

**3/2 poppet valves
electromagnetic actuated, indirectly controlled
G 1/2, 1/2 NPT or flanged with NAMUR Interface**

Main application: single operated actuators for plants

Valves for safety systems up to SIL 4 (IEC 61508)

Add-on manual override or inductive limit switches

Valve switches at power failure into starting position (mechanical spring return)

Suited for outdoor use under critical environment conditions (see solenoid list)

These solenoid valves are applicable in Ex protection class ATEX (categories II 2 GD and II 3 GD) and other international approvals



Approval depends on magnetic system, see page 3 and 4!

Technical features

Medium:

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

Operation:

Indirect solenoid operated poppet valves with external pilot port

Mounting position:

Any, but preferably with solenoid vertical

Orifice:

8 mm

Port size:

G 1/2, 1/2 NPT or flanged with NAMUR Interface

Operating pressure:

2 ... 8 bar (29 ... 116 psi)
0 to 8 bar (0 ... 29 psi) with external air supply, control pressure 2,0 ... 8 bar (29 ... 116 psi)

Flow:

See technical data on page 2

Flow direction:

Fixed

Fluid/Ambient temperature:

-40 ... +60°C (-40 ... +140°F) (special perbunan)
-25 ... +60°C (-13 ... +140°F) (SIL version)
Depending on solenoid system
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (35°F).

Materials:

Housing: stainless steel 1.4404 (316L), brass 2.0401 (Ms 58), Aluminium anodized 3.0615
Seal: SNBR (special perbunan)
Inner parts: stainless steel

Technical data

3/2 way indirect solenoid operated poppet valves

Symbol	Port size		Flow (l/min) *2)		Flow (l/min) *3)		Materials	Test certification IEC 61508	Weight (kg)	Dimension No.	Model *1)
	1, 3	2 (3)	1 » 2	2 » 3	1 » 2	2 » 3					
	G 1/4, G1/2	NAMUR G1/4	1250	1500	2500	3100	Aluminium	x	0,9	1	9802505
	1/4 NPT, 1/2 NPT	NAMUR 1/4 NPT	1250	1500	2500	3100	Aluminium	x	0,9	1	9802515
	G 1/4, G1/2	NAMUR G1/4	1250	1500	2500	3100	Stainless steel	x	1,5	1	9802705
	1/4 NPT, 1/2 NPT	NAMUR 1/4 NPT	1250	1500	2500	3100	Stainless steel	x	1,5	1	9802715
	G 1/4, G1/4	NAMUR G1/4 P into flange plate	550	900	1300	2100	Aluminium	—	0,9	5	9802525
	G 1/2	G 1/2	1300	1200	2700	2600	Aluminium	x	0,6	2	9802555
	1/2 NPT	1/2 NPT	1300	1200	2700	2600	Aluminium	x	0,6	2	9802565
	G 1/2	G 1/2	1300	1200	2700	2600	Stainless steel	x	1,0	2	9802755
	1/2 NPT	1/2 NPT	1300	1200	2700	2600	Stainless steel	x	1,0	2	9802765
	G 1/2	G 1/2	1300	1200	2700	2600	Brass	x	1,0	2	9802655
	1/2 NPT	1/2 NPT	1300	1200	2700	2600	Brass	x	1,0	2	9802665

3/2 way indirect solenoid operated poppet valves with exhaust quad

Symbol	Port size		Flow (l/min) *2)		Flow (l/min) *3)		Materials	Test certification IEC 61508	Weight (kg)	Dimension No.	Model *1)
	1, 3	2 (3)	1 » 2	2 » 3	1 » 2	2 » 3					
	G 1/4, G1/4	NAMUR G1/4 P into flange plate	550	900	1300	2100	Aluminium	—	0,9	6	9802825

3/2 way indirect solenoid operated valves using low-power pilot system in protection class Ex ia IIC T4/T6

Suitable solenoid actuators see page 4 only

Symbol	Port size		Flow (l/min) *2)		Flow (l/min) *3)		Materials	Test certification IEC 61508	Weight (kg)	Dimension No.	Model *1)
	1, 3	2 (3)	1 to 2	2 to 3	1 to 2	2 to 3					
	G 1/4, G 1/2	NAMUR G 1/4	1250	1500	2500	3100	Aluminium		0,9	3	9802509
	1/4 NPT, 1/2 NPT	NAMUR 1/4 NPT	1250	1500	2500	3100	Aluminium		0,9	3	9802519
	G 1/2	G 1/2	1300	1200	2700	2600	Aluminium		0,6	4	9802559
	1/2 NPT	1/2 NPT	1300	1200	2700	2600	Aluminium		0,6	4	9802569

*1) Ordering information see below

Flow conducted according to ISO 6358 and ISO 8778, 20°C

*2) Inlet pressure 6 bar, outlet pressure 5 bar

*3) Inlet pressure 8 bar, outlet pressure 0 bar

Option selector

9802★★★★.★★★★.★★★★.★★

Materials	Substitute
Aluminium	5
Brass	6
Stainless steel	7
Port size	Substitute
NAMUR, G1/4	0
NAMUR, 1/4 NPT	1
G1/2	5
1/2 NPT	6
Version	Substitute
Standard	5
Low power version	9

