

- > **Port size: 1/4" or 1/2" ISO G/NPT**
- > **Main application: single and double operated actuators**
- > **TÜV-approval based on type examination DIN EN 161, DIN 3394 and IEC 61 508**
- > **Valves for safety systems multi-channel up to SIL 3**
- > **Crossover-free switching**
- > **Add-on manual override**
- > **Suited for outdoor use under critical environment conditions (see solenoid list)**
- > **The solenoid valves are applicable in the protection classes Ex e mb, Ex d mb, Ex mb, Ex ia for zones 1 & 2 (gas), 21 & 22 (dust), ATEX cat. II 2GD**
- > **International approvals: IEC Ex, FM, CSA others on request**



### Technical features

#### Medium:

Filtered, non-lubricated and dried compressed air, instrument air, nitrogen and other non-flammable neutral, dry fluids

#### Operation:

Indirect solenoid operated spool valves

#### Operating pressure:

2,5 ... 8 bar (36 ... 116 psi) with internal air supply  
0 ... 8 bar (0 ... 116 psi) with external air supply (G1/2, 1/2 NPT or low power pilot system only)

#### Orifice:

DN 6 or DN 8

#### Port size::

G 1/4, 1/4 NPT, G 1/2, 1/2 NPT or NAMUR Interface with integrated exhaust air

#### Mounting position:

Optional, impuls valves preferably horizontally

#### Ambient/Media temperature:

Valve:

-40° ... +65°C (-40° ... +149°F) (special NBR)

-25° ... +80°C (-13° ... +176°F) (HNBR)

Depending on solenoid system  
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

For outdoor installations must be protected all connections against the penetration of moisture and a solenoid with IP66 protection must be used!

#### Materials:

Body: aluminium 3.0615 with surface treatment for critical environmental conditions (approved according to DIN 50018: Condensate test with alternating temperatures in sulphuric atmosphere, DIN 50021/ASTM B117-73: Salt spray test with different sodium chloride solutions, tested in ammonia atmosphere), brass 2.0401 (Ms 58) stainless steel 1.4404 (316 L)  
Seals: special NBR or HNBR

3/2, 5/2 and 5/3 way valves with seals NBR -40 ... +65°C \*3)

Housing: aluminium anodized

Symbol	Ports 1, 3, (5)	2, 4	Actuation	Operating pressure (bar)	Flow *6) (l/min)	Test certification IEC 61508 *2)	Weight (kg)	Dimension No.	Model *1)
	G 1/4	Flange	Solenoid/spring	2,5 ... 8	1300	x	0,45	1	9710505
	1/4 NPT	Flange	Solenoid/spring	2,5 ... 8	1300	x	0,45	1	9710515
	G 1/2	Flange	Solenoid/spring	2,5 ... 8	2600		0,80	7	9710595
	1/2 NPT	Flange	Solenoid/spring	2,5 ... 8	2600		0,80	7	9710596
	G 1/4	Flange	Solenoid/solenoid	2,5 ... 8	1300		0,65	2	9711505
	1/4 NPT	Flange	Solenoid/solenoid	2,5 ... 8	1300		0,65	2	9711515
	G 1/4	Flange	Solenoid/solenoid (APB)	2,5 ... 8	950		0,7	3	9712505
	1/4 NPT	Flange	Solenoid/solenoid (APB)	2,5 ... 8	950		0,7	3	9712515

Housing: brass

Symbol	Ports 1, 3, (5)	2, 4	Actuation	Operating pressure (bar)	Flow *6) (l/min)	Test certification IEC 61508 *2)	Weight (kg)	Dimension No.	Model *1)
	G 1/4	Flange	Solenoid/spring	2,5 ... 8	1300	x	1,00	1	9710605
	1/4 NPT	Flange	Solenoid/spring	2,5 ... 8	1300	x	1,00	1	9710615
	G 1/4	Flange	Solenoid/solenoid	2,5 ... 8	1300		1,40	2	9711605
	1/4 NPT	Flange	Solenoid/solenoid	2,5 ... 8	1300		1,40	2	9711615
	G 1/4	Flange	Solenoid/solenoid (APB)	2,5 ... 8	950		1,50	3	9712605
	1/4 NPT	Flange	Solenoid/solenoid (APB)	2,5 ... 8	950		1,50	3	9712615

Housing: stainless steel

Symbol	Ports 1, 3, (5)	2, 4	Actuation	Operating pressure (bar)	Flow *6) (l/min)	Test certification IEC 61508 *2)	Weight (kg)	Dimension No.	Model *1)
	G 1/4	Flange	Solenoid/spring	2,5 ... 8	1300	x	1,00	1	9710705
	1/4 NPT	Flange	Solenoid/spring	2,5 ... 8	1300	x	1,00	1	9710715
	G 1/4	Flange	Solenoid/solenoid	2,5 ... 8	1300		1,40	2	9711705
	1/4 NPT	Flange	Solenoid/solenoid	2,5 ... 8	1300		1,40	2	9711715
	G 1/4	Flange	Solenoid/solenoid (APB)	2,5 ... 8	950		1,50	3	9712705
	1/4 NPT	Flange	Solenoid/solenoid (APB)	2,5 ... 8	950		1,50	3	9712715

In order to ensure full flow and proper function make sure that sufficient pressure supply with feed pipe diameters according to the port size is available.

\*1) When ordering please indicate solenoid, voltage and current (frequency)

\*2) Since May 2008, Date code A8192

\*3) For operation in plants according to IEC 61511/61508 -40 ... +40°C see test certificate (on request)

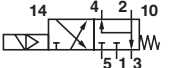
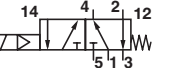
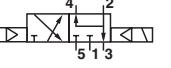
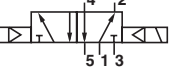
\*6) Flow characteristics conforms to ISO6358 [6 » 5 bar]

Note for \*6): Connecting pipe/fitting: In order to ensure and a pressure collapse avoid the flow, the supply air cross section should with 1/4: ≥ 8 mm; with 1/2: ≥ 10 mm. With smaller cross section the inlet (A1) should more largely, however at least equally large line at the port (A2; A1).

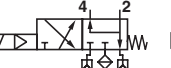
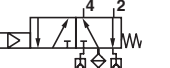
Valve function: APB = All Ports Blocked

3/2 or 5/2 way function (Conversion instructions see page 14)

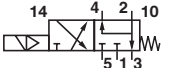
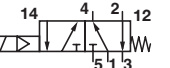
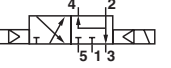
**3/2, 5/2 and 5/3 way valves with seals HNBR -25 ... +80°C \*3)**
**Housing: aluminium anodized**

Symbol	Ports 1, 3, (5)	2, 4	Actuation	Operating pressure (bar)	Flow *6) (l/min)	Test certification IEC 61508 *2)	Weight (kg)	Dimension No.	Model *1)
	G 1/4	Flange	Solenoid/spring	2,5 ... 8	1300	x	0,45	1	9710205
	1/4 NPT	Flange	Solenoid/spring	2,5 ... 8	1300	x	0,45	1	9710215
	G 1/2	Flange	Solenoid/spring	2,5 ... 8	2600	x	0,80	7	9710295
	1/2 NPT	Flange	Solenoid/spring	2,5 ... 8	2600	x	0,80	7	9710296
	G 1/4	Flange	Solenoid/solenoid	2,5 ... 8	1300		0,65	2	9711205
	1/4 NPT	Flange	Solenoid/solenoid	2,5 ... 8	1300		0,65	2	9711215
	G 1/4	Flange	Solenoid/solenoid (APB)	2,5 ... 8	950		0,7	3	9712205
	1/4 NPT	Flange	Solenoid/solenoid (APB)	2,5 ... 8	950		0,7	3	9712215

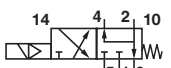
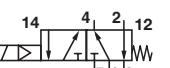
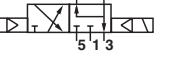
**Housing: aluminium anodized, Inlet filter and exhaust guard**

Symbol	Ports 1, 3 (5)	2, 4	Actuation	Operating pressure (bar)	Flow *6) (l/min)	Test certification IEC 61508 *2)	Weight (kg)	Dimension No.	Model *1)
	G 1/4	Flange	Solenoid/spring	2,5 ... 8	1300	x *4)	0,45	8	9710901
	G 1/4	Flange	Solenoid/solenoid	2,5 ... 8	1300	-	0,65	9	9711901

**Housing: brass**

Symbol	Ports 1, 3, (5)	2, 4	Actuation	Operating pressure (bar)	Flow *6) (l/min)	Test certification IEC 61508 *2)	Weight (kg)	Dimension No.	Model *1)
	G 1/4	Flange	Solenoid/spring	2,5 ... 8	1300	x	1,00	1	9710305
	1/4 NPT	Flange	Solenoid/spring	2,5 ... 8	1300	x	1,00	1	9710315
	G 1/4	Flange	Solenoid/solenoid	2,5 ... 8	1300		1,40	2	9711305
	1/4 NPT	Flange	Solenoid/solenoid	2,5 ... 8	1300		1,40	2	9711315
	G 1/4	Flange	Solenoid/solenoid (APB)	2,5 ... 8	950		1,50	3	9712305
	1/4 NPT	Flange	Solenoid/solenoid (APB)	2,5 ... 8	950		1,50	3	9712315

