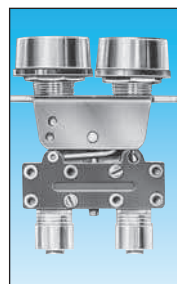
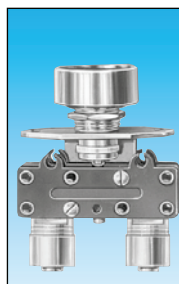


A collage of various industrial components, including valves, actuators, and a hydraulic schematic diagram, all rendered in a blue monochrome style. The components are arranged in a way that suggests a comprehensive product line for industrial automation and fluid control. The background is a light blue gradient, and the overall aesthetic is technical and professional.

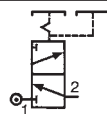
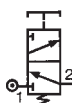
Push buttons diameter 12 and actuators



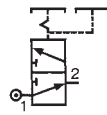
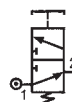
Features		Actuator color	Valve color	Push button round	Push button double round
Version	NC	black	black	81 735 511	—
		red	black	81 735 512	—
		black/red	black	—	81 733 511
	NO	black	grey	81 735 011	—
		red	grey	—	—
		black/red	grey	—	—

Symbol

NC



NO

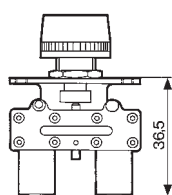


Characteristics

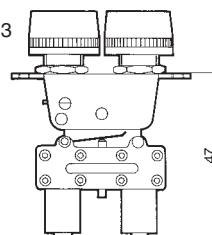
Operating pressure	bar	2 → 8	2 → 8
Orifice diameter	mm	2.7	2.7
Flow at 6 bars	NI/mn.	200	200
Valves	NC : black NO : grey	• •	• •
Operating forces (depending on actuator)	N	8 → 18	8 → 18
Effective travel	mm	1	1
Fluid: dry or lubricated air		•	•
Push-in connectors for semi-rigid tubing (NFE 49100)	mm	Ø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

Dimensions

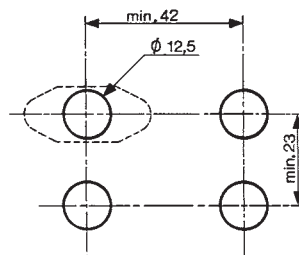
81 735



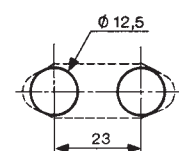
81 733

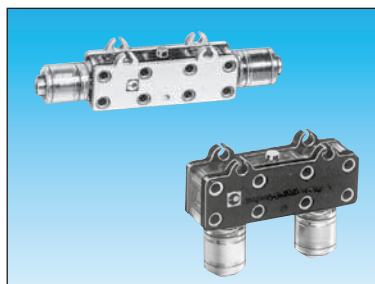
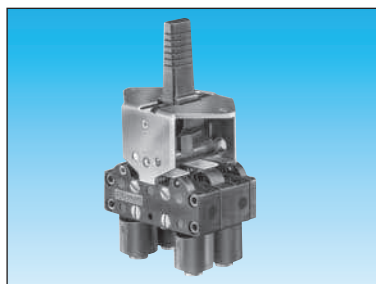
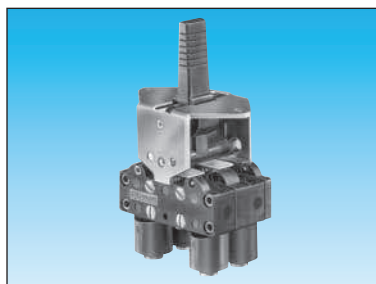


Threaded barrel



2 threaded barrels





3-position lever
manual return

81 716 511
81 716 512

3-position lever
spring return

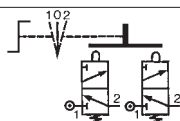
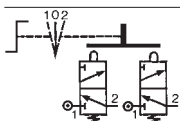
81 715 511
81 715 512

