

97100 NAMUR, 3/2 & 5/2

Indirect solenoid actuated spool valves



- > **Port size:**
1/4" (ISO G or NPT), NAMUR Interface
- > **Main application:**
Single and double acting actuators
- > **5/2 way valve usable as 3/2 way valve**
- > **Crossover-free switching**
- > **Manual override with detent**
- > **Variable valve solenoid combination**

Technical features

Medium:

Filtered, lubricated or non-lubricated and dry compressed air

Operation:

Indirect solenoid operated spool valve

Operating pressure:

2 ... 8 bar (29 ... 116 psi)

Orifice:

6 mm

Port size:

G1/4, 1/4 NPT
3 and 5: G1/8, 1/8 NPT
NAMUR Interface with integrated recirculation from the exhaust air to the acutator sping chamber

Flow direction:

Fixed

Mounting position:

Optional

Ambient/Media temperature:

-15 ... +50°C (5 ... +122°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (35°F).

Materials:

Housing: Aluminium anodized
Pilot flange: Plastic (PBT)
Flange plate: Aluminium
Seals: NBR

Flow conversion:

Cv US Gallon/min (water) =
l/min (air) x 0,001
Kv m³/h (water) =
l/min (air) x 0,000906

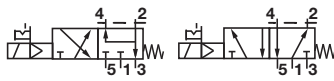
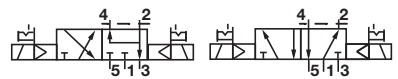
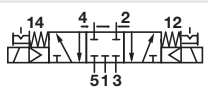
Option selector

Function)	Substitute
5/2 way, spring return (3/2 way spare adaptor plate supplied)	0
5/2 way, solenoid return (3/2 way spare adaptor plate supplied)	1
5/3 way valve, APB (all ports blocked)	2
Ports size	Substitute
G1/4	0
1/4 NPT	1

971★ 0 ★ 0 ★★★★★ ★★★★★

Voltage	Substitute
24 V d.c.	02400
230 V a.c.	23050
Solenoid actuators	Substitute
See table on page 2 & 3	






Technical data
Housing: Aluminium anodized, Seals: NBR -15 ... +50°C (+5 ... +122°F)

Symbol	Port size			Actuation/Return	Flow (l/min)	Operating pressure (bar) (psi)	Weight (kg)	Drawing No.	Model *1)
	1	3 & 5	2 & 4						
	G1/4	G1/8	Flange	Solenoid/Spring	750	2 ... 8 29 ... 116	0,25	1	9710000
	1/4 NPT	1/8 NPT	Flange	Solenoid/Spring	750	2 ... 8 29 ... 116	0,25	1	9710010
	G1/4	G1/8	Flange	Solenoid/Solenoid	750	2 ... 8 29 ... 116	0,35	2	9711000
	1/4 NPT	1/8 NPT	Flange	Solenoid/Solenoid	750	2 ... 8 29 ... 116	0,35	2	9711010
	G1/4	G1/8	Flange	Solenoid/Solenoid	500	2 ... 8 29 ... 116	0,4	3	9712000
	1/4 NPT	1/8 NPT	Flange	Solenoid/Solenoid	500	2 ... 8 29 ... 116	0,4	3	9712010