**Housing: Stainless steel**

Symbol	Ports 1, 3, (5)	2, 4	Actuation	Operating pressure (bar)	Flow *6) (l/min)	Test certification IEC 61508 *2)	Weight (kg)	Dimension No.	Model *1)
	G 1/4	Flange	Solenoid/spring	2,5 ... 8	1300	x	1,00	1	9710405
	1/4 NPT	Flange	Solenoid/spring	2,5 ... 8	1300	x	1,00	1	9710415
	G 1/4	Flange	Solenoid/solenoid	2,5 ... 8	1300		1,40	2	9711405
	1/4 NPT	Flange	Solenoid/solenoid	2,5 ... 8	1300		1,40	2	9711415
	G 1/4	Flange	Solenoid/solenoid (APB)	2,5 ... 8	950		1,50	3	9712405
	1/4 NPT	Flange	Solenoid/solenoid (APB)	2,5 ... 8	950		1,50	3	9712415

In order to ensure full flow and proper function make sure that sufficient pressure supply with feed pipe diameters according to the port size is available.

\*1) When ordering please indicate solenoid, voltage and current (frequency)

\*2) Since May 2008, Date code A8192

\*3) For operation in plants according to IEC 61511/61508 -25°C...+65°C or 0...+80°C see test certificate (on request)

\*4) Test certificate without inlet filter and exhaust guard

\*6) Flow characteristics conforms to ISO6358 [6 × 5 bar]

Note for \*6): Connecting pipe/fitting: In order to ensure and a pressure collapse avoid the flow, the supply air cross section should with 1/4: ≥ 8 mm; with 1/2: ≥ 10 mm. With smaller cross section the inlet (A1) should more largely, however at least equally large line at the port (A2; A1).

Valve function: APB = All Ports Blocked

3/2 or 5/2 way function (Conversion instructions see page 14)

Option selector

971\*\*\*\*\*.\*\*\*\*\*.\*\*\*\*\*

Function	Substitute
5/2 way with spring return (3/2 way with adapter plate for NAMUR flange)	0
5/2 way impuls (3/2 way with adapter plate for NAMUR flange)	1
5/3 way with spring return (ABP)	2
<b>Material: Housing/seals</b>	<b>Substitute</b>
Aluminium/HNBR (-25 ... + 80°C)	2
Brass/HNBR (-25 ... + 80°C)	3
Stainless steel/HNBR (-25 ... + 80°C)	4
Aluminium/NBR (-40 ... + 65°C)	5
Brass/NBR (-40 ... + 65°C)	6
Stainless steel/NBR (-40 ... + 65°C)	7
Special version *1)	9
<b>Ports size</b>	<b>Substitute</b>
G 1/4	0
1/4 NPT	1
G 1/2	9
1/2 NPT (in connection with 'version code 6' below described)	9
<b>Version</b>	<b>Substitute</b>
Without manual override (retrofit)	5
Semi automatic (on request)	7
Low power pilot (see page 5)	9
For 1/2 NPT only + NAMUR (manual override retrofit)	6

Air supply	Substitute
Internal	0
Externa	Z
<b>Voltage</b>	<b>Substitute</b>
24 V d.c.	024.0
230 V a.c.	230.5
<b>Solenoid</b>	<b>Substitute</b>
see solenoid table	

Valve function:

APB = All Ports Blocked

\*1) Norgren internal use.

Port size and other features shown under version are different.

E.g. 971x901: Valve with inlet filter and exhaust guards according to customer requirement.

Solenoids, standard voltages

	Power consumption		Rated current		Protection class IP/NEMA	Ex-Protection (ATEX-Category)	Temperature Ambient/ Media (°C)	Electrical connection	Drawing No.	Circuit diagram No.	Model
	24 V d.c. (W)	230 V a.c. (VA)	24 V d.c. (m A)	230 V a.c. (m A)							
	1,9	2,1 *2)	78	11	IP65 (with connector)	—	-25 ... +60	Connector DIN EN 175301-803, form A *1)	3	1/5	0763
	3,6	—	150	—	IP66	II 2G Ex mb IIC T4 Gb II 2D Ex mb IIIC T110°C Db	-20 ... +70	Cable length 3 m	5	4	0298
	—	4,6	—	18	IP66	II 2G Ex mb IIC T4 Gb II 2D Ex mb IIIC T110°C Db	-20 ... +70	Cable length 3 m	5	4	0299
	0,8	—	38	—	IP66 (with cable gland)	II 2G Ex eb mb IIC T5/T6 Gb II 2D Ex tb IIIC T130°C Db	T5: -40 ... +80 T6: -40 ... +70 -40 ... +80	M20 x 1,5 *1)	6	4	4200
	—	1,3	—	6	IP66 (with cable gland)	II 2G Ex eb mb IIC T5/T6 Gb II 2D Ex tb IIIC T130°C Db	T5: -40 ... +80 T6: -40 ... +70 -40 ... +80	M20 x 1,5 *1)	6	7	4201

Standard voltages (±10%) 24 V d.c., 230 V a.c., other voltages on request. Design according to VDE 0580, EN 50014/50028. 100% duty cycle.

\*1) Connector/cable gland is not scope of delivery, see table »Accessories«

\*2) Required connector: type 0570275 for d.c.; type 0663303 for a.c., 200 V d.c. solenoid voltage must be ordered!



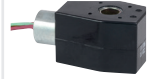
Attention: The protection class for coil series 46xx and 48xx is determined by the choice of cable gland.

Example: if an ATEX-certified cable gland is used that has Ex d type of protection, the solenoid will have the protection class Ex d mb; if a cable gland with Ex e type of protection is used, the solenoid will have protection class Ex e mb.

Approvals

Model	Approvals ATEX	IECEX	FM	Datasheet
029x	KEMA 02 ATEX 1347 X	—	—	N/en 7.1.505
42xx	KEMA 98 ATEX 4452 X	IECEX KEM 09.0068X	—	N/en 7.1.580

**Solenoids, standard voltages**

	Power consumption		Rated current		Protection class IP/NEMA	Ex-Protection (ATEX-Category)	Temperature Ambient/ Media (°C)	Electrical connection	Drawing No.	Circuit diagram No.	Model
	24 V d.c. (W)	230 V a.c. (VA)	24 V d.c. (m A)	230 V a.c. (m A)							
	0,8	—	33	—	IP66 (with cable gland)	II 2G Ex d mb IIC T5/T6 Gb II 2G Ex e mb IIC T5/T6 Gb  II 2D Ex tb IIIC T130°C Db	T5: -40 ... +80 T6: -40 ... +70  -40 ... +80	1/2 NPT *1)	7	20	4600
	—	1,3	—	6	IP66 (with cable gland)	II 2G Ex d mb IIC T5/T6 Gb II 2G Ex e mb IIC T5/T6 Gb  II 2D Ex tb IIIC T130°C Db	T5: -40 ... +80 T6: -40 ... +70  -40 ... +80	1/2 NPT *1)	7	21	4601
	0,8	—	33	—	IP66 (with cable gland)	II 2G Ex d mb IIC T5/T6 Gb II 2G Ex e mb IIC T5/T6 Gb  II 2D Ex tb IIIC T130°C Db	T5: -40 ... +80 T6: -40 ... +70  -40 ... +80	M20 x 1,5 *1)	7	20	4602
	—	1,3	—	6	IP66 (with cable gland)	III 2 G Ex d mb IIC T5/T6 Gb II 2G Ex e mb IIC T5/T6 Gb  II 2D Ex tb IIIC T130°C Db	T5: -40 ... +80 T6: -40 ... +70  -40 ... +80	M20 x 1,5 *1)	7	21	4603
	0,8	—	33	—	IP66 (with cable gland)	II 2G Ex mb d IIC T4/T6 Gb II 2G Ex mb e II T4/T6 Gb	T4: -40 ... +80 T6: -40 ... +70	M20 x 1,5 *1)	10	4	4802
	—	1,3	—	6	IP66 (with cable gland)	II 2G Ex mb d IIC T4/T6 Gb II 2G Ex mb e II T4/T6 Gb	T4: -40 ... +80 T6: -40 ... +70	M20 x 1,5 *1)	10	7	4803
	1,4	—	228	—	4X	Cl. I, Div. 1, Gr. A - D Cl. II/III, Div. 1, Gr. E - G T3C (160°C)	-20 ... +60	Flying leads 460 mm long	8	1	3720

Standard voltages (±10%) 24 V d.c., 230 V a.c., other voltages on request. Design according to VDE 0580, EN 50014/50028. 100% duty cycle.

