |
|                                      | 2 → 8 b     | 81 505 160      | 81 502 160      |  |
| Version                              |             | Positive output | Negative output |  |
| Accuracy                             | 50 → 500 mb | 10 %            | 10 %            |  |
|                                      | 0.1 → 2.5 b | 4 %             | 4 %             |  |
|                                      | 2 → 8 b     | 4 %             | 4 %             |  |

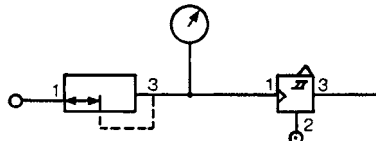
### Symbol



| Characteristics                   |             |                     |                     |  |
|-----------------------------------|-------------|---------------------|---------------------|--|
| Orifice diameter                  | mm          | 2.5                 | 2.5                 |  |
| Flow at 4 bars                    | NI/min      | 170                 | 170                 |  |
| Hysteresis                        | 50 → 500 mb | 60 mb               | 60 mb               |  |
|                                   | 0.1 → 2.5 b | 100 mb              | 100 mb              |  |
|                                   | 2 → 8 b     | 320 mb              | 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

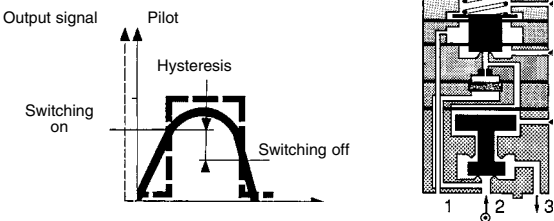
Example of pressure threshold adjustment (mini-regulator - manostat)



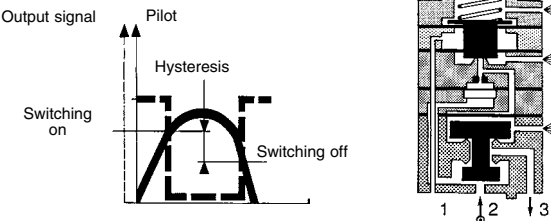
### Principle of operation

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

#### Positive output

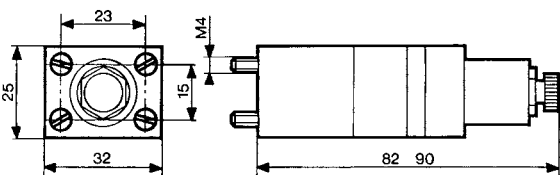


#### Negative output



### 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**

## Adjustable vacuum switches (vacuostat)

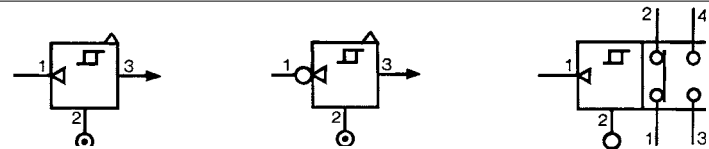
### 100 % pneumatic

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

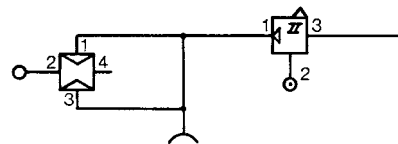


### Characteristics

|                                   |            |                     |                     |                     |
|-----------------------------------|------------|---------------------|---------------------|---------------------|
| 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

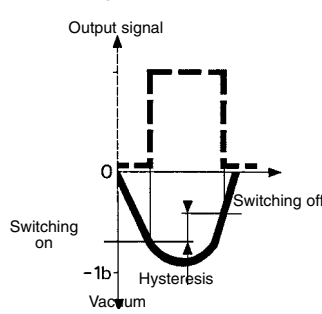
Example of use:  
Vacuum handling (vacuum generator, vacuum pad, vacuostats).