Horizontal outputs

81 280 510

Vertical outputs

81 281 510



2 → 8
2.7
200

2 → 8
2.7
200

2 → 8
2.7
200

2 → 8
2.7
200

8 → 18
1

8 → 18
1

8 → 18
1

8 → 18
1

Ø 4

Ø 4

Ø 4

Ø 4

-5 → +50

-5 → +50

-5 → +50

-5 → +50

1.5 x 10⁶

1.5 x 10⁶

1.5 x 10⁶

1.5 x 10⁶

65

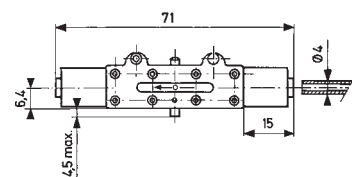
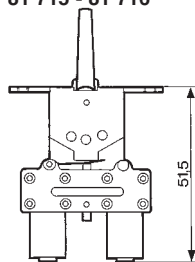
65

14

14

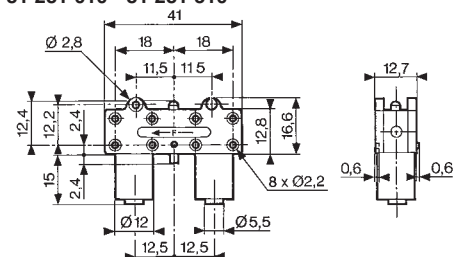
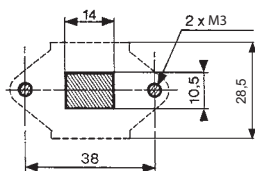
81 715 - 81 716

81 280 010 - 81 280 510



Square lever

81 281 010 - 81 281 510

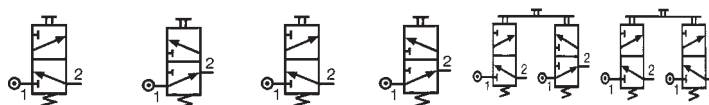


3/2 valves for manual actuators Ø 22 mm



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

Symbol

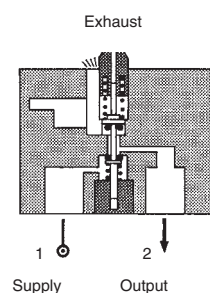


Characteristics

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	l/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 ⁶	1.5 x 10 ⁶	1.5 x 10 ⁶	1.5 x 10 ⁶	1.5 x 10 ⁶	1.5 x 10 ⁶	—
Non-connectable exhaust		•	•	•	•	•	•	—
Weight	g	50	50	60	60	110	110	40

Principle of operation

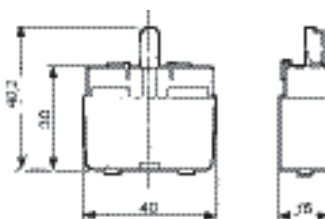
NC version



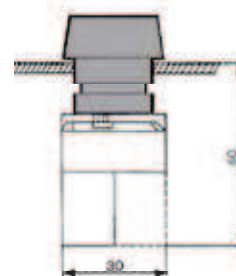
Dimensions

89 543 001 - 89 543 201

89 543 501 - 89 543 701

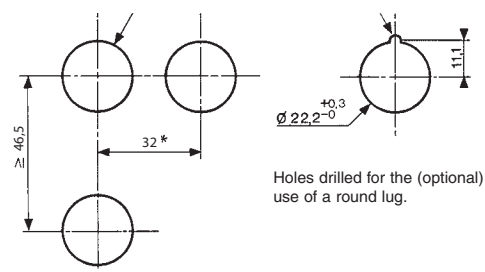


Ø 22 series



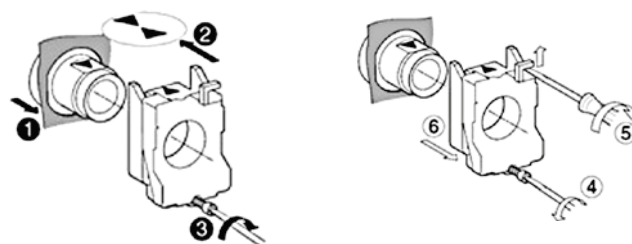
Holes drilled in panel for actuators Ø 22