\*1) Connector/cable gland is not scope of delivery, see table »Accessories«

\*2) Required connector: type 0570275 for d.c.; type 0663303 for a.c., 200 V d.c. solenoid voltage must be ordered!


Attention: The protection class for coil series 46xx and 48xx is determined by the choice of cable gland.

Example: if an ATEX-certified cable gland is used that has Ex d type of protection, the solenoid will have the protection class Ex d mb; if a cable gland with Ex e type of protection is used, the solenoid will have protection class Ex e mb.

**Approvals**

Model	Approvals ATEX	IECEX	FM	Datasheet
372x, 382x	—	—	CSA-LR 57643-6	N/en 7.1.575
46xx	PTB 02 ATEX 2085 X	IECEX PTB 11.0094X	—	N/en 7.1.585
48xx	PTB 06 ATEX 2054 X	IECEX PTB 07.0039X	—	N/en 7.1.590

### Solenoid actuators for intrinsically-safe circuits

	Nominal resistance RN coil (Ω)	Min. required switching current (mA)	Resistance Rw 60 coil (Ω)	Required voltage at terminal Rw 60 (V)	IP Protection class	Ex-Protection (ATEX-Category)	Temperature Ambient/Media (°C)	Drawing No.	Circuit diagram No.	Model
		200	33	240	8	IP66 (with cable gland)	II 2G Ex ia IIC T4/T6 Gb	T4: -40 ... +80	17	10
II 2D Ex ia IIIC T80°C Db							T6: -40 ... +60			
II 2D Ex ia IIIC T100°C Db							-40 ... +60			
391		24	460	11	IP66 (with cable gland)	II 2G Ex ia IIC T4/T6 Gb	T4: -40 ... +80	17	10	2051
						II 2D Ex ia IIIC T80°C Db	T6: -40 ... +60			
						II 2D Ex ia IIIC T100°C Db	-40 ... +60			
736		17	880	15	IP66 (with cable gland)	II 2G Ex ia IIC T4/T6 Gb	T4: -40 ... +80	17	10	2052
						II 2D Ex ia IIIC T80°C Db	T6: -40 ... +60			
						II 2D Ex ia IIIC T100°C Db	-40 ... +60			
1220		13	1460	19	IP66 (with cable gland)	II 2G Ex ia IIC T4/T6 Gb	T4: -40 ... +80	17	10	2053
						II 2D Ex ia IIIC T80°C Db	T6: -40 ... +60			
						II 2D Ex ia IIIC T100°C Db	-40 ... +60			

Cable gland (cable Ø 5 ... 10 mm) is in scope of delivery

When selecting an intrinsically safe power supply, the permissible maximum values according to the Certificate of Conformity should be taken into account.

Ui = 45 V, Ii = 500 mA according to Tab. A. 1, EN 60079-11

Pi = 2,0 W, Li and Ci can be ignored.

### Approvals

Model	Approvals		Datasheet
	ATEX	IECEX	
205x	PTB 07 ATEX 2019	IECEX PTB 07.0017	N/en 7.1.535

**3/2, 5/2 and 5/3 way valves, indirect solenoid actuated using low-power pilot system in protection class Ex ia IIC T4/T6, seals NBR -40 ... +65° C**

Symbol	Ports 1, 3, (5)	2, 4	Actuation	Material	Operating pressure (bar)	Flow *6) (l/min)	Weight (kg)	Dimension No.	Model *1)
	G 1/4	Flange	Solenoid/spring	Aluminium	2,5 ... 8	1300	0,45	4	9710509
	1/4 NPT	Flange	Solenoid/spring	Aluminium	2,5 ... 8	1300	0,45	4	9710519
	G 1/4	Flange	Solenoid/solenoid	Aluminium	2,5 ... 8	1300	0,65	5	9711509
	1/4 NPT	Flange	Solenoid/solenoid	Aluminium	2,5 ... 8	1300	0,65	5	9711519
	G 1/4	Flange	Solenoid/solenoid (APB)	Aluminium	2,5 ... 8	950	0,7	6	9712509
	1/4 NPT	Flange	Solenoid/solenoid (APB)	Aluminium	2,5 ... 8	950	0,7	6	9712519

**3/2, 5/2 and 5/3 way valves, indirect solenoid actuated using low-power pilot system in protection class Ex ia IIC T4/T6, seals HNBR -25° ... +80°C**

Symbol	Ports 1, 3 (5)	2, 4	Actuation	Material	Operating pressure (bar)	Flow *6) (l/min)	Weight (kg)	Dimension No.	Model *1)
	G 1/4	Flange	Solenoid/spring	Aluminium	2,5...8	1300	0,45	4	9710209
	1/4 NPT	Flange	Solenoid/spring	Aluminium	2,5...8	1300	0,45	4	9710219
	G 1/4	Flange	Solenoid/solenoid	Aluminium	2,5...8	1300	0,65	5	9711209
	1/4 NPT	Flange	Solenoid/solenoid	Aluminium	2,5...8	1300	0,65	5	9711219
	G 1/4	Flange	Solenoid/solenoid (APB)	Aluminium	2,5...8	950	0,7	6	9712209
	1/4 NPT	Flange	Solenoid/solenoid (APB)	Aluminium	2,5...8	950	0,7	6	9712219

In order to ensure full flow and proper function make sure that sufficient pressure supply with feed pipe diameters according to the port size is available.

\*1) When ordering please indicate solenoid, voltage and electrical connection, see below

\*6) Flow characteristics conforms to ISO6358 [6 × 5 bar]

Note for \*6): Connecting pipe/fitting: In order to ensure and a pressure collapse avoid the flow, the supply air cross section should with 1/4: ≥ 8 mm; with 1/2: ≥ 10 mm. With smaller cross section the inlet (A1) should more largely, however at least equally large line at the port (A2; A1).

Valve function: APB = All Ports Blocked

3/2 or 5/2 way function (Conversion instructions see page 14)

**Low-power pilot system in protection class II 2G Ex ia IIC T4/T6 Suitable for valves see page 6 and 7**

	Power P (mW)	Switch-on voltage U on (V)	Switch-off voltage U off (V)	Rated current I on (mA)	Resistance coil R (Ω)	IP Protection class	Ex-Protection (ATEX-Category)	Temperature Ambient/Media (°C)	Circuit diagram No.	Model
	6,3 (+20°C)	≥ 4,3 (+20°C) ≥ 5,2 (+80°C)	≤ 1,44 (+20°C) ≤ 1,2 (-25°C)	≥ 1,45	2800	IP65 (with cable gland)	II 2G Ex ia IIC T4/T6	T4: -40 ... +80°C T6: -40 ... +60°C	11	2085
	23,2 (+20°C)	≥ 16 (+20°C) ≥ 16,8 (+80°C)	≤ 5,4 (+20°C) ≤ 4,7 (-25°C)	≥ 1,45	10900	IP65 (with cable gland)	II 2G Ex ia IIC T4/T6	T4: -40 ... +80°C T6: -40 ... +60°C	11	2086

Cable gland (cable Ø 5 ... 10 mm) is in scope of delivery

**Approvals**

Typ	Approvals ATEX	Datasheet
208x	PTB 06 ATEX 2001U	N/en 7.1.540

**Ordering example**

9710509	2085	005	00
Valve	Pilot 6,3 mW	Electrical connection	00 internal air supply
Valve	Pilot 6,3 mW	005 M16 x 1,5 cable gland	0Z external air supply

**Max. values Ex i**

Ui (V)	Ii (mA)	Pi *1) (mW)
25	150	250
27	125	250
28	115	250
30	100	250
32	85	250

Air consumption: home position ≤ 60 l/h, operating position ≤ 15 l/h

\*1) Model 2086 without Pi limiting. Ci and Li can be ignored.

