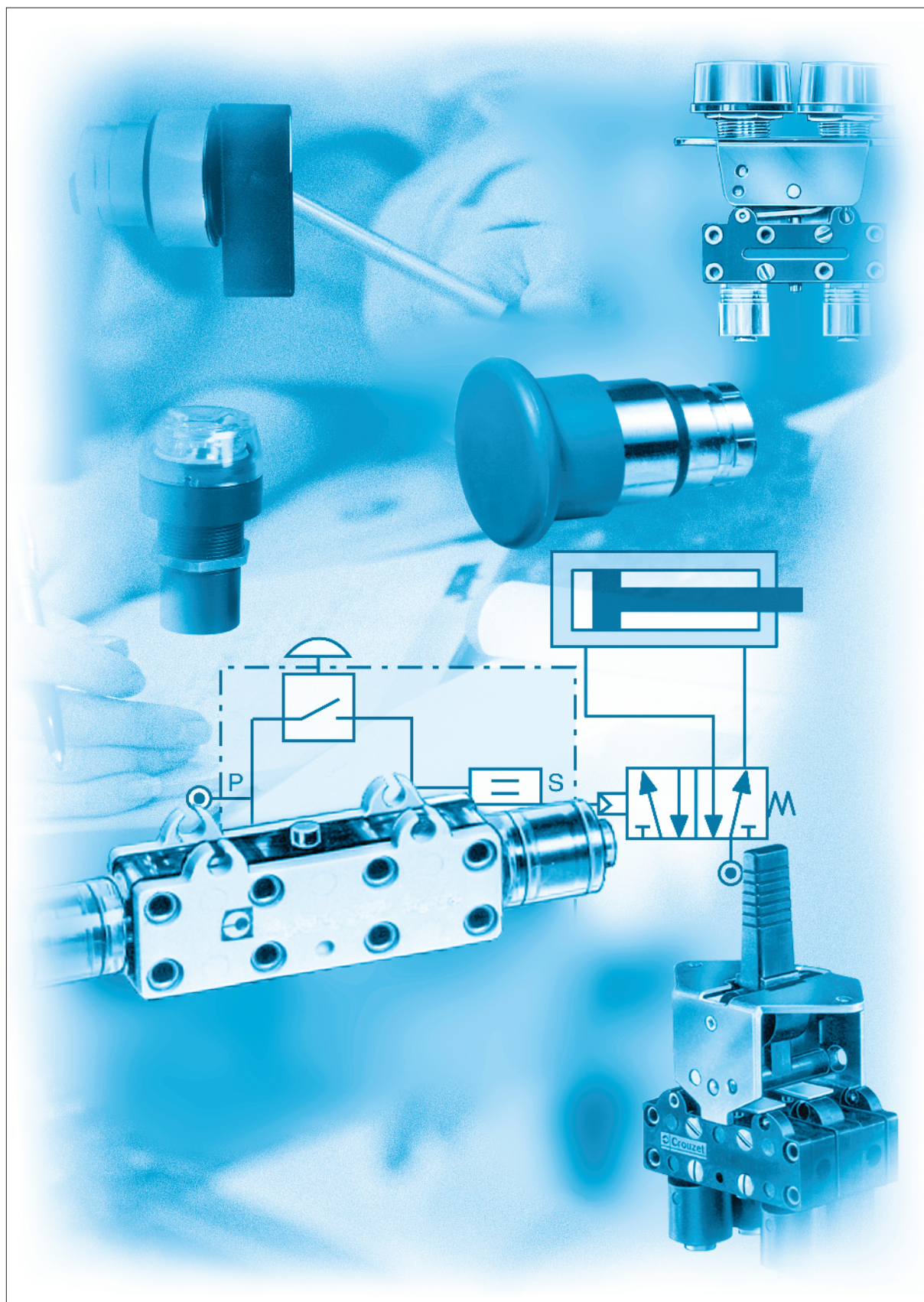
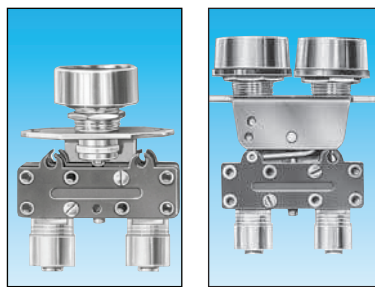