Voltages	Substitute
24 V d.c.	024.00
230 V a.c.	230.50
Solenoids	Substitute
See table above	

Solenoid operators

	Power consumption		Rated current		Ex-Protection (ATEX-Category)	Protection class *7)	Temperature Ambient/Fluid (°C)	Electrical connection	Weight (kg)	Dimension No.	Circuit diagram No.	Model
	24 V d.c. (W)	230 V a.c. (VA)	24 V d.c. (mA)	230 V a.c. (mA)								
	1,9	2,1 *5)	78	10		IP00 without connector *5) IP65 with connector *5)	-25 ... +60	DIN EN 175 301-803 Form A	0,3	3	1/5	0763 *7)
	3,6	-	150	-	IIG IIZD	Ex mb II T4 *1) Ex tD A21 IP66 T110°	-20 ... +70	3 m Cable	0,4	5	4	0298 *8)
	-	4,6	-	18	IIG IIZD	Ex mb II T4 *1) Ex tD A21 IP66 T110°	-20 ... +70	3 m Cable	0,4	5	7	0299 *8)
	0,8	-	33	-	IIG IIZD	Ex e mb IIC T5/T6 Gb Ex tb IIIC T130°C Db IP66 *2), *10)	-40 ... +80 T5 -40 ... +70 T6 -40 ... +80	M20 X 1,5 *6)	0,6	6	4	4200 *8)
	-	1,3	-	6	IIG IIZD	Ex e mb IIC T5/T6 Gb Ex tb IIIC T130°C Db IP66 *2), *10)	-40 ... +80 T5 -40 ... +70 T6 -40 ... +80	M20 X 1,5 *6)	0,6	6	7	4201 *8)
	0,8	-	33	-	IIG IIZD	Ex d mb IIC T5/T6 Gb Ex e mb IIC T5/T6 Gb Ex tb IIIC T130°C Db IP66 *3), *10)	-40 ... +80 T5 -40 ... +70 T6 -40 ... +80	1/2 NPT *6)	0,8	7	20	4600 *8)
	0,8	-	33	-	IIG IIZD	Ex d mb IIC T5/T6 Gb Ex e mb IIC T5/T6 Gb Ex tb IIIC T130°C Db IP66 *3), *10)	-40 ... +80 T5 -40 ... +70 T6 -40 ... +80	M20 X 1,5 *6)	0,8	7	21	4602 *8)
	-	1,3	-	6	IIG IIZD	Ex d mb IIC T5/T6 Gb Ex e mb IIC T5/T6 Gb Ex tb IIIC T130°C Db IP66 *3), *10)	-40 ... +80 T5 -40 ... +70 T6 -40 ... +80	1/2 NPT *6)	0,8	7	20	4601 *8)
	-	1,3	-	6	IIG IIZD	Ex d mb IIC T5/T6 Gb Ex e mb IIC T5/T6 Gb Ex tb IIIC T130°C Db IP66 *3), *10)	-40 ... +80 T5 -40 ... +70 T6 -40 ... +80	M20 X 1,5 *6)	0,8	7	21	4603 *8)
Stainless steel 	0,8	-	33	-	IIG IIZD	Ex mb d IIC T4/T6 Ex mb e II T4/T6 Ex tD A21 IP66 T100° *2), *10)	-40 ... +50 T4 -40 ... +40 T6 -40 ... +80	M20 X 1,5 *6)	1,2	10	4	4802 *8), *11)
	-	1,3	-	6	IIG IIZD	Ex mb d IIC T4/T6 Ex mb e II T4/T6 Ex tD A21 IP66 T100° *2), *10)	-40 ... +50 T4 -40 ... +40 T6 -40 ... +80	M20 X 1,5 *6)	1,2	10	7	4803 *8), *11)
	1,4	-	59	-		XP/DIP, Div. 1 & 2 Cl. I, Gr. A-D Cl. II / III, Gr. E-G T3 (160°C) *4) NEMA 4, 4X, 6, 6P, 7, 9	-20 ... +60	Flying leads 450 mm long	0,4	8	1	3720

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

*1) EG-Type-Examination-Certificate KEMA 02 ATEX 1347 X

*2) EG-Type-Examination-Certificate KEMA 98 ATEX 4452 X

*3) EG-Type-Examination-Certificate PTB 02 ATEX 2085 X

*4) CSA-LR 57643-6, FM Approval

*5) Required connector: type 0570275

*6) Connector cable gland not supplied, see table »Accessories«

*7) IP-Protection class according to EN60529

*8) Suitable for outdoor installation

*10) IEC Ex Certificate of Conformity

*11) EG-Type-Examination-Certificate PTB 06 ATEX 2054 X

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 dmb; if a cable gland with Ex e type of protection is used, the solenoid will have protection class Ex emb.