Suitable solenoids, see below only

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

Solenoids for 971xxx0 only, standard voltages

Image	Power consumption 24 V d.c. 230 V a.c.		Rated current		Protection class IP/NEMA	Ex-Protection (ATEX-Category)	Temperature Ambient/ Media (°C)	Electrical connection	Weight (kg)	Drawing No.	Circuit diagram No.	Model
	(W)	(VA)	24 V d.c. (mA)	230 V a.c. (mA)								
	1,8	—	70	—	IP65 (with connector)	—	-15 ... +50	Connector DIN EN 175301-803, form B *1)	0,1	11	1	3050
	1,6	—	30	—	IP65 (with connector)	—	-15 ... +50	Connector DIN EN 175301-803, form A *1)	0,1	12	1	3036
	2	—	85	—	IP65 (with connector)	II 3 G Ex nA IIC T5 Gc II 3 D Ex tc IIC T95° Dc IP65	-15 ... +50	Special connector DIN EN 175301-803, form A	0,3	5	1	3046
	—	2	—	18	IP65 (with connector)	II 3 G Ex nA IIC T5 Gc II 3 D Ex tc IIC T95° Dc IP65	-15 ... +50	Special connector DIN EN 175301-803, form A	0,3	5	1	3047
	—	5	—	22	IP65 (with connector)	II 2 G Ex mb IIC T4 Gb II 2 D Ex mb tb T130°C Db	-20 ... +50	Cable length 3 m	0,3	13	15	3061
	2,7	—	115	—	IP65 (with connector)	II 2 G Ex mb IIC T5 Gb II 2 D Ex mb tb T95°C Db	-20 ... +50	Cable length 3 m	0,3	13	14	3062
	2,7	—	115	—	IP66 (with connector)	—	-10 ... +50	Connector *1) M12x1, DIN IEC 61076-2-101 Solenoid with yellow LED	0,1	14	17	3071


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 is not scope of delivery, see table »Accessories«

Approvals

Model	Approvals ATEX	Datasheet
304x	PTB 06 ATEX 2055	N/en 7.1.555
306x	PTB 03 ATEX 2015	N/en 7.1.560

Electrical connection M12 x 1

Model	Pin	Cable
	1	brown
	2	white
	3	blue
	4	black

Valves for minimal electrical power, included Ex ia
Housing: Aluminium anodized, Seals: NBR -15 ... +50°C (+5 ... +122°F)

Symbol	Port size			Actuation/Return	Flow (l/min)	Operating pressure (bar) (psi)	Weight (kg)	Drawing No.	Model *1)
	1	3 & 5	2 & 4						
	G1/4	G1/8	Flange	Solenoid/spring	750	2 ... 8 29 ... 116	0,25	1	9710002
	1/4 NPT	1/8 NPT	Flange	Solenoid/spring	750	2 ... 8 29 ... 116	0,25	1	9710012
	G1/4	G1/8	Flange	Solenoid/solenoid	750	2 ... 8 29 ... 116	0,35	2	9711002
	1/4 NPT	1/8 NPT	Flange	Solenoid/solenoid	750	2 ... 8 29 ... 116	0,35	2	9711012
	G1/4	G1/8	Flange	Solenoid/solenoid	500	2 ... 8 29 ... 116	0,40	3	9712002
	1/4 NPT	1/8 NPT	Flange	Solenoid/solenoid	500	2 ... 8 29 ... 116	0,40	3	9712012

Suitable solenoids, see below only

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

Solenoids for 971xxx2 only, standard voltages

Image	Power consumption		Rated current		Protection class IP/NEMA	Ex-Protection (ATEX-Category)	Temperature Ambient/Media (°C)	Electrical connection	Weight (kg)	Drawing 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)								
	1,8	—	70	—	IP65 (with connector)	—	-15 ... +50	Connector DIN EN 175301-803, form B *1)	0,1	11	1	3050
	0,7	2,0 *2)	29	4	IP65 (with connector)	—	-15 ... +50	Connector DIN EN 175301-803, form A *1)	0,1	12	1	3034
	2	—	85	—	IP65 (with connector)	II 3 G Ex nA IIC T5 Gc II 3 D Ex tc IIC T95° Dc IP65	-15 ... +50	Special connector DIN EN 175301-803, form A	0,3	12	1	3046
	—	5	—	22	IP65 (with connector)	II 2 G Ex mb IIC T4 Gb II 2 D Ex mb tb T130°C Db	-20 ... +50	Cable length 3 m	0,3	13	15	3061
	2,7	—	115	—	IP65 (with connector)	II 2 G Ex mb IIC T5 Gb II 2 D Ex mb tb T95°C Db	-20 ... +50	Cable length 3 m	0,3	13	14	3062
	2,7	—	115	—	IP66 (with connector)	—	-10 ... +50	Connector *1) M12x1, DIN IEC 61076-2-101 Solenoid with yellow LED	0,1	14	17	3071

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 is not scope of delivery, see table »Accessories«

Solenoid actuators for intrinsically-safe circuits

Image	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)	Weight (kg)	Drawing No.	Circuit diagram No.	Model

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

On the other hand, the low effective inductivity and capacity can be ignored.