Partnumbers for international approval

Land/Approval	Coil/Code	029x	205x	208x	372x	42xx	46xx	48xx
Europa/ATEX	Standard	X	X	X	-	X	X	X
International/IECEX	Standard	X	X	X	-	X	X	X
China/NEPSI	-01	-	X	-	-	X	X	-
Brasilien/INMETRO	-02	-	X	-	-	X	X	-
Korea/KOSHA	-03	-	X	-	-	X	X	X
Russland, Kasachstan & Weißrussland/TR-CU 012	-04	X	X	X	-	X	X	X
Indien/CCOE	Standard	-	X	-	-	X	X	-
Taiwan/ITRI	Standard	-	X	-	-	X	X	-
USA/FM	Standard	-	-	-	X	-	-	-
Kanada/CSA	Standard	-	-	-	X	-	-	-

Example: 000000420002400-04  
(Coil: 4200; Voltage: 24V DC; Approval: TR-CU 012)

Accessories

Electrical connection

**Cable gland**  
Protection class Ex e, Ex d (ATEX),  
Nickel plated brass/  
Stainless steel

Page 17

For solenoid	Thread	Cable Ø (mm)	Material	Protection class (ATEX)	Ambient temperatur limitation *1)	Model
42xx	M20 x 1,5	7,0 ... 12,0	Plastic	II 2G Ex e / II 2D Ex t	See table	0589735
42xx	M20 x 1,5	10,0 ... 14,0	Plastic	II 2G Ex e / II 2D Ex t	See table	0589736
42xx	M20 x 1,5	6,0 ... 12,0	Plastic	II 2G Ex e / II 2D Ex t	See table	0589737
46xx	M20 x 1,5	5,0 ... 8,0	Nickel plated brass	II 2G Ex e / II 2D Ex t	-	0588819
46xx	M20 x 1,5	10,0 ... 14,0	Nickel plated brass	II 2G Ex d / II 2D Ex t	-	0588851
46xx	1/2 NPT	7,5 ... 11,9	Nickel plated brass	II 2G Ex d / II 2D Ex t	-	0588925
46xx, 48xx	M20 x 1,5	9,0 ... 13,0	Stainless steel 1.4571	II 2G Ex e / II 2D Ex t	-	0589385
46xx, 48xx	M20 x 1,5	7,0 ... 12,0	Stainless steel 1.4404	II 2G Ex d / II 2D Ex t	-	0589395
46xx, 48xx	M20 x 1,5	10,0 ... 14,0	Stainless steel 1.4404	II 2G Ex d / II 2D Ex t	-	0589387

For solenoid	Ambient temperatur limitation solenoid 42xx	
	<b>0589735 &amp; 0589736 *2)</b>	<b>0589737</b>
420x/425x	T5 & Staub Ex: -35°C ... +80°C T6: -35°C ... +70°C	T5 & Staub Ex: -40°C...+68°C T6: -40°C...+68°C

\*2) Tested for the lower level of mechanical risk (4 joule), an additional protection against impacts might be needed.

Connector



0570275  
0663303 (with rectifier)

\*1) The limitation of the temperature range to the mentioned range is due to the self-heating of the solenoid.

Adaptor complete (Adaptor, inlet filter and seal ring)	Inlet filter	Silencer (plastic) *1)	Exhaust guard *2)	Silencer (stainless steel) *1)	Manual override	Manual override (for start-up only)
Page 18	Page 18	Page 18	Page 18	Page 18	Page 17	Page 17
0613487	0681173 (G1/4, 1/4 NPT)	M/S2 (G1/4) C/S2 (1/4 NPT) M/S4 (G1/2) C/S4 (1/2 NPT)	0613422 (G1/4, 1/4 NPT) 0613423 (G1/2, 1/2 NPT)	0014613 (G 1/4) 0613678 (1/4 NPT) 0014813 (G 1/2) 0613679 (1/2 NPT)	0553886 (without detent) 0553887 (with detent)	0613379 (without detent)

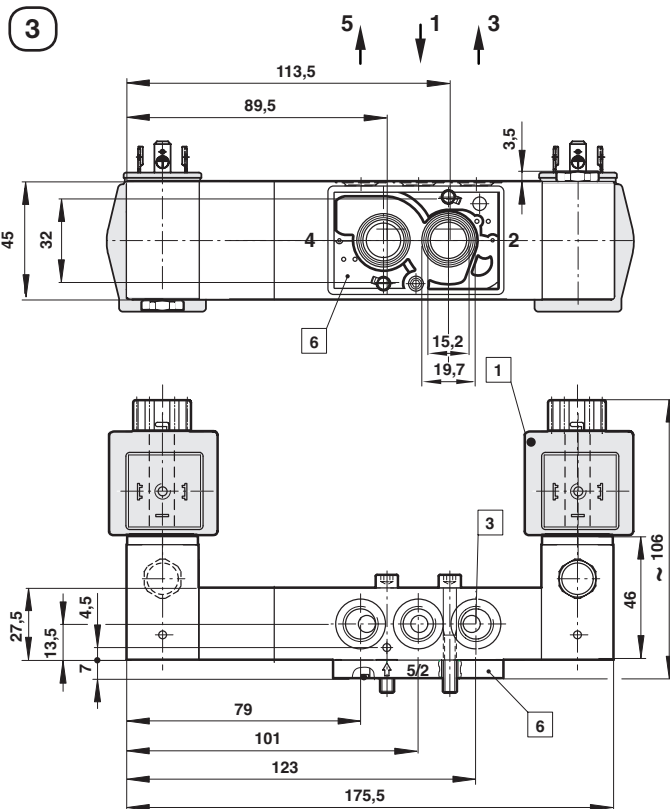
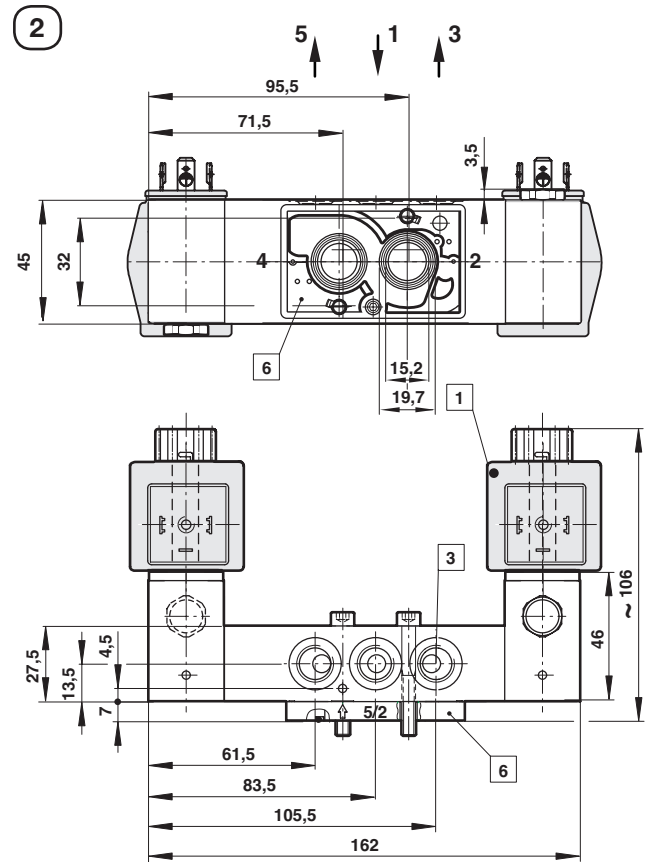
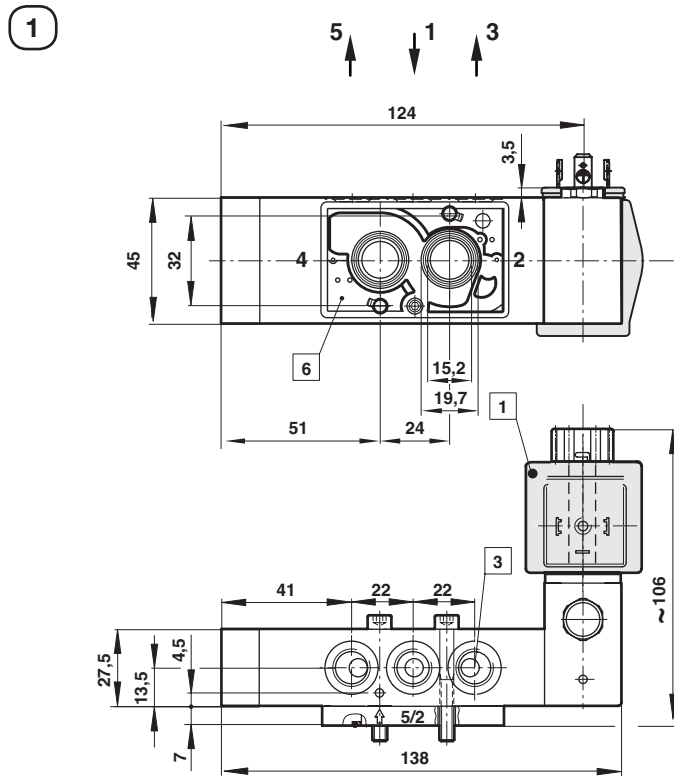
\*1) For indoors use only  
\*2) For outdoors use, opening pressure ~ 0,2 bar

Throttle control plate	Flange plate, for G1/4 only	Yoke	Distance plate for pressure switches	Mounting plate 90°, 180° and 270°
Page 16	Page 16	Page 16	Page 17	Page 17
4040239 (only for G1/4)	0612790 (NAMUR single connection plate) 0612791 (NAMUR-rip use in combination with 0612790)	0540593	0540109	0613453 (90°) 0612631 (180°) 0613556 (270°)



