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3/2 and 5/2 NAMUR Directional Control Valves

OBSOLETE DOCUMENT Technical Reference Only

Solenoid pilot actuated soft seal spool valve for single and double acting positioning drives G1/4 or NPT1/4

- **Exhaust air recirculation**
- **Non-overlapping switching**
- **Safe switching also with small cross-sectional area of air inlet**
- **Safety position in case of energy failure thanks to mechanical return spring (version with 1 solenoid)**
- **Manual overrides with or without detent. Partially available as add-on units for later installation.**
- **Suited for outdoor use under critical environmental conditions (some versions)**
- **Small power requirement enabling the use of different protection classes, including protection class EEx i**



Technical Data

Medium:
Filtered, non-lubricated dry air, instrument air, nitrogen and other neutral, dry fluids
Operation:
Solenoid pilot actuated
Mounting:
Optional
Port Size:
G1/4 and NPT 1/4 internal thread connection
Operating Pressure:
1,5 to 10 bar with internal control air supply
Auxiliary pressure:
Only with external control air supply. Port 12: 1,5 to 10 bar
Operating Temperature:
Valve: -25°C to 80°C
Solenoid: See relevant tables overleaf
Materials:
Body – PBTP (Crastin) Inflammability acc. to UL 94: HB
Seals – NBR (Perbunan)

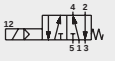
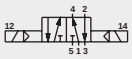
Ordering Information

To order, quote model number from table overleaf, e.g. for a G1/4 port size single solenoid 5/2 valve with return spring without throttle operation and a Form A solenoid with IP65 degree of protection, quote part number 2638010.3035.

Our policy is one of continued research and development. We therefore reserve the right to amend, without notice, the specifications given in this document.
For your local Norgren Technical Sales Centre phone 0345 662266. For your local Norgren Distributor phone 0345 227777.
IMI Norgren Limited, PO Box 22, Eastern Avenue, Lichfield, Staffordshire WS13 6SB

General Information

Valves for use with Type 'A' Solenoids

Symbol	Part No.	Line Connection	Operation	Nominal Size	Operating Pressure (bar) Min	Max	k_v-value (C_v (US) ≈ K_v x 1,2)	Weight (kg)	Valve Drawing No.
	2638010	G1/4	Return spring without throttle	6	1,5	8	0,9	0,3	01
	2638012	NPT 1/4							
	2638110	G1/4	Return spring with throttle	6	1,5	8	0,35	0,3	01
	2638112	NPT 1/4							
	2638210	G1/4	Double solenoid without throttle	6	1,5	8	0,9	0,4	04
	2638212	NPT 1/4							
	2638310	G1/4	Double solenoid with throttle	6	1,5	8	0,35	0,4	04
	2638312	NPT 1/4							

Type 'A' Solenoids

	Part No.	Power Consumption 24V dc (W)	230V ac (VA)	Rated Current at 24V dc (mA)	230V ac (mA)	Protection Class	Temperatures Fluid max. (°C)	Ambience (°C)	Weight (kg)	Solenoid Drawing No.	Circuit Diagram No.
	3034	0,7	-	30	-	IP00 without connector	+80	-15 to +50	0,1	08	01
	3035	0,7	-	30	-	IP65 with connector	+80	-15 to +50	0,1	08/11	01
	3044*	0,9	-	30	-	EEx m II T6 IP65 3m cable	+80	-15 to +50	0,4	12	01
	3045*	-	0,9	-	5	EEx m II T6 IP65 3m cable	+80	-15 to +50	0,4	12	08

Standard voltages 24V dc, 230V ac. Other voltages available on request.
Design acc. to VDE 0580 or VDE 0171, EN 50014/EN 50020/50028. 100% duty cycle.

For intrinsically safe circuits with safety rating EEx ia IIC T6

	Part No.	Nominal resistence R_V coil (Ω)	Min required switching current (mA)	Resistance $R_{W\,65}$ coil	Required Voltage at Terminal $R_{W\,65}$	Ambient Temperature (°C)	Maximum Fluid Temperature (°C)	Weight (kg)	Solenoid Drawing No.	Circuit Drawing No.
	3039**	275	33	330	12	-15 to +50	+80	0,83	08/11	13

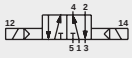
When selecting an intrinsically safe power supply, the permissable maximum values according to the Certificate of Conformity should be taken into

* Certificate of Conformity PTB No. Ex-95.C.2153 X

** Certificate of Conformity PTB No. Ex-95.C.2152, CSA-Certificate No. LR 51090-4, FM approved.
Connector to DIN 43650 or ISO 4400 necessary. See table on page 6. Installation according to FM and CSA specifications.