Connector DIN EN 175301-803 form A is not scope of delivery, see table »Accessories«






Approvals

Model	Approvals ATEX		Datasheet
	FM	FM	
3039	PTB 03 ATEX 2134	CSA-LR 51090-4	N/en 71.550
304x	PTB 06 ATEX 2055	—	N/en 71.555
306x	PTB 03 ATEX 2015	—	N/en 71.560

Electrical connection M12 x 1

Model	Pin	Cable
	1	brown
	2	white
	3	blue
	4	black







Accessories

Connector DIN EN 175301-803	4-pin, 90°	4-pin, 90°	4-pin, straight	4-pin, straight
				
	Page 8	Page 8	Page 8	Page 8
0570275, form A	0523058 (2 m cable, 4-core)	0523056 (without cable)	0523057 (2 m cable, 4-core)	0523055 (without cable)
0680003, form B	0523053 (5 m cable, 4-core)		0523052 (5 m cable, 4-core)	

Silencer

Page 6
C/S1 (1/8 NPT)
M/S1 (G1/8)

NAMUR accessories

Throttle control plate *1)	Flange plate	Yoke	Distance plate for pressure switches	Mounting plate	Quick exhaust module *2)
					
Page 7	Page 6 & 7	Page 7	Page 7	Page 7	
4040239	0612790 (NAMUR single connection plate) 0612791 (NAMUR-rip use in combination with 0612790)	0540593	0540109	0613453 (90°) 0612631 (180°) 0613556 (270°)	4050218

*1) The throttle control plate 4040239 has a minimum flow rate for safety reason.

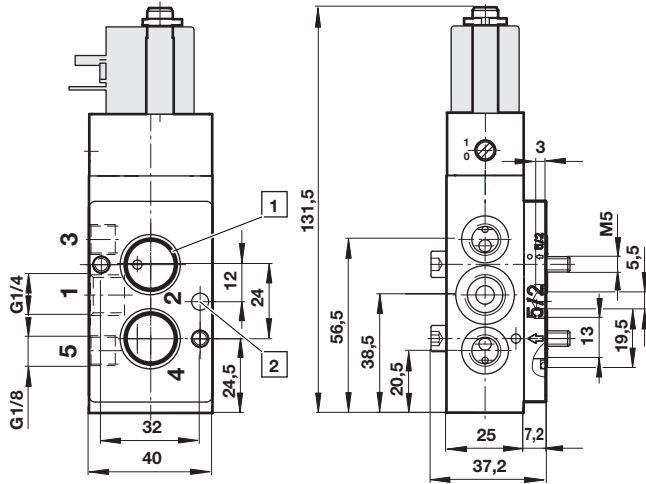
*2) Technical details see catalogue page en 5.4.820.