**Dimensions**

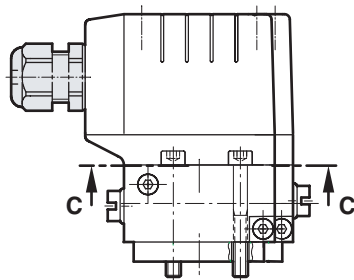
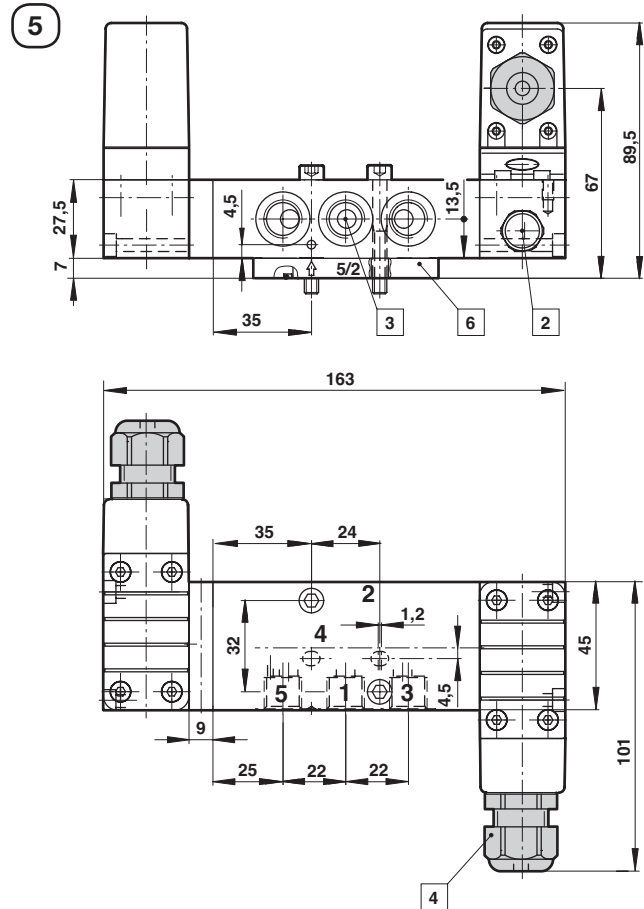
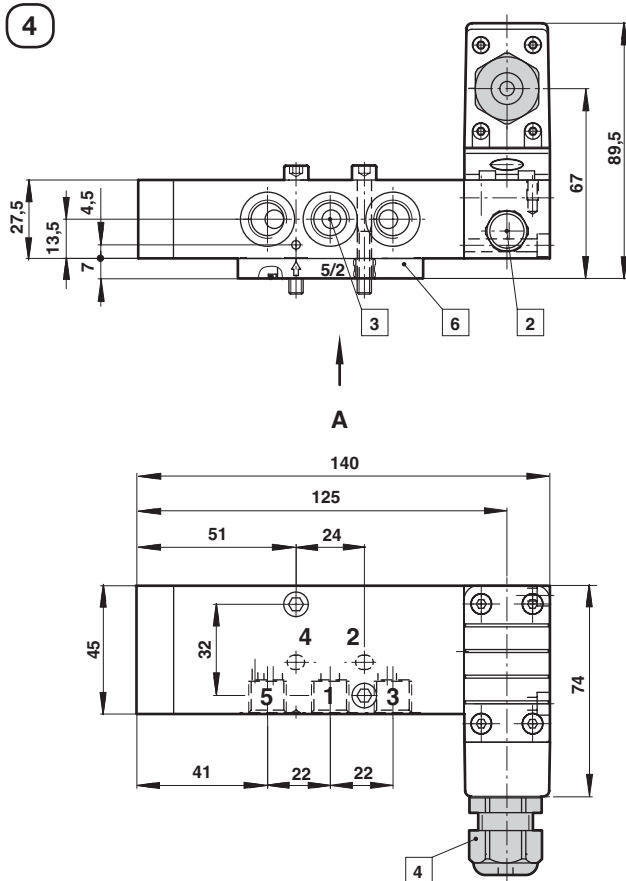
 Dimensions in mm  
 Projection/First angle

**Valves**


① Solenoid dimensions on page 13

③ Port G 1/4 or 1/4 NPT

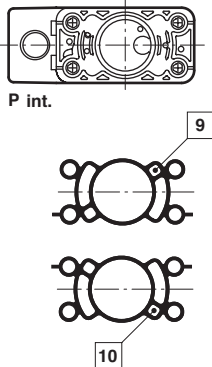
⑥ NAMUR connection plate 3/2 or 5/2 way function



C-C

P ext.

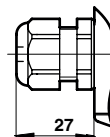
P int.

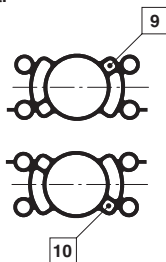
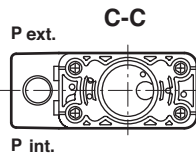
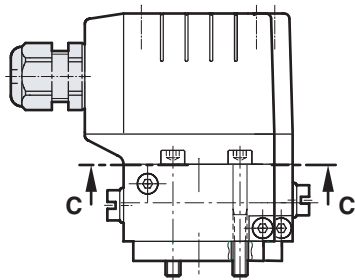
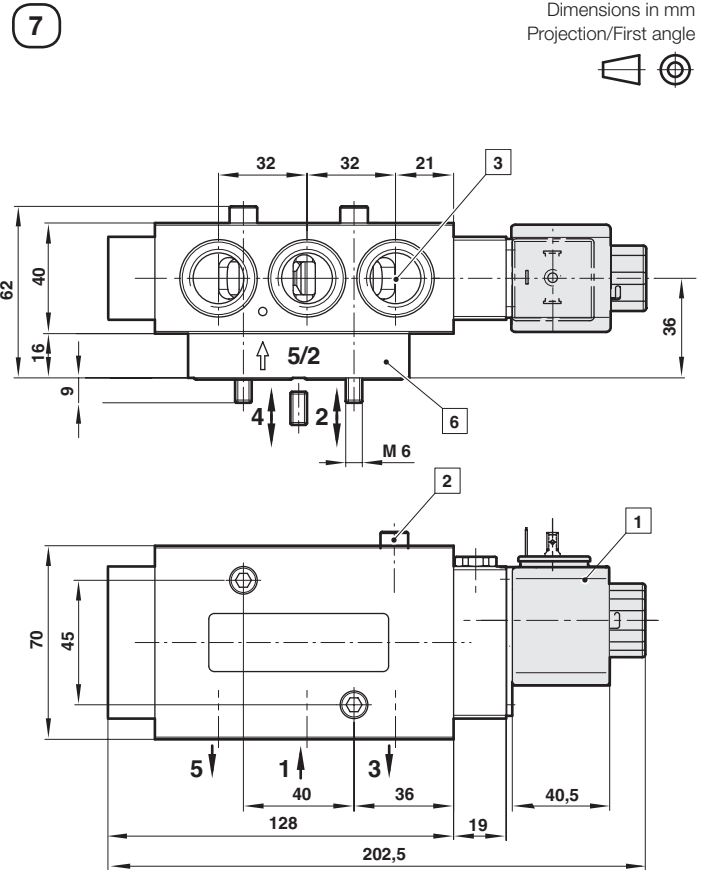
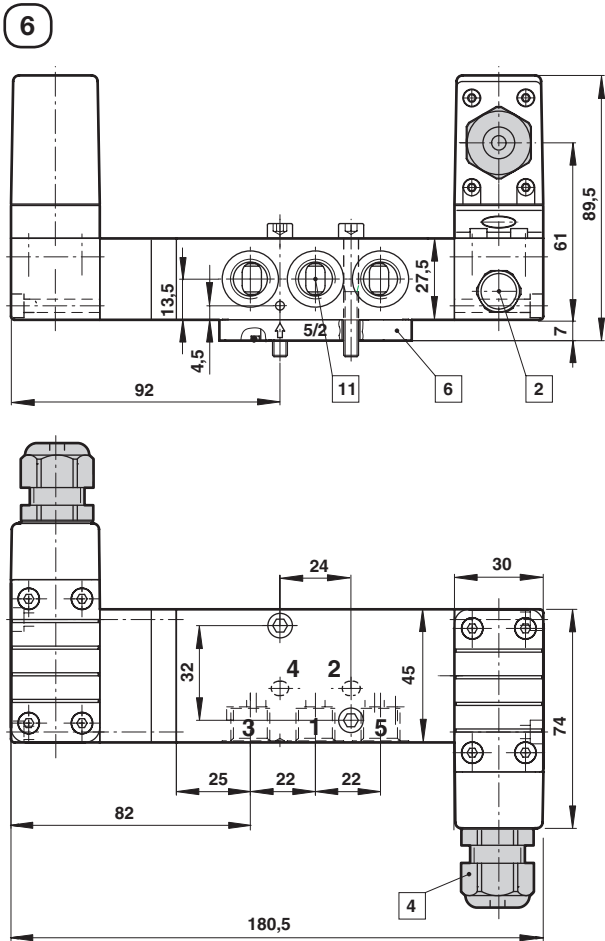


- 2 External control pressure connection G1/8 or 1/8 NPT
- 3 Port G1/4 or 1/4 NPT
- 4 Electrical connection 005
- 6 NAMUR connection plate 3/2 or 5/2 way function
- 9 Position of gasket internal pilot air
- 10 Position of gasket external pilot air