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Valves for use with Type 'B' Solenoids

Symbol	Part No.	Line Connection	Operation	Nominal Size	Operating Pressure (bar) Min	Max	k_v-value (C_v (US) ≈ K_v x 1,2)	Weight (kg)	Valve Drawing No.
	2638040	G1/4	Return spring without throttle	6	1,5	8	0,9	0,3	01
	2638042	NPT 1/4							
	2638140	G1/4	Return spring with throttle	6	1,5	8	0,35	0,3	01
	2638142	NPT 1/4							
	2638240	G1/4	Double solenoid without throttle	6	1,5	8	0,9	0,4	04
	2638242	NPT 1/4							
	2638340	G1/4	Double solenoid with throttle	6	1,5	8	0,35	0,4	04
	2638342	NPT 1/4							

Type 'B' Solenoids

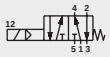
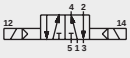
	Part No.	Power Consumption 24V dc (W)	230V ac (VA)	Rated Current at 24V dc (mA)	230V ac (mA)	Protection Class	Temperatures Fluid max. (°C)	Ambience (°C)	Weight (kg)	Solenoid Drawing No.	Circuit Diagram No.
	3032	2,7	-	112	-	IP00 without connector	+80	-15 to +50	0,1	08	01
	3033	-	4,9	-	21	IP65 with connector	+80	-15 to +50	0,1	08/11	01
	3042*	3,3	-	135	-	EEx m II T6 IP65 3m cable	+80	-15 to +50	0,4	12	01
	3043*	-	3,3	-	14	EEx m II T6 IP65 3m cable	+80	-15 to +50	0,4	12	08

Standard voltages 24V dc, 230V ac. Other voltages available on request.
Design acc. to VDE 0580 or VDE 0171, EN 50014/EN 50020/50028. 100% duty cycle.

* Certificate of conformity PTB No. Ex-95.C.2153 X

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Valves for use with Type 'C' Solenoids

Symbol	Part No.	Line Connection	Operation	Nominal Size	Operating Pressure (bar) Min	Max	k_v-value (C_v (US) ≈ K_v x 1,2)	Weight (kg)	Valve Drawing No.
	2638020	G1/4	Return spring without throttle	6	1,5	10	0,9	0,3	01
	2638022	NPT 1/4							
	2638120	G1/4	Return spring with throttle	6	1,5	10	0,35	0,3	01
	2638122	NPT 1/4							
	2638220	G1/4	Double solenoid without throttle	6	1,5	10	0,9	0,4	04
	2638222	NPT 1/4							
	2638320	G1/4	Double solenoid with throttle	6	1,5	10	0,35	0,4	04
	2638322	NPT 1/4							

Type 'C' Solenoids

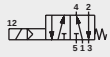
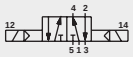
	Part No.	Power Consumption 24V dc (W)	230V ac (VA)	Rated Current at 24V dc (mA)	230V ac (mA)	Nominal Voltage Tolerance (%) +	-	Protection Class	Temperatures Fluid max. (°C)	Ambience (°C)	Weight (kg)	Solenoid Drawing No.	Circuit Diagram No.
	0242 0240	2,7	-	113	-	10	10	IP00 without connector IP65 with connector	+80	-25 to +60	0,15 0,18	09 09/11	01
	0245 0241	-	10/4,2	-	45/18	10	10	IP00 without connector IP65 with connector	+80	-25 to +60	0,15 0,18	09 09/11	01
	0278	3,2	-	135	-	10	15	EEx m II (T4) IP65* 3m cable	+70	-20 to +70	0,4	13	04
	0279	-	3,5	-	15	10	15	EEx m II (T6) IP65* 3m cable	+70	-20 to +70	0,4	13	07
	3910	3,9	-	161	-	10	20	IP65 EEx em II (T5/6)**	-20 to +80 (T5) -20 to +60 (T6)		0,85	14	04
	3911	-	4,9	-	21	10	15	IP65 EEx em II (T5/6)**	-20 to +80 (T5) -20 to +60 (T6)		0,85	14	07
	3722	5	-	228	-	10	15	NEMA 1, 3, 4, 4X, 7, 9 †	-20 to +60		0,4	15	01
	3723	-	6	-	25	10	15	NEMA 1, 3, 4, 4X, 7, 9 †	-20 to +60		0,4	15	05

Standard voltages 24V dc, 230V ac. Other voltages available on request.
Design acc. to VDE 0580 or VDE 0171, EN 50014/EN 50020/50028. 100% duty cycle.