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)	Protection class	Temperature Ambient/Fluid (°C)	Weight (kg)	Dimension No.	Circuit diagram No.	Model
		200	33	240	8	Ex ia IIC T6	-40 ... +60	0,85	6	10
391		24	460	11	Ex ia IIC T4	-40 ... +80	0,85	6	10	2051
736		17	880	15	Ex iaD 21 T80°C	-40 ... +60	0,85	6	10	2052
1220		13	1460	19	Ex iaD 21 T100°C	-40 ... +80	0,85	6	10	2053

EG-Type-Examination-Certificate PTB 07 ATEX 2019 (Kat. II 2 GD)

IECEX Certificate of Conformity IECEX PTB 07.0017

Cable gland is included in 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.

Low-power pilot system in protection class Ex ia IIC T4/T6

Suitable valves see page 2 only

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

Max. values Ex i

Ui (V)	Ii (mA)	Pi *5) (mW)
25	150	250
27	125	250
28	115	250
30	100	250
32	85	250

Ordering example

9802509.	2085.	005.	00
Valve	Pilot 6,3 mW	Electrical connection 005 M16 x 1,5 cable gland	00 internal air supply 02 external air supply

*4) Category II2G, EG-Type-Examination-Certificate PTB 00 ATEX 2050
Air consumption: home position ≤ 60 l/h, operating position ≤ 15 l/h

*5) Model 2086 without Pi limiting. Ci and Li can be ignore.

Accessories

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







Page 13 Thread	Cable Ø	Material	Protection class (ATEX)	Model
M 20x1,5	5,0...8,0 mm	Nickel plated brass	II2GD Ex e	0588819
M 20x1,5	10...14 mm	Nickel plated brass	II2GD Ex d	0588851
1/2-14-NPT	7,5...11,9 mm	Nickel plated brass	II2GD Ex d	0588925
M 20x1,5	9,0...13 mm	Stainless steel 1.4571 (316 Ti)	II2GD Ex e	0589385
M 20x1,5	7,0...12 mm	Stainless steel 1.4404 (316 L)	II2GD Ex d	0589395
M 20x1,5	10...14 mm	Stainless steel 1.4404 (316 L)	II2GD Ex d	0589387

Connector



0570275
0663303 (with rectifier)

Inlet filter	Silencer *1)	Exhaust guard *2)	Manual override	Manual override (for start-up only)
				
Page 14	Page 14	Page 14		
0613487	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)	0553886 (without detent) 0553887 (with detent)	0613379 (without detent)

*1) For indoors use only

*2) For outdoors use

Throttle control plate	Flange plate, for G1/4 only	Yoke	Distance plate for coils	Mounting plate 90° and 270°
				
Page 13	Page 13	Page 13	Page 13	Page 13
4040239 (only for G1/4)	0612790 (NAMUR single connection plate) 0612791 (NAMUR-rip use in combination with 0612790)	0540593	0540109	0613453 (90°) 0613556 (270°)

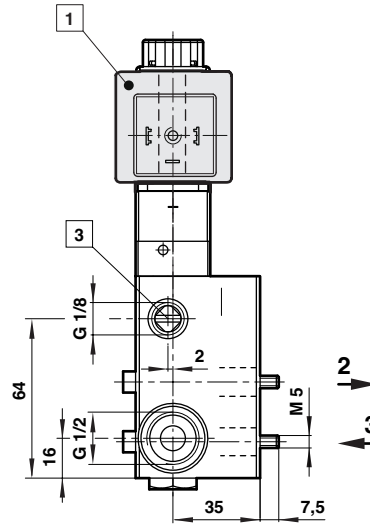
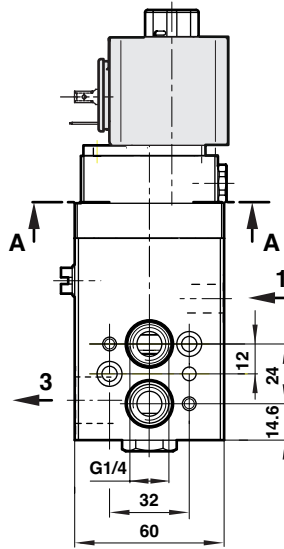
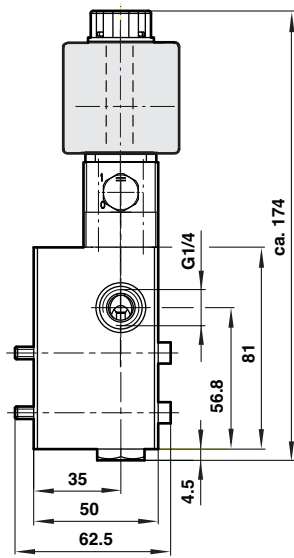
Dimensions

Valves

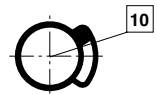
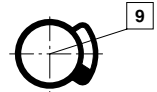
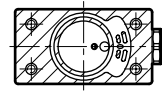
Dimensions shown in mm
Projection/First angle