# Manual actuated valves



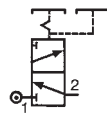
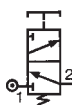
# Push buttons diameter 12 and actuators



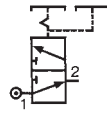
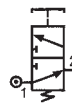
| Features | Actuator color | Valve color | Push button round | Push button double round |
|----------|----------------|-------------|-------------------|--------------------------|
| Version  | NC             | black       | 81 735 511        | —                        |
|          |                | red         | 81 735 512        | —                        |
|          |                | black/red   | —                 | 81 733 511               |
| NO       | black          | grey        | 81 735 011        | —                        |
|          | red            | grey        | —                 | —                        |
|          | black/red      | grey        | —                 | —                        |

## Symbol

NC



NO

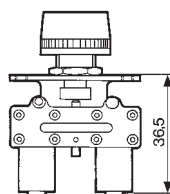


## Characteristics

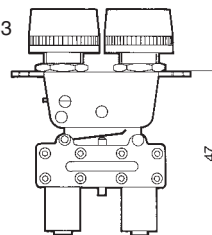
|  |                         |                       |                       |
|--|-------------------------|-----------------------|-----------------------|
| Operating pressure                                   | bar                     | 2 → 8                 | 2 → 8                 |
| Orifice diameter                                     | mm                      | 2.7                   | 2.7                   |
| Flow at 6 bars                                       | NI/mn.                  | 200                   | 200                   |
| Valves   | NC : black<br>NO : grey | •<br>•                | •                     |
| Operating forces (depending on actuator)             | N                       | 8 → 18                | 8 → 18                |
| Effective travel                                     | mm                      | 1                     | 1                     |
| Fluid: dry or lubricated air                         |                         | •                     | •                     |
| Push-in connectors for semi-rigid tubing (NFE 49100) | mm                      | Ø 4                   | Ø 4                   |
| Operating temperature                                | °C                      | -5 → +50              | -5 → +50              |
| Mechanical life                                      | operations              | 1.5 x 10 <sup>6</sup> | 1.5 x 10 <sup>6</sup> |
| Weight   | g                       | 35                    | 40                    |

## Dimensions

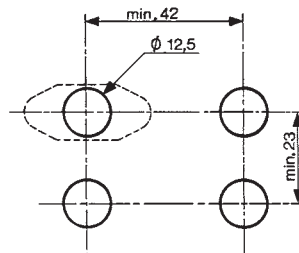
81 735



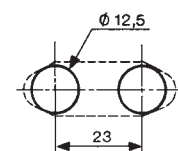
81 733

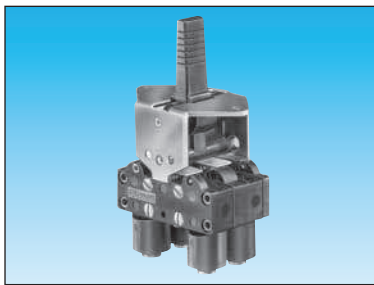


Threaded barrel



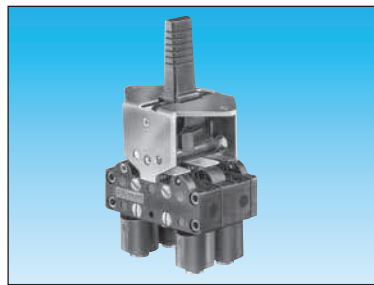
2 threaded barrels





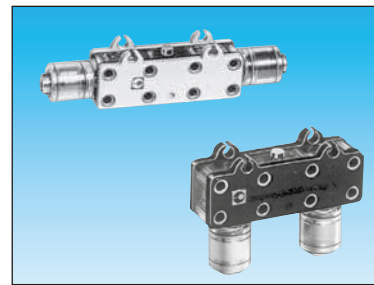
3-position lever  
manual return

81 716 511  
81 716 512



3-position lever  
spring return

81 715 511  
81 715 512

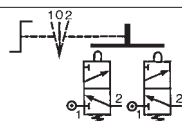
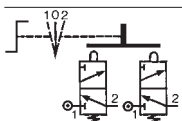