**Drawings
Valves**

Dimensions in mm
Projection/First angle

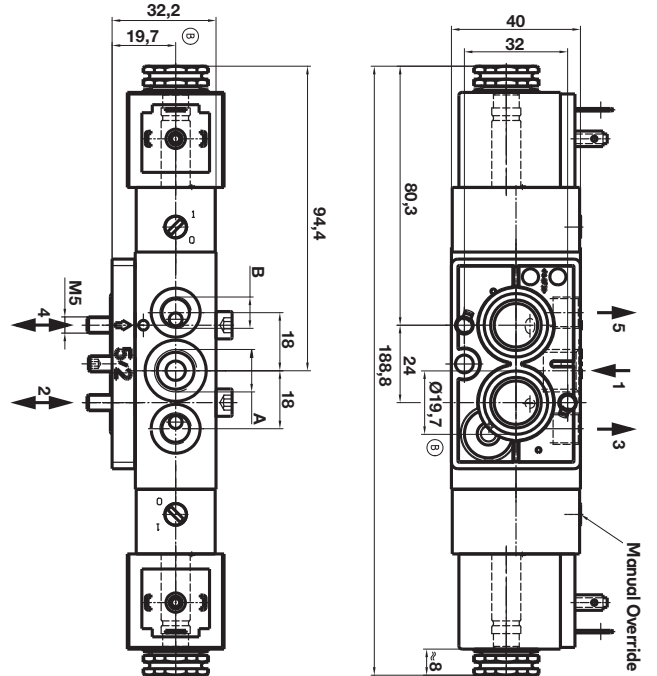


1

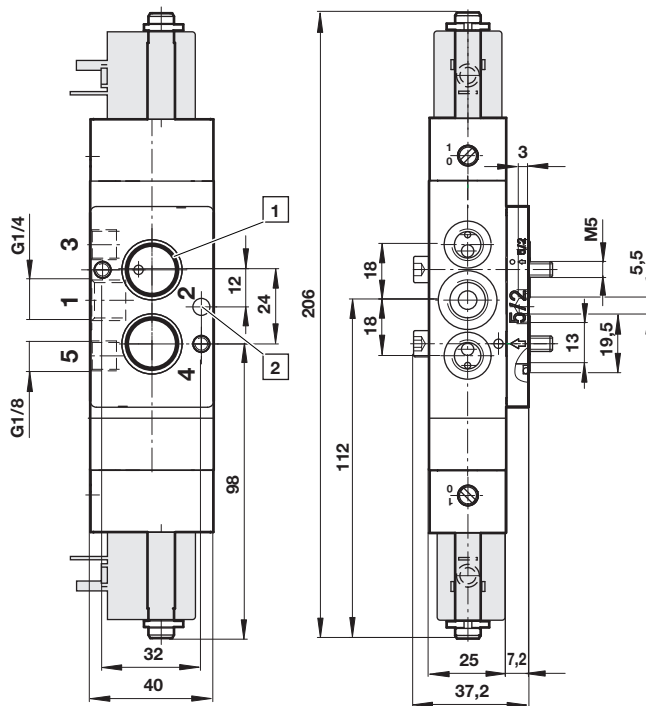


- 1 O ring $\varnothing 6 \times 2$ mm in scope with delivery
- 2 Hole (3 mm deep) coding stud