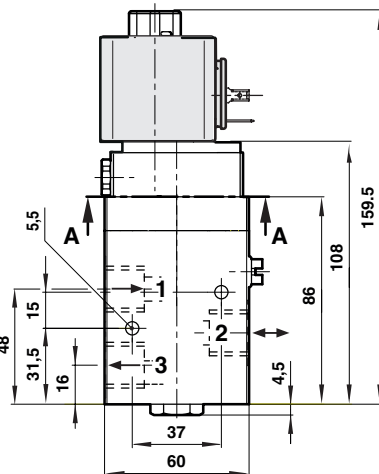
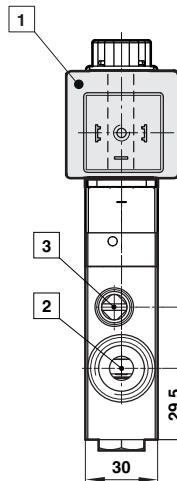
1



A - A



2

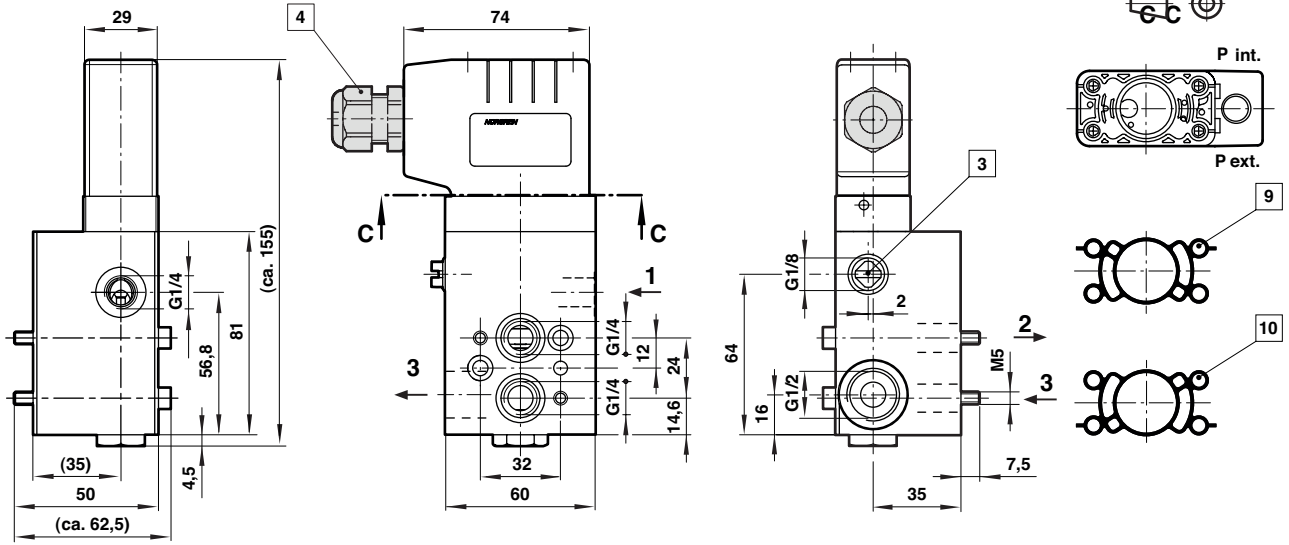


- 1 Solenoid optional turnable
- 2 Port G1/2 or 1/2 NPT
- 3 External control pressure connection G1/8 or 1/8 NPT
- 4 Electrical connection selectable version 005
- 9 Position of gasket internal pilot air
- 10 Position of gasket external pilot air

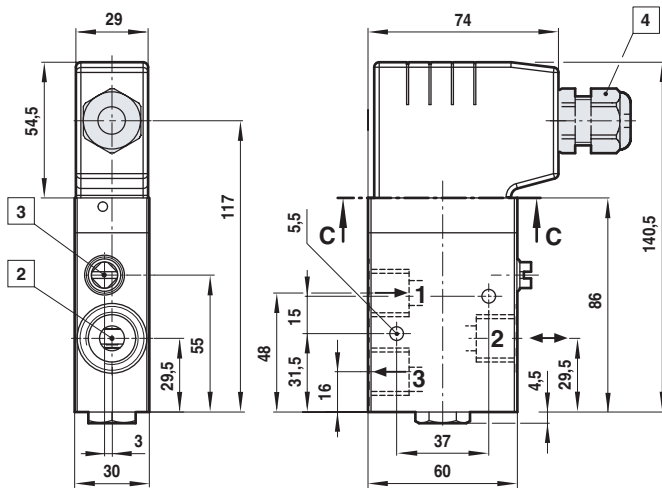
Dimensions shown in mm
Projection/First angle