Horizontal outputs

81 280 510  
81 280 010

Vertical outputs

81 281 510  
81 281 010



2 → 8  
2.7  
200

8 → 18  
1

Ø 4

-5 → +50  
1.5 x 10<sup>6</sup>  
65

2 → 8  
2.7  
200

8 → 18  
1

Ø 4

-5 → +50  
1.5 x 10<sup>6</sup>  
65

2 → 8  
2.7  
200

8 → 18  
1

Ø 4

-5 → +50  
1.5 x 10<sup>6</sup>  
14

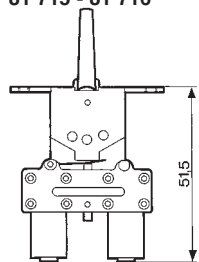
2 → 8  
2.7  
200

8 → 18  
1

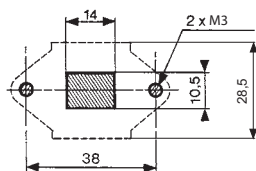
Ø 4

-5 → +50  
1.5 x 10<sup>6</sup>  
14

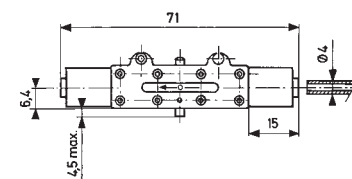
81 715 - 81 716



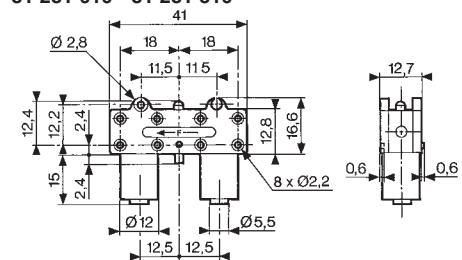
Square lever



81 280 010 - 81 280 510



81 281 010 - 81 281 510

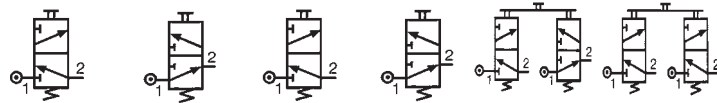


# 3/2 valves for manual actuators Ø 22 mm



|   |               |            |            |            |            |            |            |            |
|---|---------------|------------|------------|------------|------------|------------|------------|------------|
| 3/2 valve supplied with screws for fixing the adaptor               | Connection Ø4 | 89 543 501 | 89 543 101 | —          | —          | —          | —          | —          |
|   | Gas 1/8       | 89 543 701 | 89 543 201 | —          | —          | —          | —          | —          |
| Valve(s) 3/2 fixed on adaptor (supplied with adaptor not assembled) | Connection Ø4 | —          | —          | 89 543 105 | 89 543 005 | 89 543 305 | 89 543 205 | —          |
| Adaptor for 3/2 valve on actuators Ø 22                             |               | —          | —          | —          | —          | —          | —          | 24 679 702 |
| Version   |               | NC         | NO         | NC         | NO         | NC + NO    | NC + NC    |            |

## Symbol

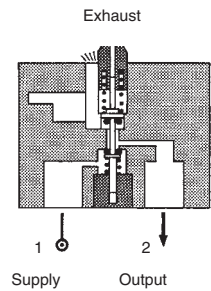


## Characteristics

|                                  |            |                       |                       |                       |                       |                       |                       |    |
|----------------------------------|------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|
| Operating pressure               | bar        | 0 → 8                 | 0 → 8                 | 0 → 8                 | 0 → 8                 | 0 → 8                 | 0 → 8                 | —  |
| Orifice diameter                 | mm         | 2                     | 2                     | 2                     | 2                     | 2                     | 2                     | —  |
| Flow at 6 bars                   | NI/min     | 112                   | 112                   | 112                   | 112                   | 112                   | 112                   | —  |
| Control force                    | N          | 12.6                  | 12.6                  | 12.6                  | 12.6                  | 12.6                  | 12.6                  | —  |
| Operating temperature in dry air | °C         | -5 → +60              | -5 → +60              | -5 → +60              | -5 → +60              | -5 → +60              | -5 → +60              | —  |
| Life                             | operations | 1.5 x 10 <sup>6</sup> | 1.5 x 10 <sup>6</sup> | 1.5 x 10 <sup>6</sup> | 1.5 x 10 <sup>6</sup> | 1.5 x 10 <sup>6</sup> | 1.5 x 10 <sup>6</sup> | —  |
| Non-connectable exhaust          |            | ●                     | ●                     | ●                     | ●                     | ●                     | ●                     | —  |
| Weight                           | g          | 50                    | 50                    | 60                    | 60                    | 110                   | 110                   | 40 |