### Electrical connection

005

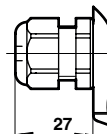




- 1 Solenoid optional turnable
- 2 External control pressure connection G1/8 or 1/8 NPT
- 3 Port G1/2 or 1/2 NPT
- 4 Electrical connection 005
- 6 NAMUR connection plate 3/2 or 5/2 way function
- 9 Position of gasket internal pilot air
- 10 Position of gasket external pilot air
- 11 Port G1/4 or 1/4 NPT

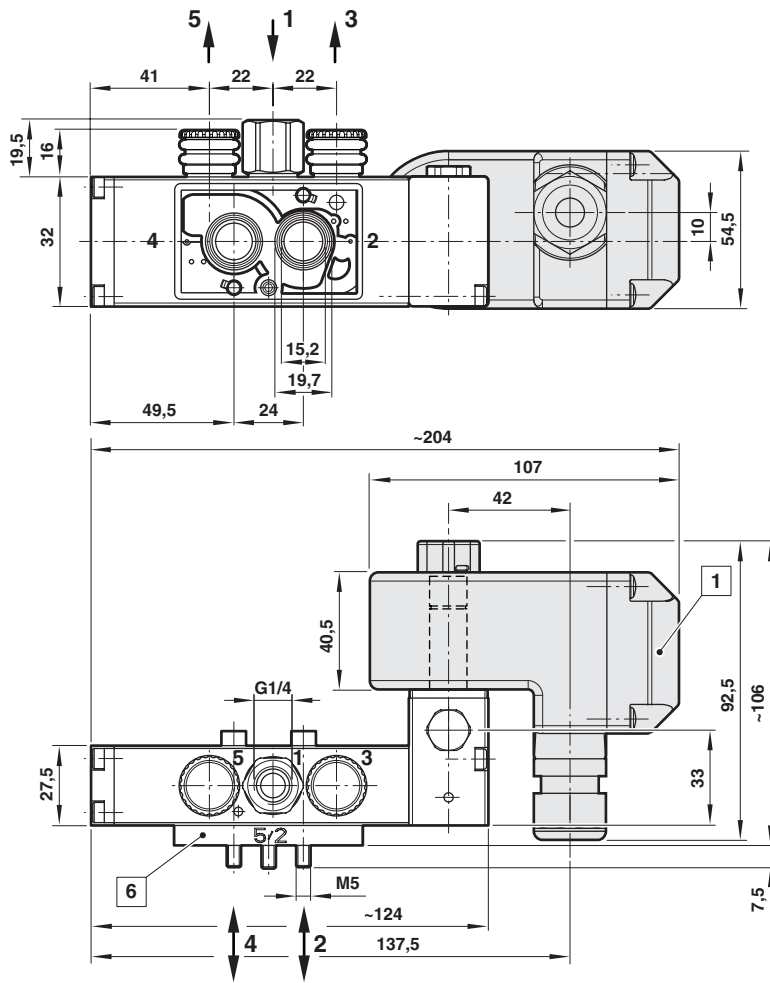
### Electrical connection

005



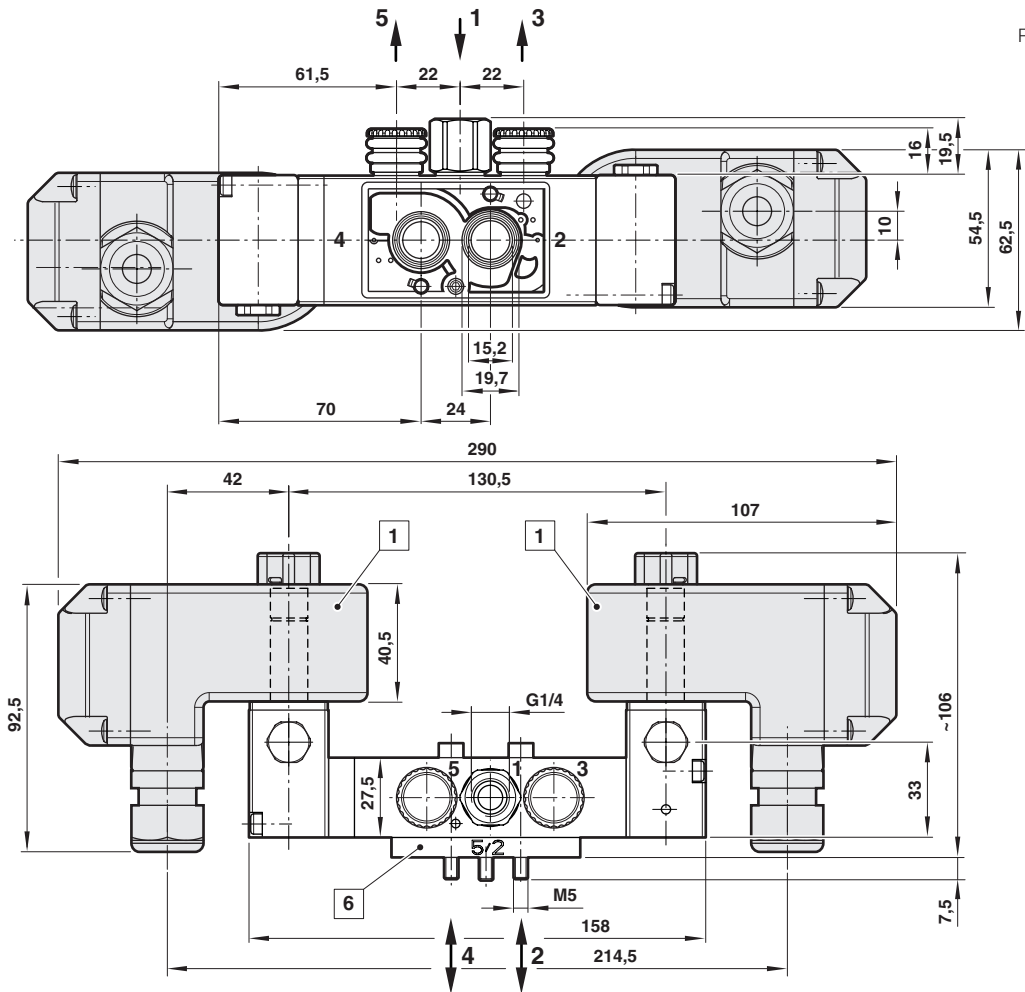
8

Dimensions in mm  
 Projection/First angle



- 1 Solenoid turnable
- 6 NAMUR connection plate 3/2 or 5/2 way function

9



Dimensions in mm  
Projection/First angle

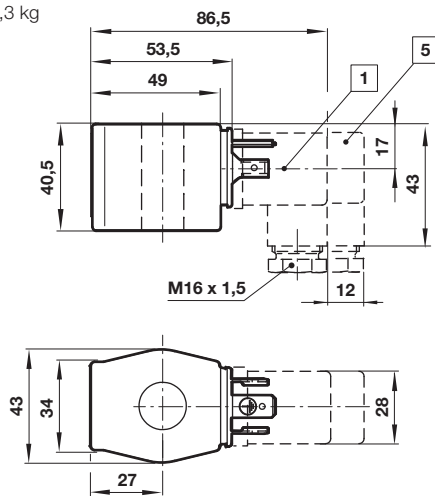


- 1 Solenoid turnable
- 6 NAMUR connection plate 3/2 or 5/2 way function

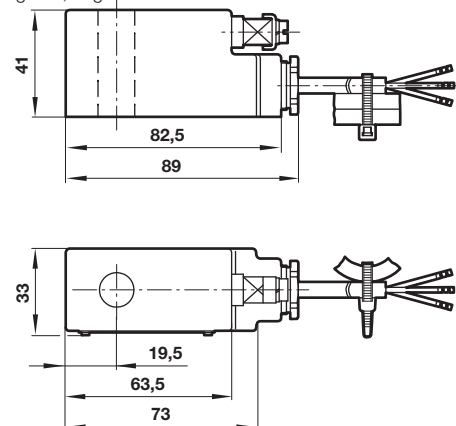
## Dimensions

### Solenoid operators

3 Weight: 0,3 kg

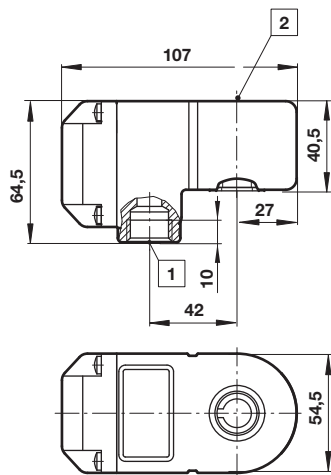


5 Weight: 0,5 kg

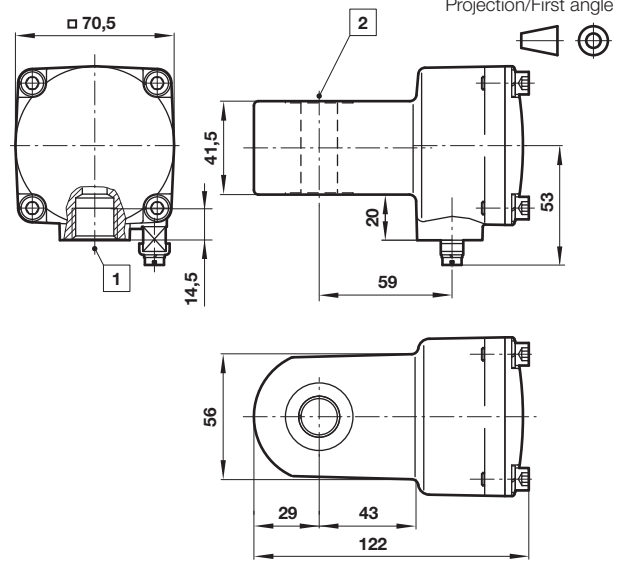


- 1 Connector 4 x 90° turnable
- 5 Connector with rectifier(0663303)