3



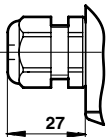
4



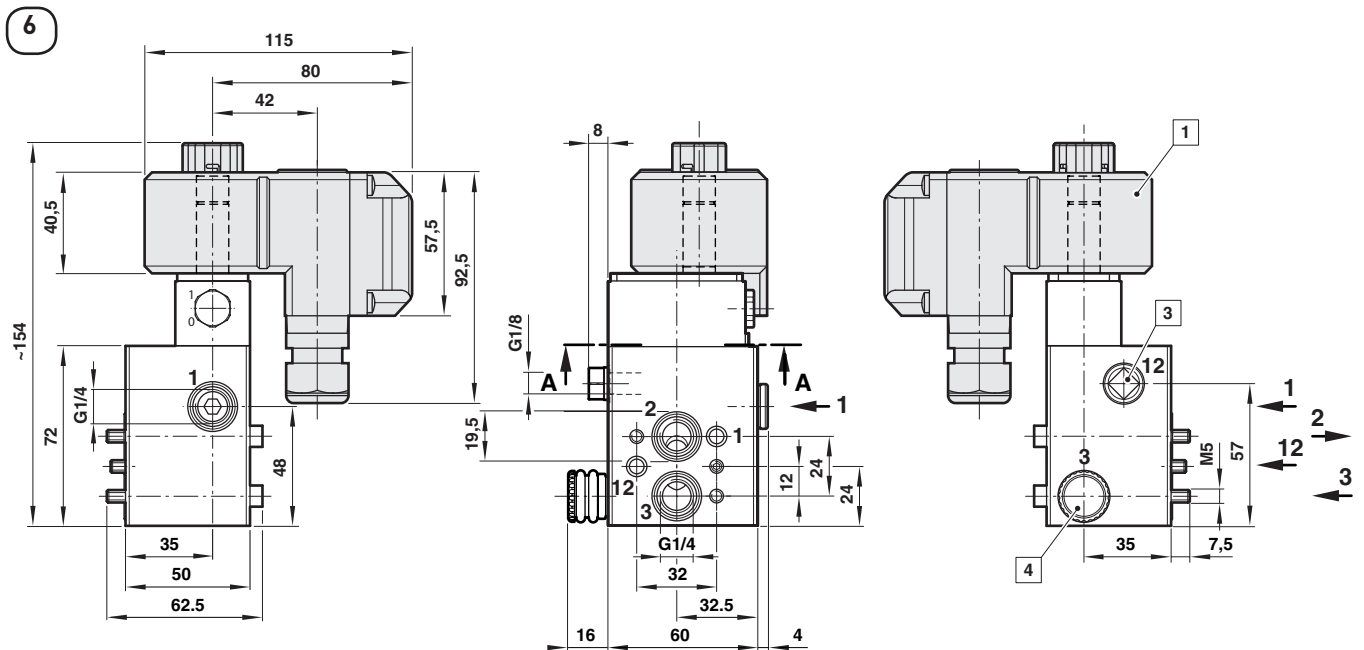
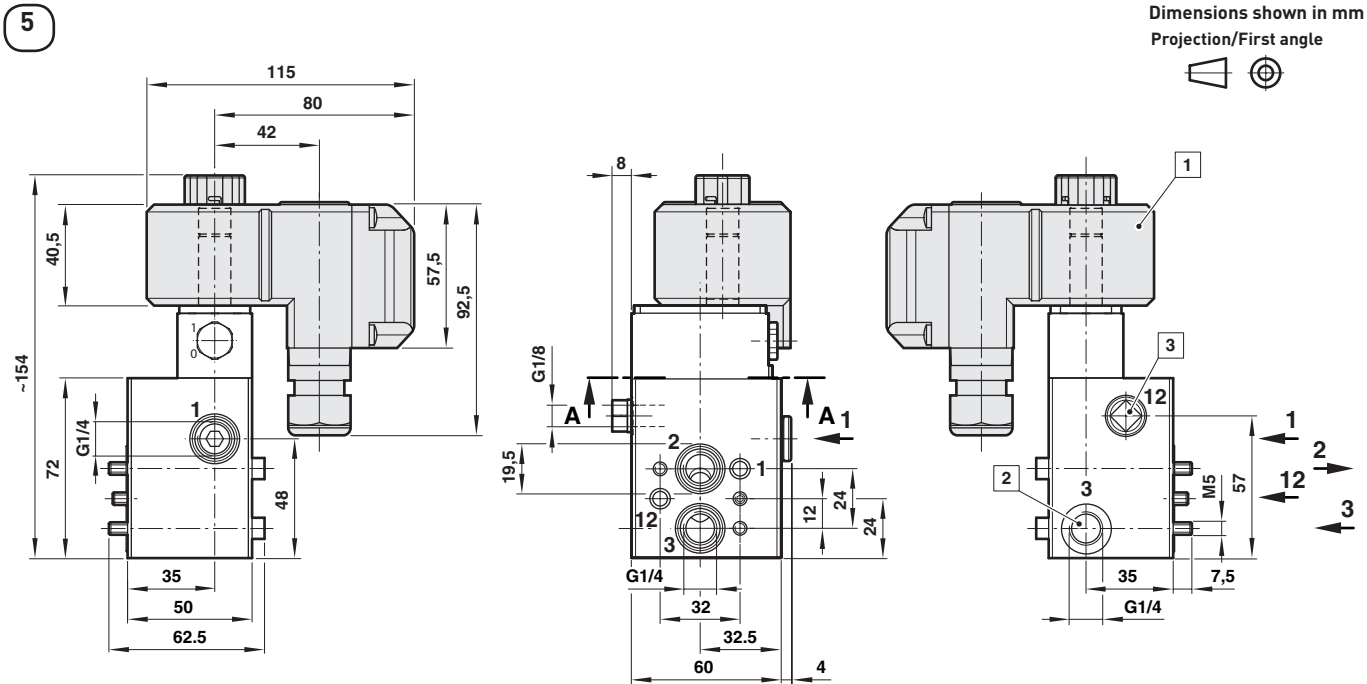
- 1 Solenoid optional turnable
- 2 Port G1/2 or 1/2 NPT
- 3 External control pressure connection G1/8 or 1/8 NPT
- 4 Electrical connection selectable version 005
- 9 Position of gasket internal pilot air
- 10 Position of gasket external pilot air