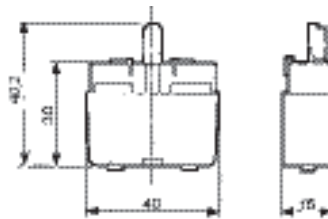
## Principle of operation

### NC version

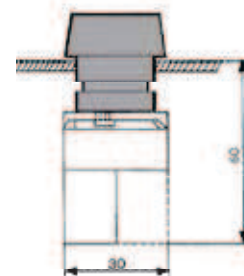


## Dimensions

89 543 001 - 89 543 201  
89 543 501 - 89 543 701

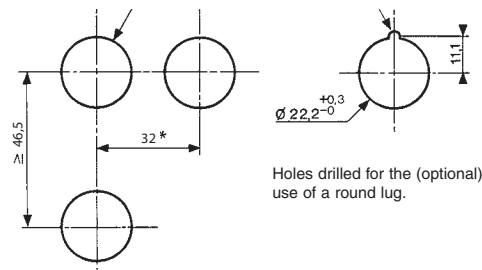


## Ø 22 series



## Holes drilled in panel for actuators Ø 22

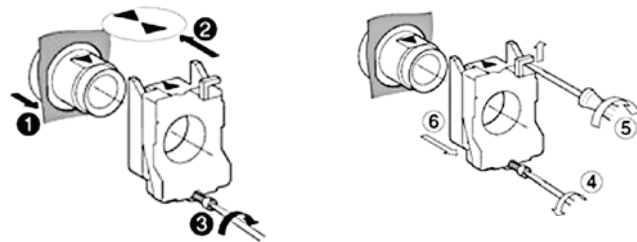
### EN 50007








Holes drilled for the (optional) use of a round lug.

- \* > 40 Ø 40 push-buttons
- \* > 45 for lever type rotary switches

## Installation



# Actuators Ø 22 mm for manually operated valves

|                             |   |   |  |   |   |                  |
|-----------------------------|---|---|--|---|---|------------------|
|                             |  |  |  |  |  |                  |
| Push buttons                | Red<br>Green<br>Black   | 24 678 129<br>24 678 128<br>24 678 127  | 24 678 173<br>—<br>24 678 172  | 24 678 171<br>—<br>—  | —<br>—<br>—   | —<br>—<br>—      |
| 2-positions rotary switches |   | —   | —  | —   | 24 678 174  | 24 678 175       |
| 3-positions rotary switches |   | —   | —  | —   | —   | —                |
| Function                    |   | Flush push contact  | Emergency stop plastic Ø 40  | Emergency stop Ø 40 mm push-turn  | Black symmetrical actuator  | Long lever Black |

## Symbol



## Position

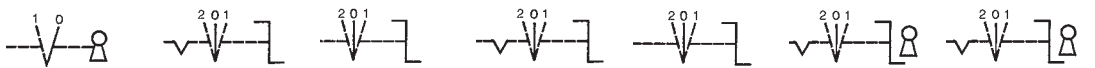
|        |   |    |    |    |   |   |
|--------|---|----|----|----|---|---|
|        |   |    |    |    |  |  |
| Weight | g | 30 | 45 | 45 | 45  | 45  |

## Dimensions










|                             |                                       |                            |  |                  |                                    |  |   |            |
|-----------------------------|---------------------------------------|----------------------------|--|------------------|------------------------------------|--|---|------------|
| 2-positions rotary switches | 24 678 180                            | —                          | 24 678 176                             | 24 678 178       | 24 678 177                         | 24 678 179   | 24 678 182  | 24 678 181 |
| 3-positions rotary switches | —                                     | —                          | —                                      | —                | —                                  | —  | —   | —          |
| Function                    | RONIS key 455 removable in position 0 | Black symmetrical actuator | Black symmetrical actuator with return | Long lever Black | Black Long lever, spring to center | RONIS key 455 remov. in pos. 0 3 positions with spring to center | RONIS key 455 removable in position 0 3 fixed positions |            |