EN 50007

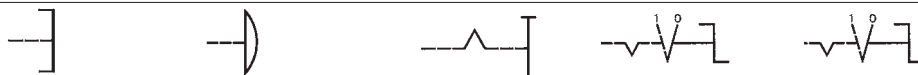


- * > 40 Ø 40 push-buttons
- * > 45 for lever type rotary switches

Installation

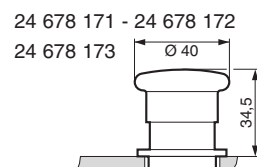
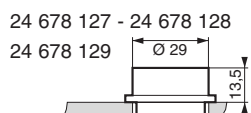


1

Symbol

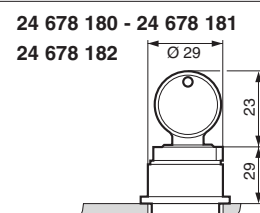
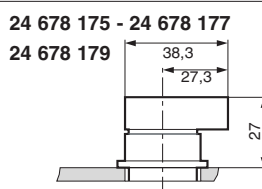
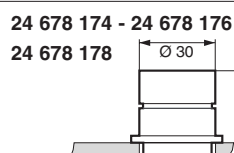
Two identical diagrams of a right-angled triangle. The top vertex is labeled '0', the bottom-left vertex is labeled '45°', and the bottom-right vertex is labeled '1'. The triangle is oriented with the right angle at the bottom-left vertex.

Dimensions



Symbol

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

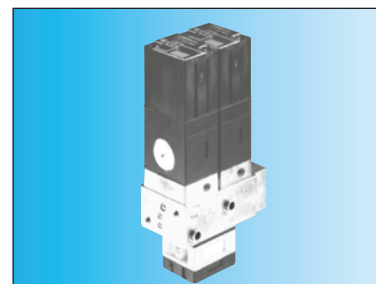
An output signal is only generated if both control actuating devices are actuated within 500 ms.

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

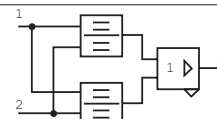


Pneumatic relay for two-hand control
EN 574 +A1 classification

81 580 101
III A

81 580 202
III B

Symbol

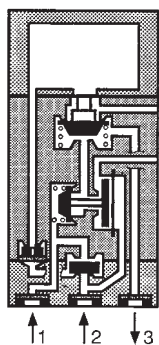


Characteristics

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 ⁷	10 ⁷
Weight	g	90	320

Principle of operation

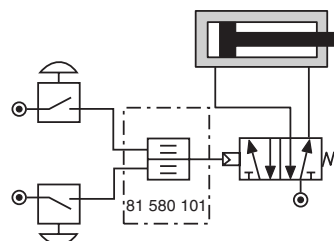
81 580 101



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.

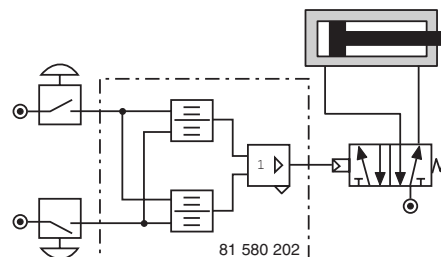
Connections (Typical application with double-acting cylinder)