Electrical connection

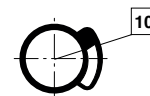
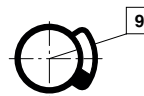
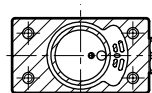
005



Dimensions shown in mm
Projection/First angle



A - A

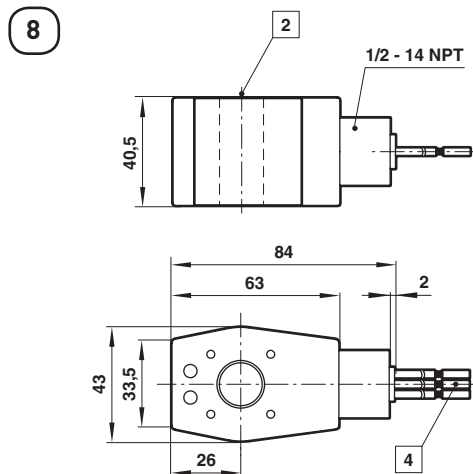
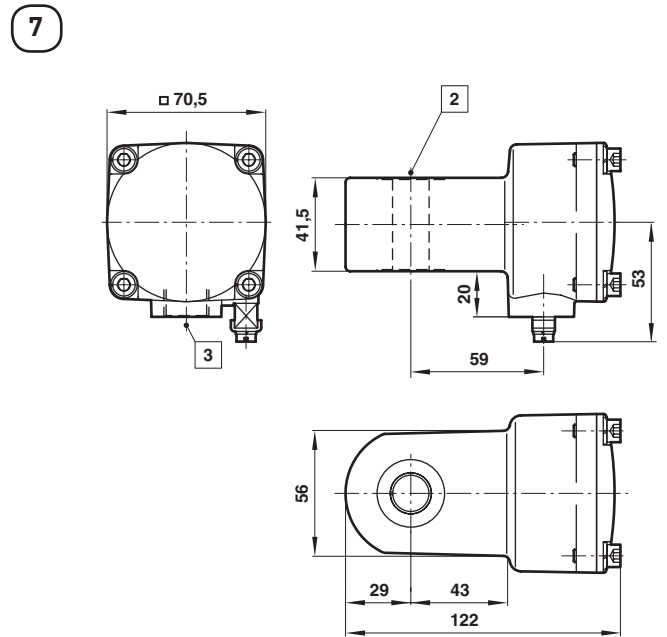
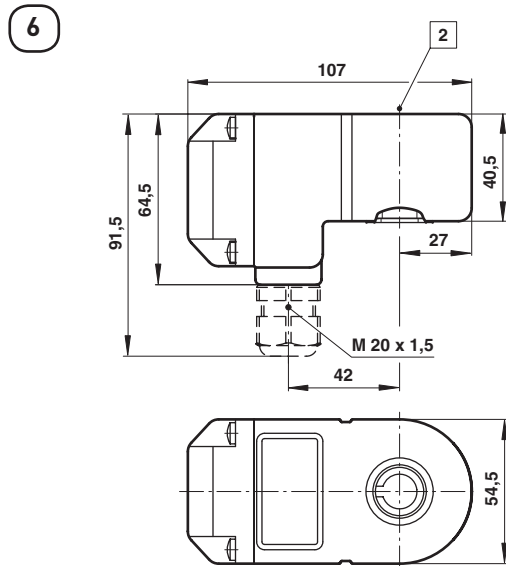
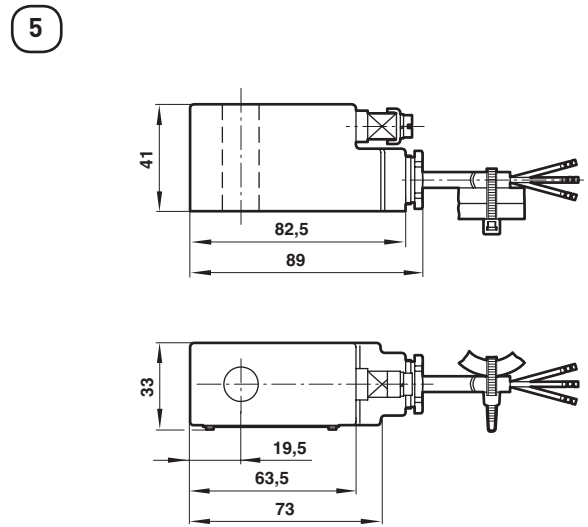
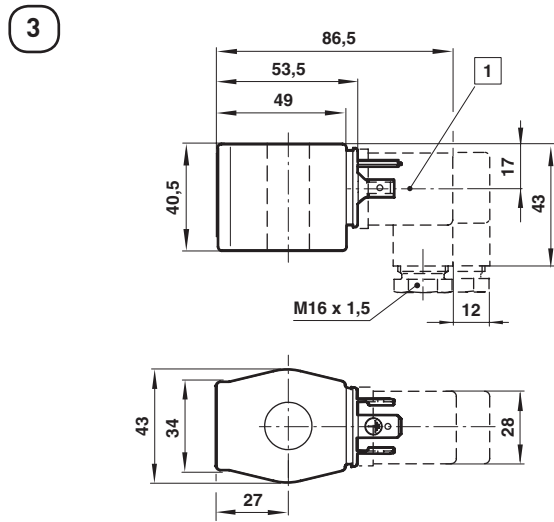