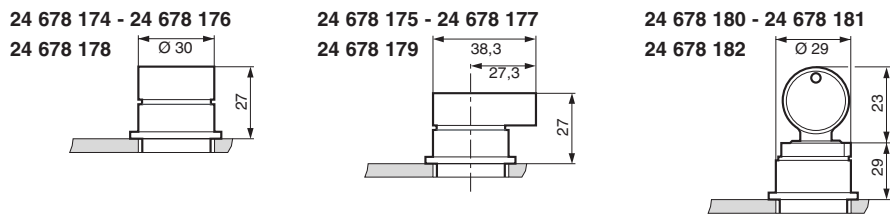
## Symbol



## Position

|        |   |   |   |   |   |   |   |
|--------|---|---|---|---|---|---|---|
|        |  |  |  |  |  |  |  |
| Weight | 70  | 45  | 45  | 16  | 45  | 70  | 70  |

## Dimensions



# Pneumatic 2-hand control

**Conforms to the Machinery Directive**



## Definition (conforming to EN 574 +A1)

A pneumatic 2-hand control device is used with dangerous machinery and requires the simultaneous use of both hands to trigger and maintain machine operation. Such a device must be located outside the dangerous zone, so that the operator cannot enter this zone before the machine has come to a complete standstill.

A pneumatic 2-hand control device is composed of 2 parts :

- 2 manual pushbuttons which require the simultaneous use of both hands.
- A pneumatic relay.

## Types of 2-hand control devices

| Requirements   | Type |    |     |   |   |
|--|------|----|-----|---|---|
|  | I    | II | III |   |   |
|  |      |    | A   | B | C |
| Use of both hands (simultaneous actuation)           | ●    | ●  | ●   | ● | ● |
| Relationship between input signals and output signal | ●    | ●  | ●   | ● | ● |
| Cessation of the output signal                       | ●    | ●  | ●   | ● | ● |
| Prevention of accidental operation                   | ●    | ●  | ●   | ● | ● |
| Prevention of defeat                                 | ●    | ●  | ●   | ● | ● |
| Reinitiation of the output signal                    |      | ●  | ●   | ● | ● |
| Synchronous actuation                                |      |    | ●   | ● | ● |
| Use of category 1 (EN 954-1)                         | ●    |    | ●   |   |   |
| Use of category 3 (EN 954-1)                         |      | ●  |     | ● |   |
| Use of category 4 (EN 954-1)                         |      |    |     |   | ● |

**Category 1 (EN ISO 13849) :** the system should use well tried components and principles.

**Category 3 (EN ISO 13849) :** the system must be designed so that a single fault will not cause the loss of the safety function.

**Category 4 (EN ISO 13849):** the system must be designed so that an accumulation of faults must not lead to a loss of the safety function.

## Synchronous action

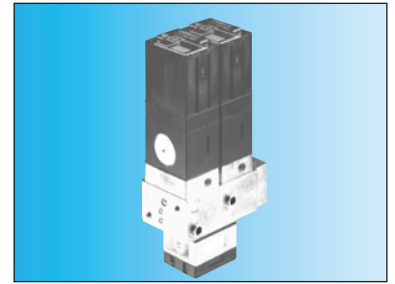
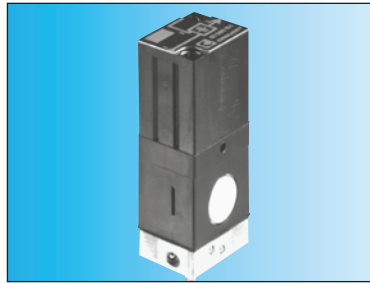
An output signal is only generated if both control actuating devices are actuated within 500 ms.

## Resetting the output signal

The release of a single control device interrupts the output signal, but a reset is only possible once both control devices have been released.

# Pneumatic relay for two-hand control

- 100% pneumatic
- Complies with Machinery Directive and the standard EN 574 +A1
- CE Certification type-IIIA and IIIB

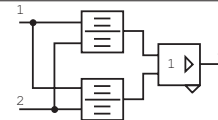


Pneumatic relay for two-hand control  
EN 574 +A1 classification

**81 580 101**  
III A

**81 580 202**  
III B

## Symbol

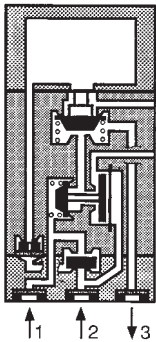


## Characteristics

|                                  |            |                     |                                   |
|----------------------------------|------------|---------------------|-----------------------------------|
| Operating pressure               | bar        | 2 → 8               | 2 → 8                             |
| Orifice diameter                 | mm         | 2.5                 | 2.5                               |
| Max. delay between input signals | s          | 0.2 max.            | 0.2 max.                          |
| Connection                       |            | Sub-base 81 532 001 | Semi-rigid tubing Ø 4 (NFE 49100) |
| Operating temperature            | °C         | -5 → +50            | -5 → +50                          |
| Mechanical life                  | operations | 10 <sup>7</sup>     | 10 <sup>7</sup>                   |
| Weight                           | g          | 90                  | 320                               |