81 580 101



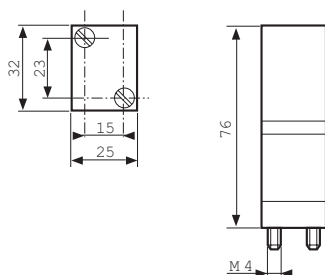
Components follow current standards

81 580 202



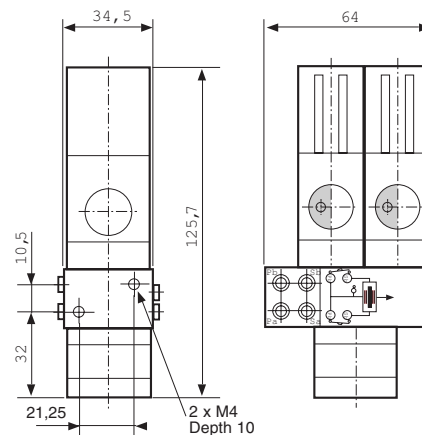
Dimensions

81 580 101



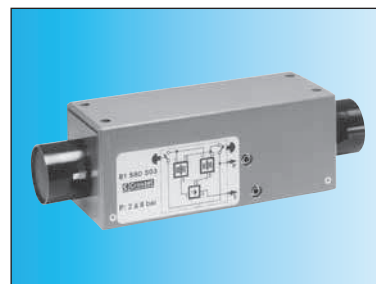
Mounted on sub-base 81 532 001
(See page 55 of Pneumatic catalogue)

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

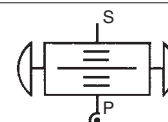
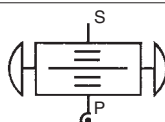


Two-hand pneumatic safety start module
Pneumatic relay (to EN 574)

81 580 504
Type III A

81 580 503
Type III B

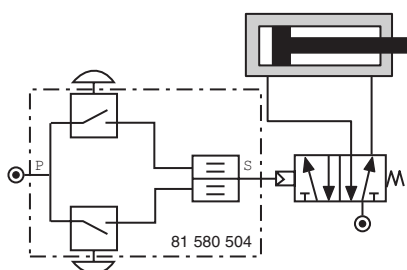
Symbol



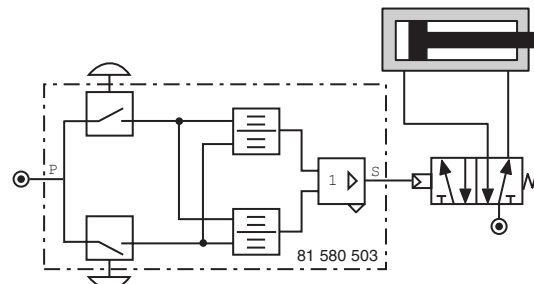
Characteristics

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 ⁶	1.5 x 10 ⁶
Weight	g	1000	1410