2



3

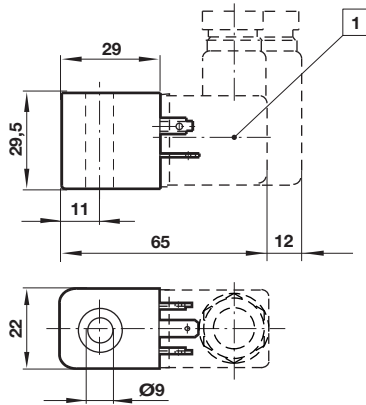


Solenoids

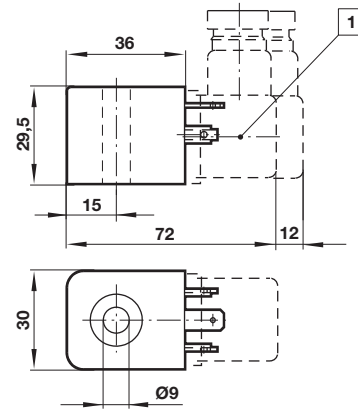
Dimensions in mm
Projection/First angle



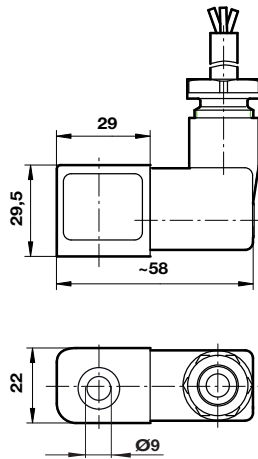
11



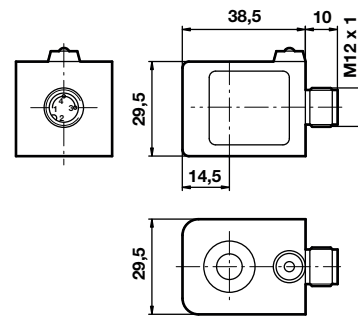
12



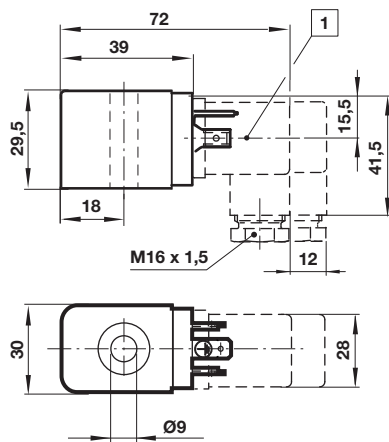
13



14



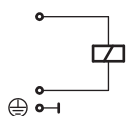
15



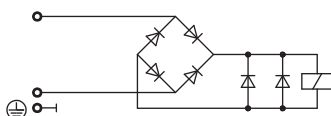
1 Connector 4 x 90° turnable

Circuit diagrams

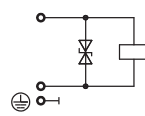
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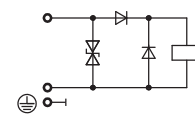
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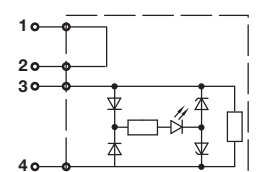
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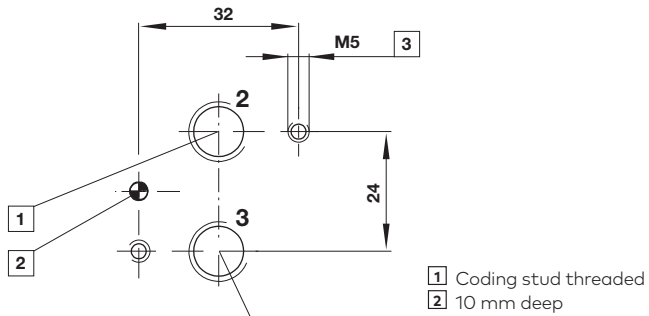


15



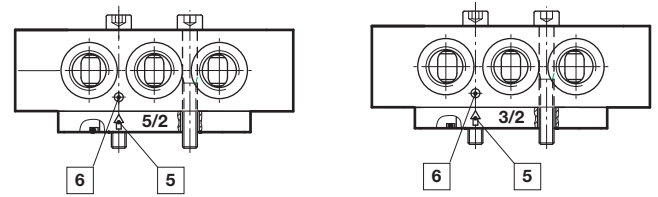
17



NAMUR hole pattern (actuator side)


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

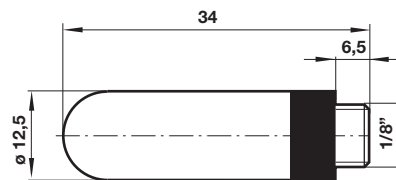
Conversion instructions of 5/2 into 3/2 way function


3/2 resp. 5/2 way function can be achieved just by swapping enclosed adaptor plates. Make sure marker and arrow do match as shown on above drawing. Original mode of supply: 5/2 function.