## Principle of operation

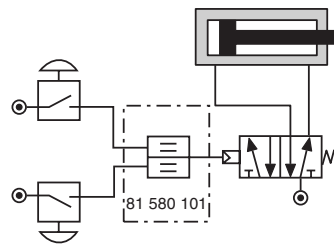
**81 580 101**



To obtain an output signal it is necessary to give simultaneous input signals 'a' and 'b' with a max. delay of 0.45. The output signal 's' is lost if one or both of the inputs are removed.

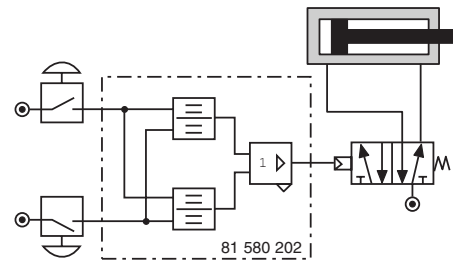
## Connections (Typical application with double-acting cylinder)

**81 580 101**



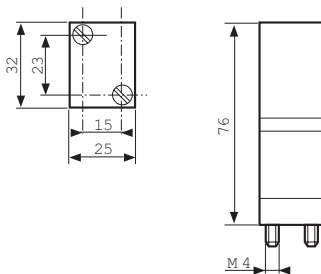
Components follow current standards

**81 580 202**



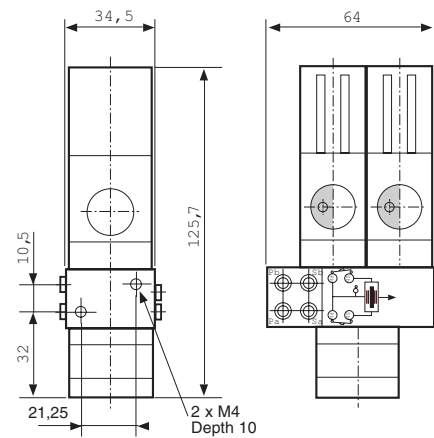
## Dimensions

**81 580 101**



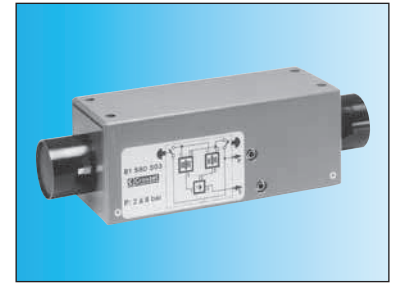
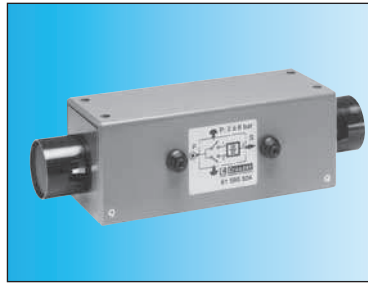
Mounted on sub-base 81 532 001  
(See page 55 of Pneumatic catalogue)

**81 580 202**



# Two-hand pneumatic safety start module

- Conforms to the Machinery Directive and standard EN 574
- Including pneumatic relay to classification IIIA or IIIB depending on version

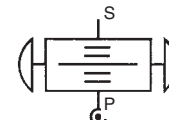
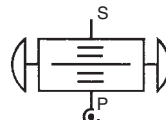


Two-hand pneumatic safety start module  
Pneumatic relay (to EN 574)