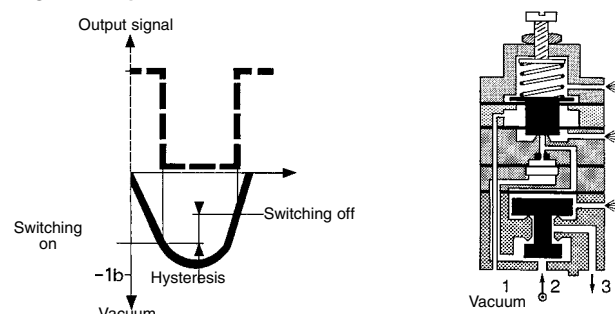
### Principle of operation

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

#### Positive output

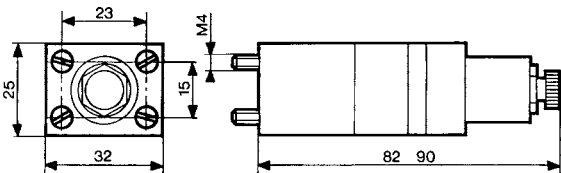


#### Negative output

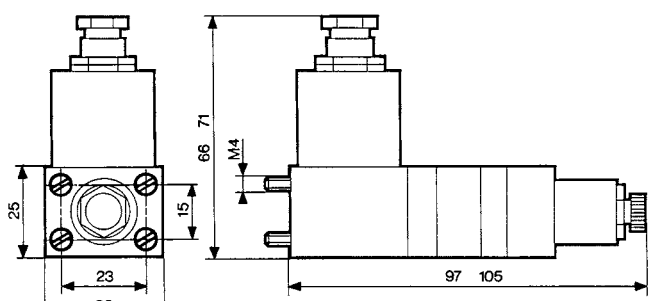


### Dimensions

81 502 110 - 81 505 110



81 508 110



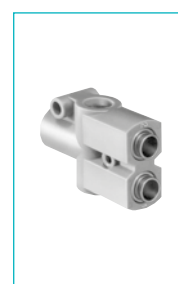
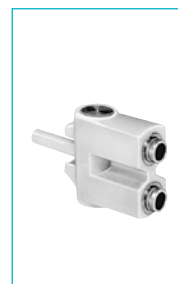
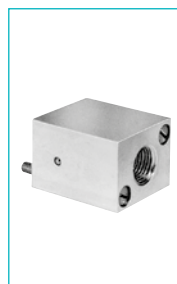
## Vacuum handling components

› 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

81 535 301

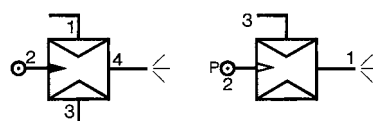
Sub-base mounting

81 545 001

Plug-in

81 545 005

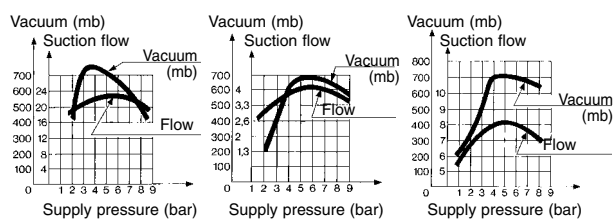
Plug-in



### Characteristics

|                                                      |                            |       |        |        |
|------------------------------------------------------|----------------------------|-------|--------|--------|
| Push-in connectors for semi-rigid tubing (NFE 49100) | Male/Female/Female (MFF)   | —     | Ø 4 mm | —      |
|                                                      | Female/Female/Female (FFF) | —     | —      | Ø 6 mm |
| Operating pressure                                   | bar                        | 2 → 8 | 2 → 8  | 2 → 8  |
| Vacuum pad material                                  |                            | —     | —      | —      |
| Weight                                               | g                          | 80    | 13     | 25     |

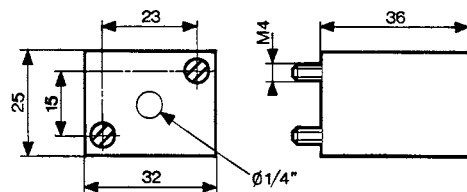
Detection of the pressure decrease can be achieved by the use of manostats (see pages 38/39)



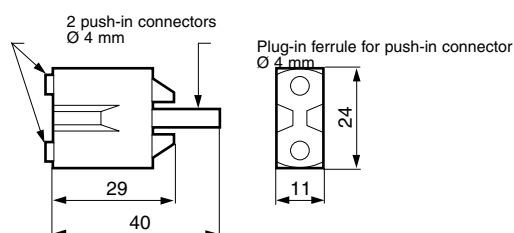
### Dimensions

81 535 301

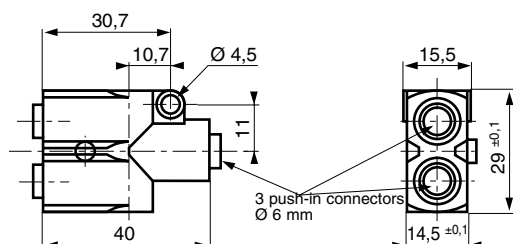
Sub-base mounting 81 531... and 81 532...



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)