5 Arrow
6 Marker

Accessories
Silencer

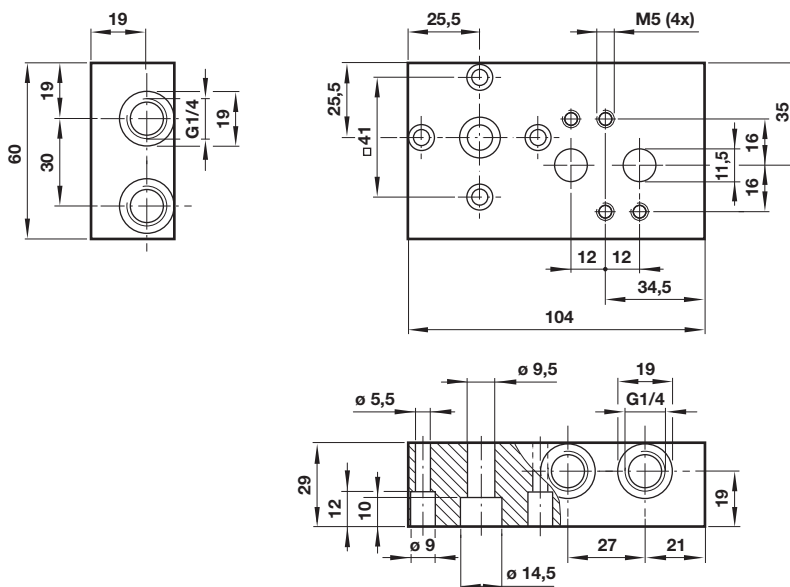
Model: M/S1, C/S1



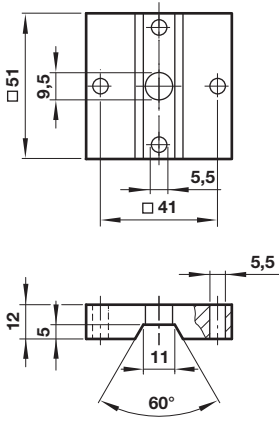
Dimensions in mm
Projection/First angle


Single connection plate

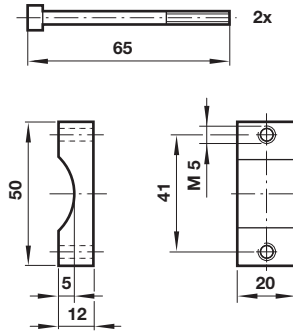
Model: O612790



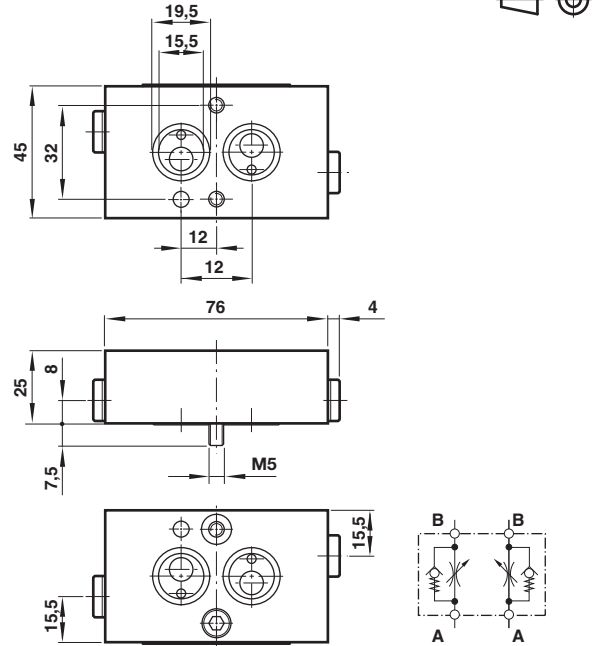
NAMUR slot
Model: 0612791



Yoke
Model: 0540593



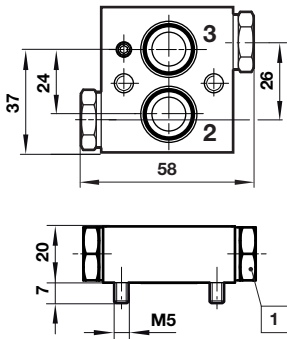
Throttle control plate
Model: 4040239



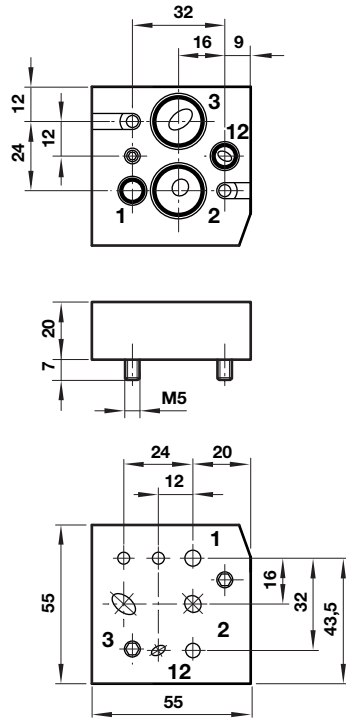
Dimensions in mm
Projection/First angle



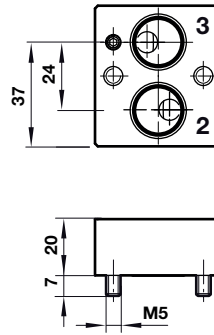
Distance plate for pressure switches
Model: 0540109



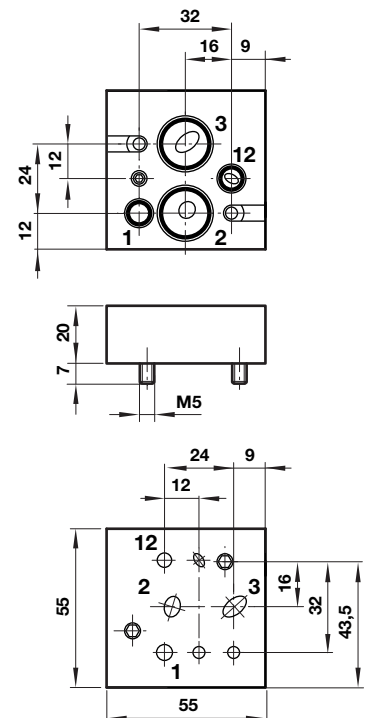
Mounting plate
Model: 0613453 (90°)

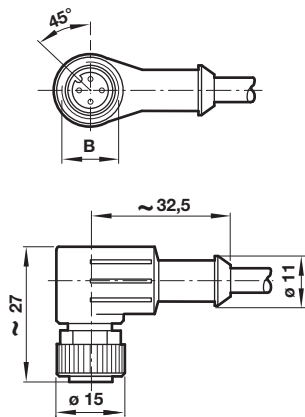


Model: 0612631 (180°)



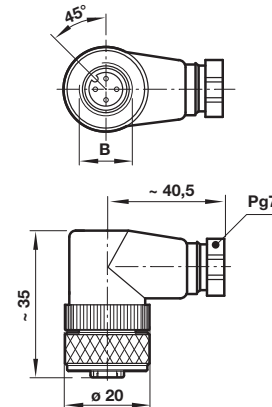
Model: 0613556 (270°)