**81 580 504**  
Type III A

**81 580 503**  
Type III B

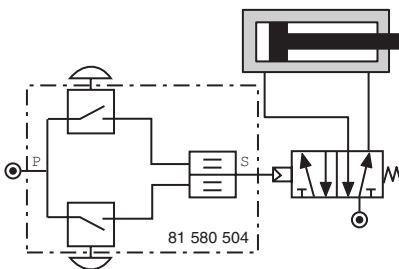
## Symbol



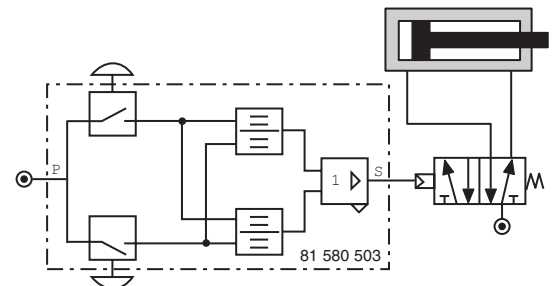
## Characteristics

|                                  |            |                                   |                                   |
|----------------------------------|------------|-----------------------------------|-----------------------------------|
| Operating pressure               | bar        | 2 → 8                             | 2 → 8                             |
| Orifice diameter                 | mm         | 2.5                               | 2.5                               |
| Max. delay between input signals | s          | 0.2 max.                          | 0.2 max.                          |
| Connection                       |            | Semi-rigid tubing Ø 4 (NFE 49100) | Semi-rigid tubing Ø 4 (NFE 49100) |
| Operating temperature            | °C         | -5 → +50                          | -5 → +50                          |
| Mechanical life                  | operations | 1.5 x 10 <sup>6</sup>             | 1.5 x 10 <sup>6</sup>             |
| Weight                           | g          | 1000                              | 1410                              |

**Connections** (Typical application with double-acting cylinder)  
**81 580 504**



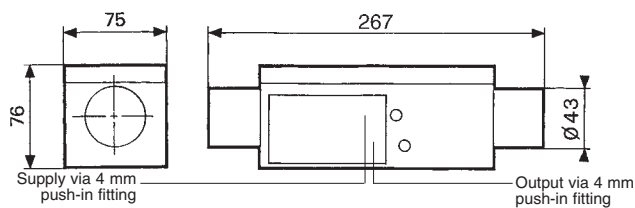
**81 580 503**



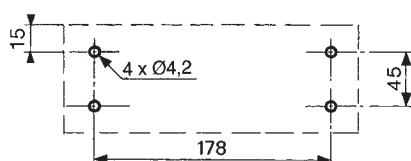
Components follow current standards

## Dimensions

**81 580 503 - 81 580 504**

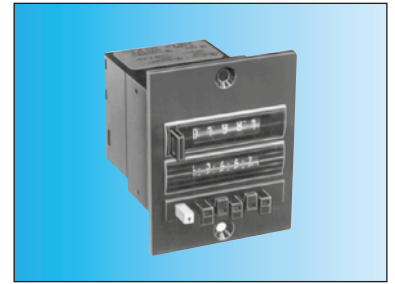
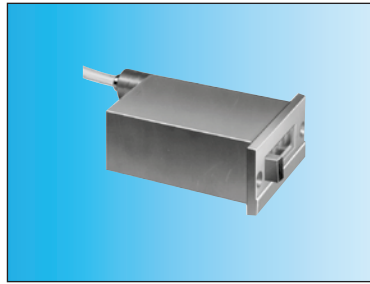


Fixing viewed from below



# Pneumatic impulse counters

- 4, 5, 6 digits with or without reset
- With or without pre-selection



|                      |                           |                                 |  |
|----------------------|---------------------------|---------------------------------|--|
| Totalizer            | 99 766 001                | 99 766 002                      | 89 538 201                                   |
| Preselection counter | —                         | —                               | —  |
| Version              | 6 digits no reset to zero | 4 digits with manual zero reset | 5 digits with manual or pneumatic zero reset |

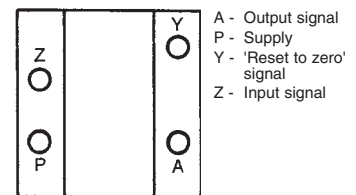
## Symbol



## Characteristics

|                                       |     |         |         |         |
|---------------------------------------|-----|---------|---------|---------|
| Supply pressure                       | bar | 2 → 8   | 2 → 8   | 2 → 8   |
| Pressure to break                     | bar | > 0.3   | > 0.3   | > 0.15  |
| Pressure to make                      | bar | > 1.4   | > 1.4   | > 0.8   |
| Reset :                               |     |         |         |         |
| Minimum pressure                      | bar | —       | —       | 2       |
| Reset time                            | ms  | —       | —       | 150     |
| Circuit pressure                      | bar | —       | —       | 2 → 8   |
| bar                                   |     | —       | —       | •       |
| Signal emitted when preset is reached |     | 0 → +60 | 0 → +60 | 0 → +60 |
| Operating temperature                 | °C  | 150     | 150     | 136     |
| Weight                                | g   |         |         |         |