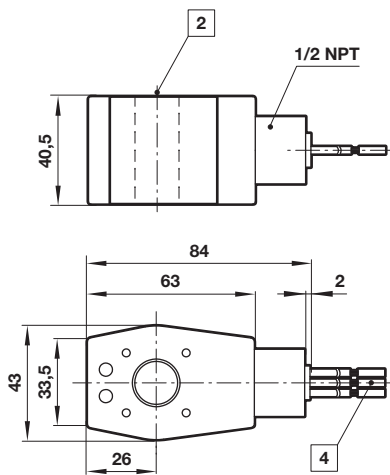
6 Weight: 0,6 kg



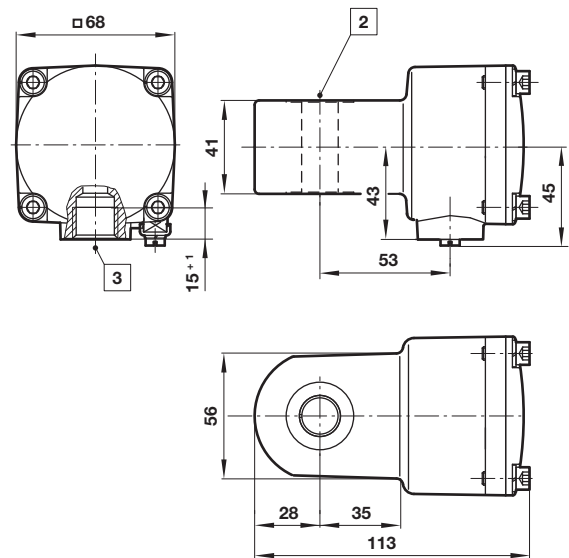
7 Weight: 0,7 kg



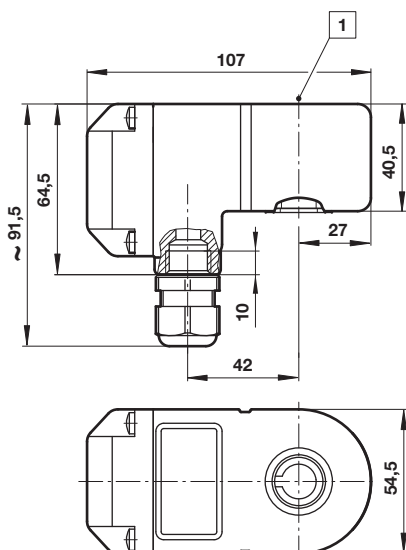
8 Weight: 0,4 kg



10 Weight: 1,2 kg



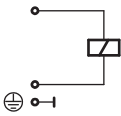
17 Weight: 0,85 kg



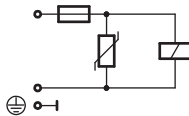
- 1 Connector 4 x 90° turnable
- 2 Ø 13 (with spacer tube)
- 3 M20 x 1,5 or 1/2 NPT
- 4 Flying leads 460 mm long

**Circuit diagrams**

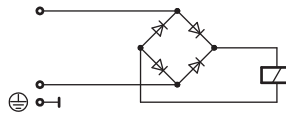
1



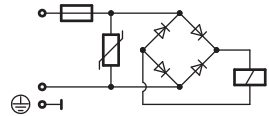
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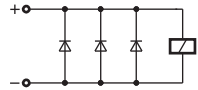
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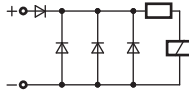
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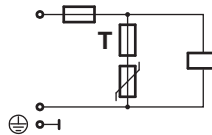
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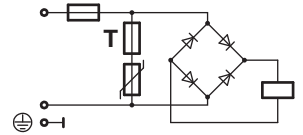
11



20

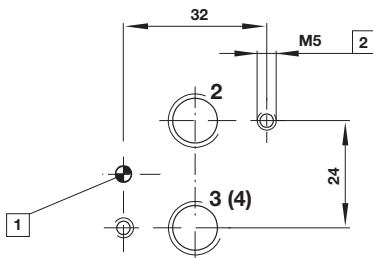


21

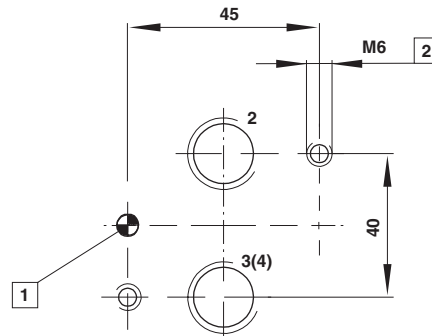


**NAMUR hole pattern (actuator side)**

Port size G1/4



Port size G1/2



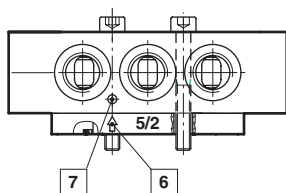
- 1 Coding stud threaded
- 2 10 mm deep

NAMUR quick exhaust module for a better kv-value by exhaust see data sheet 5.4.820

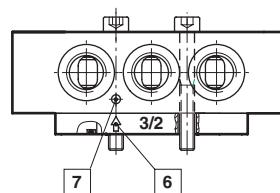
NAMUR interlinking plates in redundancy design for »safety exhausting« and »safety ventilating« see data sheet 5.4.830

**Conversion instructions of 5/2 into 3/2 way function**

**5/2 way function (original mode of supply)**



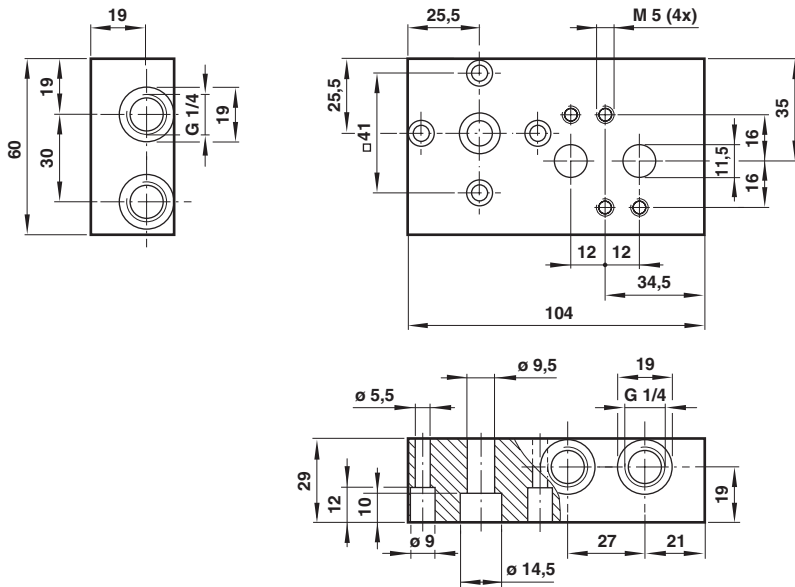
**3/2 way function**



3/2 resp. 5/2 way function according to version by swapping or turning enclosed adaptor plates. Make sure Marker and Arrow do match as shown on above drawing.