- 1 Solenoid optional turnable
- 2 Port G1/4 or 1/4 NPT
- 3 External control pressure connection G1/8 or 1/8 NPT
- 4 Exhaust guard G 1/4, or 1/4 NPT
- 9 Position of gasket internal pilot air
- 10 Position of gasket external pilot air

Dimensions

Solenoid operators

Dimensions shown in mm
Projection/First angle

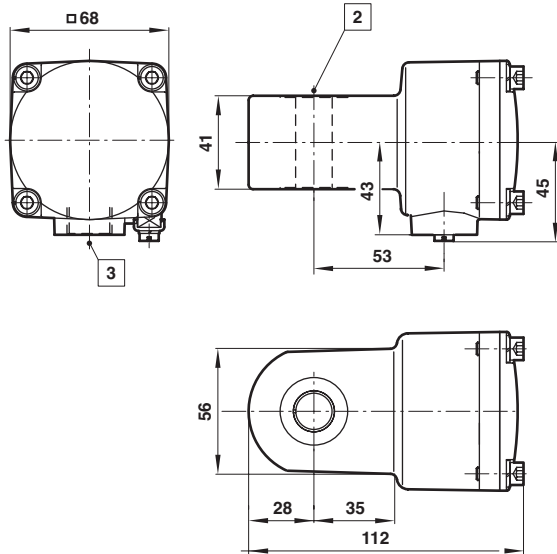


- 1 Connector can be indexed by 4x90°
- 2 Ø 16 or 13 (with spacer tube)
- 3 M20 x 1,5 or 1/2 - 14 NPT
- 4 Flying leads AWG 18 (450 mm long)

Dimensions shown in mm
Projection/First angle



10

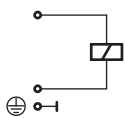


2 Ø 16 or 13 (with spacer tube)

