## General summary

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### Push buttons diameter 12 and actuators

<table>
<thead>
<tr>
<th>Features</th>
<th>Actuator color</th>
<th>Valve color</th>
<th>Push button round</th>
<th>Push button double round</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>black</td>
<td>black</td>
<td>81 735</td>
<td></td>
</tr>
<tr>
<td></td>
<td>red</td>
<td>red/kx</td>
<td>81 735 511</td>
<td></td>
</tr>
<tr>
<td></td>
<td>black/red</td>
<td>black/grey</td>
<td>81 735 512</td>
<td></td>
</tr>
<tr>
<td></td>
<td>black/grey</td>
<td>grey/grey</td>
<td>81 735 513</td>
<td></td>
</tr>
</tbody>
</table>

#### Symbol

- NC
- NO

#### Characteristics

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure (bar)</td>
<td>2 – 8</td>
</tr>
<tr>
<td>Orifice diameter (mm)</td>
<td>2.7</td>
</tr>
<tr>
<td>Hole of fl tair (mm)</td>
<td>700</td>
</tr>
<tr>
<td>Hole of fl tair (min)</td>
<td>200</td>
</tr>
<tr>
<td>Valve</td>
<td>NO: grey</td>
</tr>
<tr>
<td>Operating force (N)</td>
<td>2 – 18</td>
</tr>
<tr>
<td>Effective barrel (mm)</td>
<td>1</td>
</tr>
<tr>
<td>Push-in connectors for semi-rigid tubing (NFE 49100)</td>
<td>Ø 4</td>
</tr>
<tr>
<td>Operating temperature (°C)</td>
<td>-5 to +50</td>
</tr>
<tr>
<td>Mechanical life (operations)</td>
<td>1.5 x 10^6</td>
</tr>
<tr>
<td>Weight (g)</td>
<td>65</td>
</tr>
</tbody>
</table>

#### Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threaded barrel</td>
<td>Ø 10.5</td>
</tr>
<tr>
<td>2 threaded barrels</td>
<td>Ø 12.5</td>
</tr>
</tbody>
</table>

### 3-position lever

- Manual return
- Spring return

#### Horizontal outputs

- 81 280 510
- 81 280 516

#### Vertical outputs

- 81 715 010
- 81 281 510

#### Square lever

- 81 281 010
- 81 281 510
3/2 valves for manual actuators Ø 22 mm

3/2 valve supplied with screws for fixing the adaptator
Connection Ø4 G1/8”

Variants 3/2 valve on actuator Ø 22

Adaptor for 3/2 valve on actuators Ø 22

2 x 45°

2 x 45°

2 x 90°

2 x 45°

2 x 45°

2 x 45°

2 x 45°

23

Ø 29

NC version 89 543 001 - 89 543 201

89 543 501 - 89 543 701

EN 50007

Life operations

Operating temperature in dry air °C

Control force N

Flow at 6 bars NI/min

Orifice diameter mm

Holes drilled in panel for actuators Ø 22

Installation

Principle of operation

Weight g

Non-connectable exhaust

Characteristics

Supply

Output

Holes drilled in panel for actuators Ø 22

EN 50007

Actuators Ø 22 mm for manually operated valves

Push buttons

Red

Green

NC + NO

NC + NC

7-positions rotary switches

3-positions rotary switches

Function

Push push contact

Emergency stop plastic Ø 40

Emergency stop Ø 40 mm push-turn

Black symmetrical actuator

Long lever Black

Symbol

Position

Weight g

Dimensions Ø 22 series

3 positions with 455 removable in position 0

3 fixed positions

3-positions rotary switches

2-positions rotary switches

Principle of operation

NC version

Exhaust

Dimensions Ø 22 mm

Installation

NC + NO

NC + NC

Symbol

Position

Weight

Dimensions

3-positions rotary switches

2-positions rotary switches

Principle of operation

NC version

Exhaust

Dimensions Ø 22 mm

Installation

NC + NO

NC + NC

Symbol

Position

Weight

Dimensions
Pneumatic 2-hand control

**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**

<table>
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<tr>
<th>Requirements</th>
<th>Type</th>
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<tbody>
<tr>
<td>Use of both hands (simultaneous actuation)</td>
<td>I II III</td>
</tr>
<tr>
<td>Relationship between input signals and output signal</td>
<td>A B C</td>
</tr>
<tr>
<td>Cessation of the output signal</td>
<td>I II III</td>
</tr>
<tr>
<td>Prevention of accidental operation</td>
<td>A B C</td>
</tr>
<tr>
<td>Prevention of defeat</td>
<td>A B C</td>
</tr>
<tr>
<td>Reinitialisation of the output signal</td>
<td>A B C</td>
</tr>
<tr>
<td>Synchronous actuation</td>
<td>A B C</td>
</tr>
<tr>
<td>Use of category 1 (EN 954-1)</td>
<td>A B C</td>
</tr>
<tr>
<td>Use of category 3 (EN 954-1)</td>
<td>A B C</td>
</tr>
<tr>
<td>Use of category 4 (EN 954-1)</td>
<td>A B C</td>
</tr>
</tbody>
</table>

**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.
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

### Symbol

#### Characteristics
- **Operating pressure bar**: 2 → 8
- **Critical start/stop mm**: 0.2 max
- **Max. delay between input signals s**: 0.2 max
- **Connection**: Semi-rigid tubing Ø 4 (NFE 49100)
- **Operating temperature °C**: -5 → +50
- **Mechanical life**: 1.5 x 10^6
- **Weight**: 900 g

#### Connections (typical application with double-acting cylinder)
- 81 580 504
- 81 580 503

Components follow current standards.

### Dimensions
- 81 580 503 - 81 580 504

Pneumatic impulse counters

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

#### Symbol

#### Characteristics
- **Supply pressure bar**: 2 → 8
- **Pressure to break bar**: > 0.3
- **Pressure to make bar**: > 1.4
- **Reset time ms**: 2 → 60
- **Circuit pressure bar**: > 0.15
- **Weight**: 9 g

#### Connection

Components follow current standards.
Indicators and pedal valves

Ergonomics

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

<table>
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<tr>
<td>Symbol</td>
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<tr>
<td>Operating pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Push-in connection for semi-rigid tubing</td>
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<td></td>
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<td>Mechanical life</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
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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