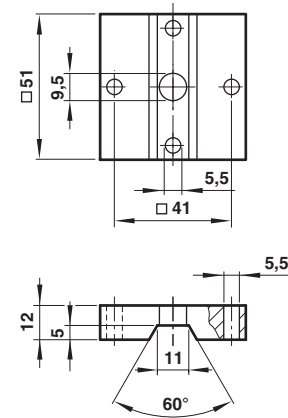
- 6 Arrow
- 7 Marker

**Single connection plate**  
Model: 0612790

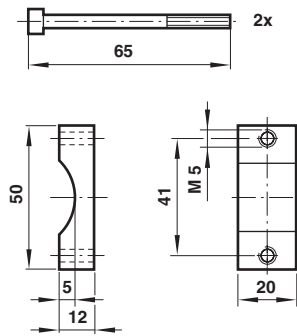


**NAMUR slot**  
(in connection with  
0612790 only)  
Model: 0612791

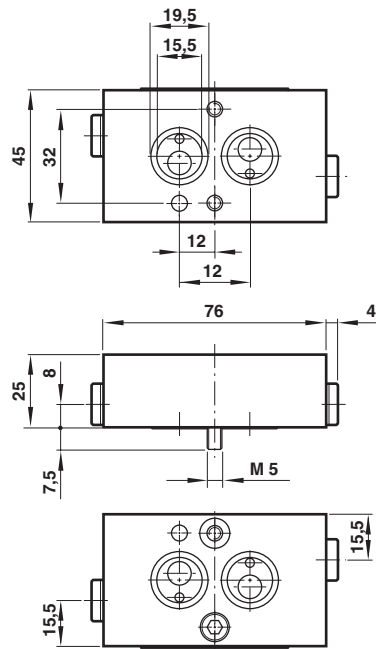
Dimensions in mm  
Projection/First angle



**Yoke**  
Model: 0540593



**Throttle control plate**  
Model: 4040239

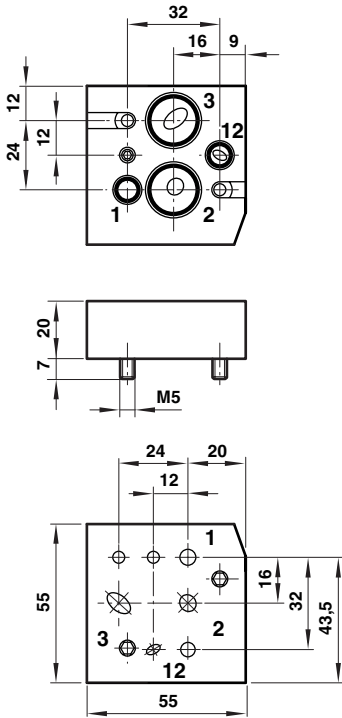




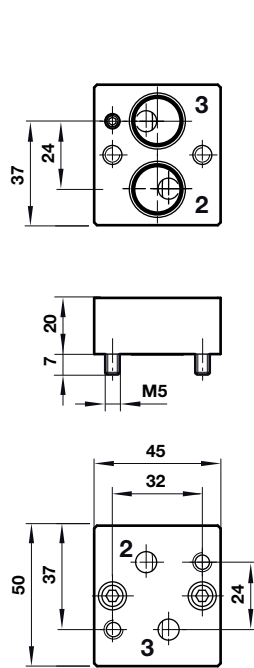
Dimensions in mm  
Projection/First angle



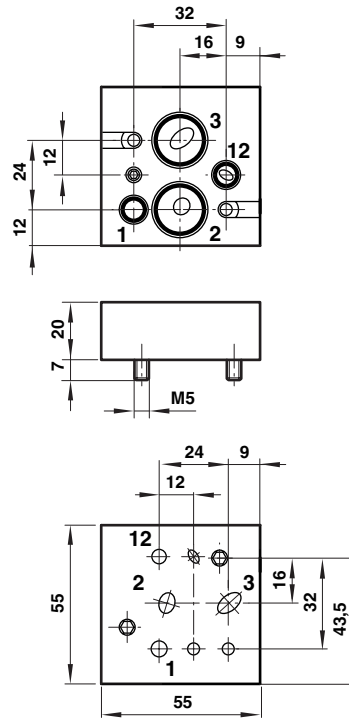
90° Mounting plate  
Model: 0613453



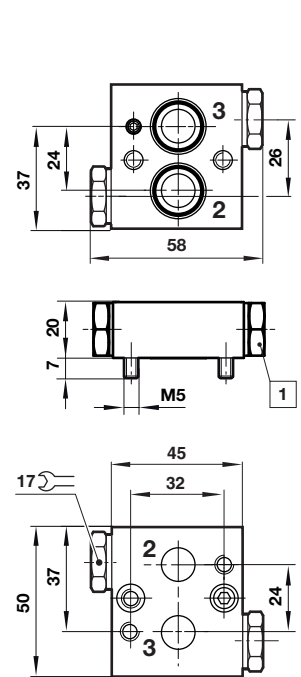
180° Mounting plate  
Model: 0612631



270° Mounting plate  
Model: 0613556



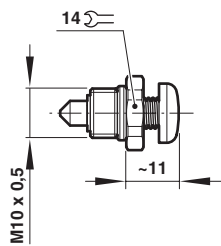
Distance plate  
Model: 0540109



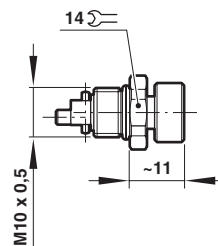
1 G1/4 ports for pressure switches

Manual override

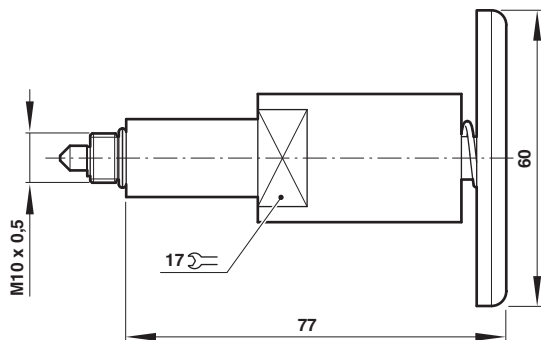
Model: 0553886



Model: 0553887

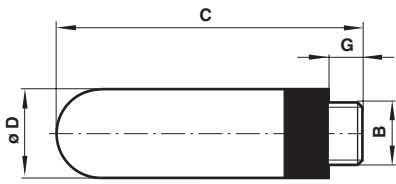


Model: 0613379



**Silencer (plastic)**

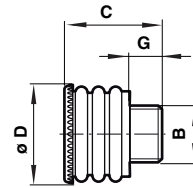
Model: M/S2, M/S4, C/S2 & C/S4



B	G	C	Ø D	Weight (g)	Model
G1/4	7	35,5	15,5	2,9	M/S2
1/4 NPT	7	35,5	15,5	2,9	C/S2
G1/2	12	67	23	11,5	M/S4
1/2 NPT	12	67	23	11,5	C/S4

**Exhaust guard**

Model: 0613422 & 0613423



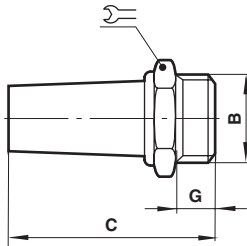
B	Suitable for	G	C	Ø D	Weight (g)	Model
1/4"	G1/4, 1/4 NPT	10	26,5	21	5	0613422
1/2"	G1/2, 1/2 NPT	12	33,5	29	11	0613423

Dimensions in mm  
Projection/First angle



**Silencer (stainless steel)**

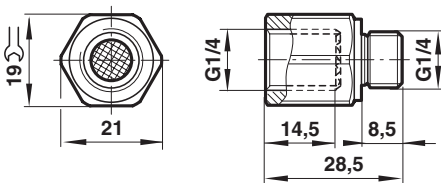
Model: 0014613, 0014813, 0613678 & 0613679



B	C	G	⌀	Weight (g)	Model
G 1/4	36	8	16	23	0014613
1/4 NPT	36	8	16	67	0613678
G 1/2	49	12	24	81	0014813
1/2 NPT	49	12	24	235	0613679

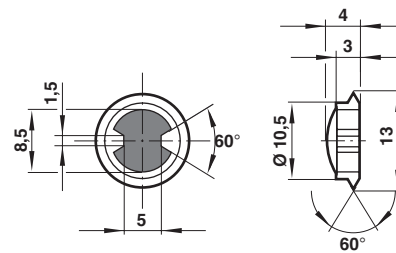
**Adaptor complete**

Model: 0613487



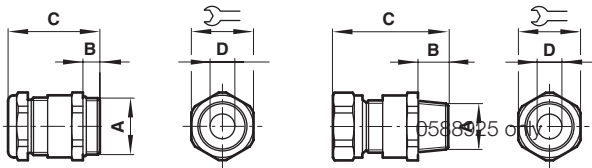
**Inlet filter**


Model: 0681173



Thread pitch diameter max. 11,85 mm

**Cable gland**

 Dimensions in mm  
 Projection/First angle


A	B	C	ø D		Model
M20 x 1,5	10	40	7,0 ... 12,0	24	0589735
M20 x 1,5	10	43	10,0 ... 14,0	27	0589736
M20 x 1,5	10	40	6,0 ... 12,0	24	0589737
M20 x 1,5	9	36	5,0 ... 8,0	22	0588819
M20 x 1,5	14	39	10,0 ... 14,0	24	0588851
1/2 NPT	15	58	7,5 ... 11,9	24	0588925
M20 x 1,5	6,5	27,5	9,0 ... 13,0	22	0589385
M20 x 1,5	14	39	7,0 ... 12,0	24	0589395
M20 x 1,5	10	34	10,0 ... 14,0	24	0589387

**Warning**

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under »**Technical features/data**«.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems or other applications not within published specifications, consult IMI Precision Engineering, Norgren GmbH.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.