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



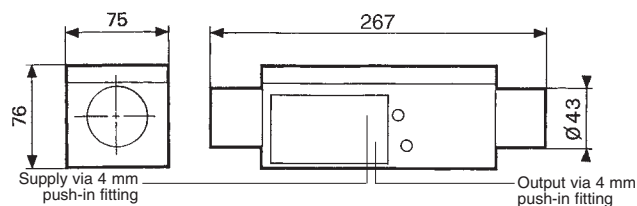
81 580 503



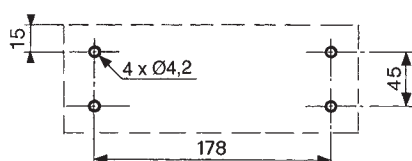
Components follow current standards

Dimensions

81 580 503 - 81 580 504

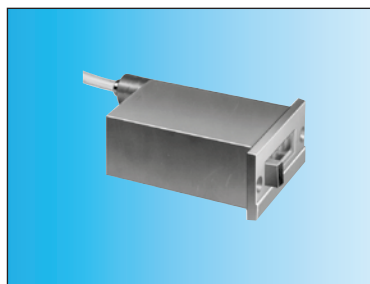


Fixing viewed from below



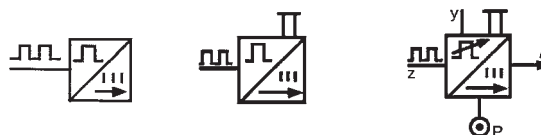
Pneumatic impulse counters

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



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

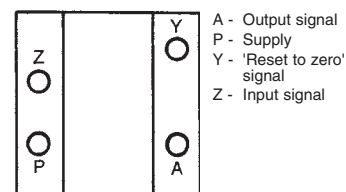
Symbol



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
Signal emitted when preset is reached		0 → +60	0 → +60	0 → +60
Operating temperature	°C	150	150	136
Weight	g	—	—	—

Connection

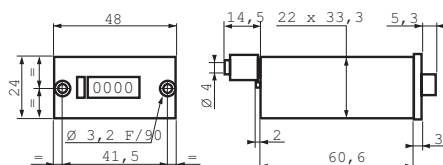


Note : the count pulse must be removed before the reset pulse is applied. The pre-set value can be changed during operation without the counter resetting to zero.

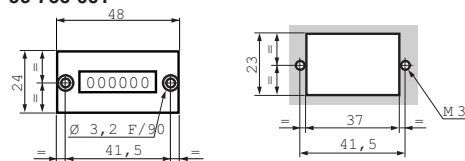
Dimensions

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

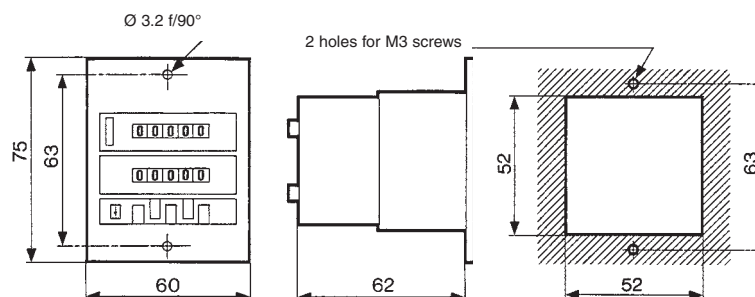
99 766 002



99 766 001



89 538 201

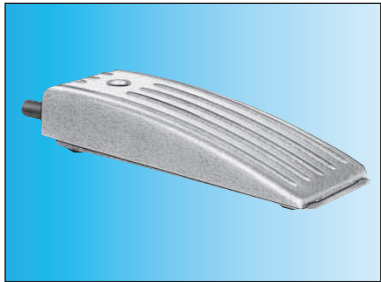


Indicators and pedal valves

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

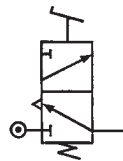
84 150 204

—

Pedal valve - Version NC

81 999 501

Symbol

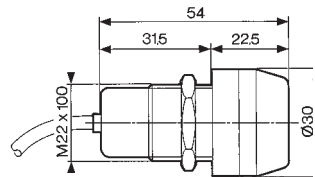


Characteristics

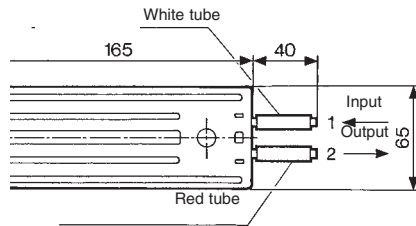
Operating pressure	bar	2 → 8	—
Push-in connection for semi-rigid tubing (NFE 49100)	mm	Ø4	Ø4
Operating temperature	°C	-5 → +50	-5 → +50
Mechanical life	operations	10 ⁷	1.5 x 10 ⁶
Weight	g	34	290

Dimensions

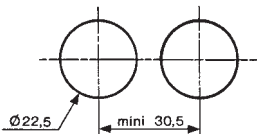
84 150 201 - 84 150 202
84 150 203 - 84 150 204



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