## Connection

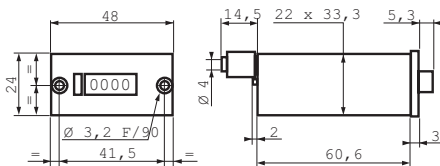


**Note :** the count pulse must be removed before the reset pulse is applied. The pre-set value can be changed during operation without the counter resetting to zero.

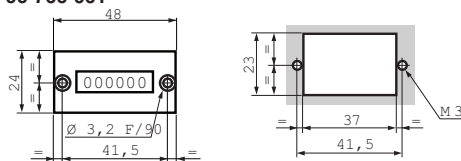
## Dimensions

Connectors for semi-rigid tubing Ø 4 (NFE 49100)

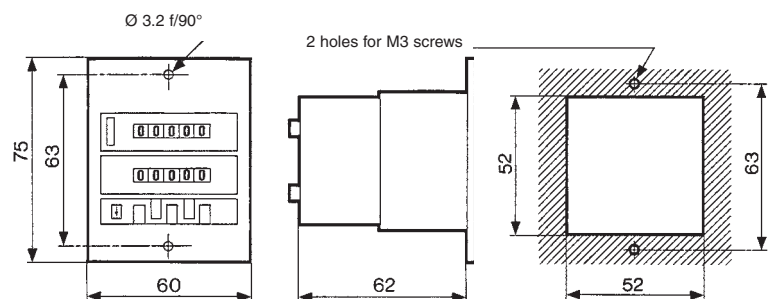
99 766 002



99 766 001



89 538 201

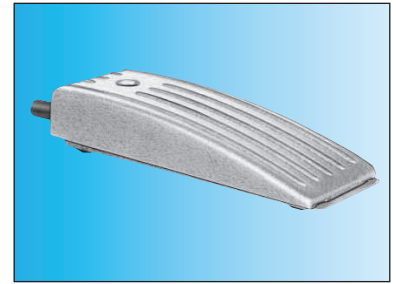


# Indicators and pedal valves

## Ergonomics

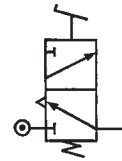


Also available in **ATEX** version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive



|                           |        |            |            |
|---------------------------|--------|------------|------------|
| Pneumatic indicators Ø 22 | Red    | 84 150 201 | —          |
|                           | Green  | 84 150 202 | —          |
|                           | Yellow | 84 150 203 | —          |
|                           | Blue   | 84 150 204 | —          |
| Pedal valve - Version NC  | —      | —          | 81 999 501 |

## Symbol

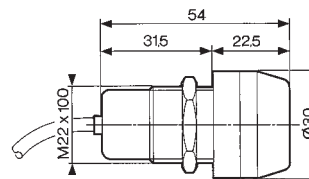


## Characteristics

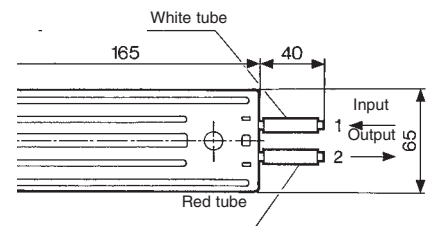
|  |            |                 |                       |
|--|------------|-----------------|-----------------------|
| Operating pressure                                   | bar        | 2 → 8           | —                     |
| Push-in connection for semi-rigid tubing (NFE 49100) | mm         | Ø4              | Ø4                    |
| Operating temperature                                | °C         | -5 → +50        | -5 → +50              |
| Mechanical life                                      | operations | 10 <sup>7</sup> | 1.5 x 10 <sup>6</sup> |
| Weight   | g          | 34              | 290                   |

## Dimensions

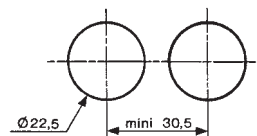
84 150 201 - 84 150 202  
84 150 203 - 84 150 204



81 999 501



Holes drilled for indicators



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)

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