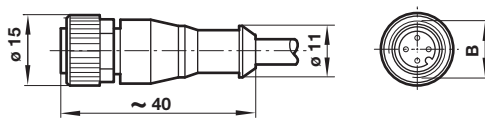
**Connector
90°, 4 pin, with PUR cable**


B	C	øD	øD1	F	Wire x dim.	Cable length (m)	Weight (g)	Model
M12 x 1,5	32,5	15	11	27	4 x 0,34 mm ²	2	90	0523058
M12 x 1,5	32,5	15	11	27	4 x 0,34 mm ²	5	180	0523053

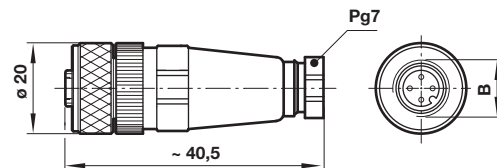
4 pin, without cable

 Dimensions in mm
Projection/First angle


B	C	øD	E	F	Weight (g)	Model
M12 x 1,5	40,5	20	Pg 7	35	30	0523056

Straight, 4 pin, with PUR cable


B	C	øD	øD1	Wire x dim.	Cable length (m)	Weight (g)	Model
M12 x 1,5	40	15	11	4 x 0,34 mm ²	2	80	0523057
M12 x 1,5	40	15	11	4 x 0,34 mm ²	5	200	0523052

Straight, 4 pin, without cable


B	C	øD	E	Weight (g)	Model
M12 x 1,5	40,5	20	Pg 7	26	0523055

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 Norgren Ltd.

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.