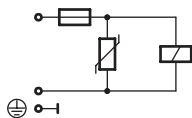
3 M20 x 1,5

Circuit diagrams

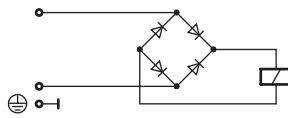
1



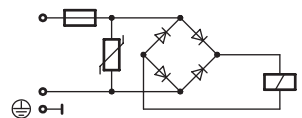
4



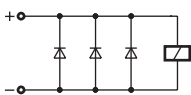
5



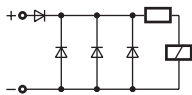
7



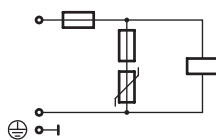
10



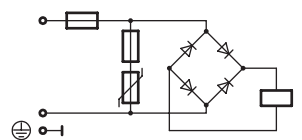
11



20

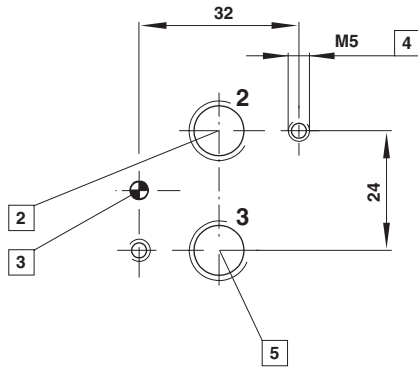


21



NAMUR hole pattern (driving side)
Port G1/4

Dimensions shown in mm
Projection/First angle

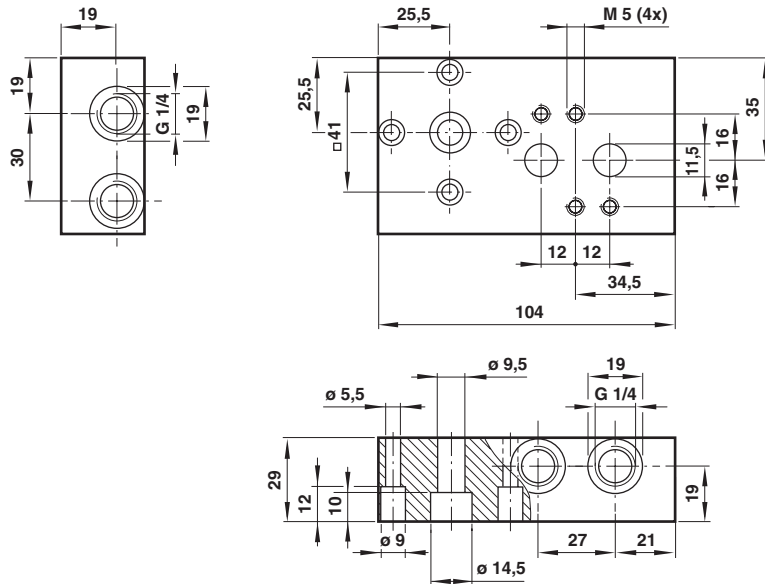


- 2 Port 2 (A)
- 3 Coding stud threaded
- 4 M5 (10 deep)
- 5 Port 3 (R)

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

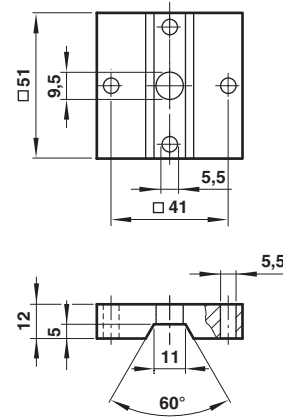
NAMUR interlinking plates in redundancy design for »safety exhausting« and »safety ventilating« see data sheet 5.4.830

Single connection plate
Type: 0612790

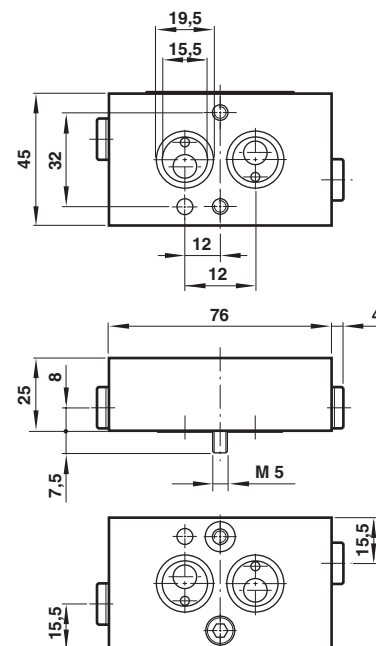
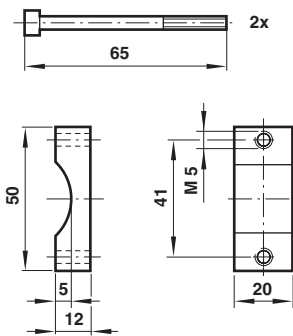


Yoke
Model: 0540593

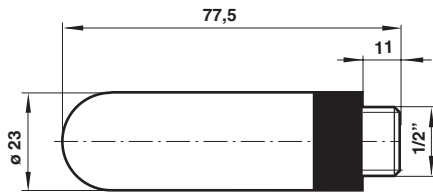
NAMUR slot
Type: 0612791



Throttle control plate
Model: 4040239

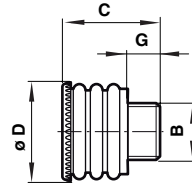


Silencer
Model: M/S4, C/S4



Exhaust guard
Model: 0613422, 0613423

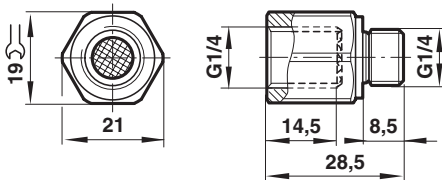
Dimensions shown in mm



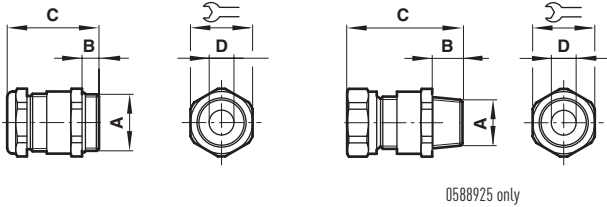
B	Suitable for	G	C	Ø D	Weight (g)	Model
1/4"	G1/4, 1/4 NPT	10	26,5	21	5	0613422
1/2"	G1/2, 1/2 NPT	12	33,5	29	11	0613423

Inlet filter
Model: 0613487

Dimensions shown in mm
Projection/First angle



Cable gland



0588925 only

A	B	C	Ø D	Symbol	Model
M20 x 1,5	9	36	5 ... 8	22	0588819
M20 x 1,5	6,5	27,5	9 ... 13	22	0589385
M20 x 1,5	14	39	10 ... 14	24	0588851
1/2-14 NPT	15	58	7,5 ... 11,9	24	0588925
M20 x 1,5	14	39	7 ... 12	24	0589395
M20 x 1,5	10	34	10 ... 14	24	0589387

Warning

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

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 NORGREN.

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 pneumatic 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.

Functional safety (SIL):

Suitable for certain applications can only be evaluated through examination of each safety-related overall system with regard to the requirements of IEC 61508/61511.