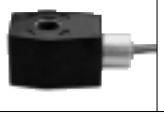
* Certificate of conformity KEMA No. Ex-93.C.8283 X
** Certificate of conformity PTB No. Ex-92.C.2175 X
† CSA-LR 57643-6, FM-File 2z2A6.AE

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Valves for use with Type 'D' Solenoids

Symbol	Part No.	Line Connection	Operation	Nominal Size	Operating Pressure (bar) Min	Max	k_v-value (C_v (US) ≈ K_v x 1,2)	Weight (kg)	Valve Drawing No.
	2638030	G1/4	Return spring without throttle	6	1,5	10Δ	0,9	0,4	01
	2638032	NPT 1/4							
	2638130	G1/4	Return spring with throttle	6	1,5	8	0,35	0,4	01
	2638132	NPT 1/4							
	2638230	G1/4	Double solenoid without throttle	6	1,5	8	0,9	0,6	04
	2638232	NPT 1/4							
	2638330	G1/4	Double solenoid with throttle	6	1,5	8	0,35	0,6	04
	2638332	NPT 1/4							

Type 'D' Solenoids

	Part No.	Power Consumption 24V dc (W)	230V ac (VA)	Rated Current at 24V dc (mA)	230V ac (mA)	Nominal Voltage Tolerance (%) +	-	Protection Class	Temperatures Fluid max. (°C)	Ambience (°C)	Weight (kg)	Solenoid Drawing No.	Circuit Diagram No.
	0253††	1,6	-	67	-	10	15	IP00 without connector IP65 with connector	+80	-25 to +60	0,14	09	01
	0763††	1,9	-	78	-	10	15	IP00 without connector IP65 with connector	+80	-25 to +60	0,3	10	01
	0278	3,2	-	135	-	10	15	IP65 with connector EEx em II (T4)*	+70	-25 to +70	0,4	13	04
	0279	-	3,5	-	15	10	15						07
	3900	0,7	-	29	-	10	20	IP65 EEx em II (T5/6)**	-20 to +80 (T5) -20 to +70 (T6)		0,85	14	04
	3910	3,9	-	161	21	10	15	IP65 EEx em II (T5/6)**	-20 to +80 (T5)				04
	3911	-	4,9	-	-	10	15	IP65 EEx em II (T5/6)**	-20 to +60 (T6)				07
	3720	1,4	-	59	-	10	15	NEMA 1, 3, 4, 4X, 7, 9 †	+60		0,4	15	04

Standard voltages 24V dc, 230V ac. Other voltages available on request.
Design acc. to VDE 0580 or VDE 0171, EN 50014/EN 50020/50028. 100% duty cycle.

* Certificate of conformity KEMA No. Ex-93.C.8283 X
** Certificate of conformity PTB No. Ex-92.C.2175 X
† CSA-LR 57643-6, FM-File 2z2A6.AE

†† Required connector for DC: Part No. 0570275.
Connector with rectifier for AC or universal current: Part No. 0663303
Δ Operating pressure maximum 8 bar with solenoids EEx ib, EEx ia

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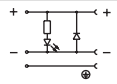
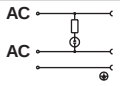
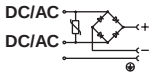
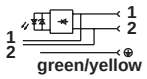
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Type 'D' solenoids for intrinsically safe circuits with safety rating EEx ia IIC T6**

	Part No.	Nominal resistence R_V coil (Ω)	Min required switching current (mA)	Resistance $R_{W\,65}$ coil*	Required Voltage at Terminal $R_{W\,65}$	Ambient Temperature (°C)	Maximum Fluid Temperature (°C)	Weight (kg)	Solenoid Drawing No.	Circuit Drawing No.
	2030	124	52	150	7,8	-40 to +65	+65	0,83	14	10
	2031	159	45	193	8,7					
	2032	198	40	240	9,6					
	2033	248	36	301	10,9					
	2034	306	33	371	12,3					
	2035	378	30	458	13,8					
	2036	467	27	566	15,3					
	2037	566	25	686	17,2					
	2038	692	23	839	19,3					

When selecting an intrinsically safe power supply, the permissable maximum values according to the Certificate of Conformity should be taken into account. On the other hand, the low effective inductivity and capacity can be ignored.

Connection options for epoxy encapsulated solenoids

	Part No.	Finish	Description	Remarks	Symbol
	0570275 0657859	Black Grey	Connector to DIN 43650 A	Up to 250V dc/ac	
	0661374		Connector to DIN 43650 A, Mounting thread 1/2 NPT acc. to NEMA 4	Up to 250V dc/ac	
	0664031 0664030	Black Grey	Connector to DIN 43650 A, with LED and quenching diode	24V dc	
	0663034 0663860	Black Grey	Connector to DIN 43650 A, with lamp	150 to 250V dc/ac	
	0663303	Black	Connector to DIN 43650 A, with rectifier	12 to 250V dc/ac	
	0681493	Black	Connector to DIN 43650 A, with cable 3x1mm², 3m long	Up to 250V dc/ac	
	0664363	Black	Connector to DIN 43650 A, with cable 3x1mm², 3m long with LED and quenching diode ???	24V dc/ac	
	0662804		Adapter with varistor and indicating light for connectors to DIN 43650 A Length 39mm, height 20mm above solenoid	24V dc/ac	
	0662805		Adapter with RC-link and indicating light for connectors to DIN 43650 A Length 39mm, height 20mm above solenoid	220V dc/ac	

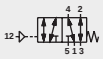
* R_{W65} is the solenoid coil resistance at +65°C ambient temperature and an applied voltage which produces an output of 2.8W at +20°C ambient temperature (maximum permissable output from intrinsically safe circuits for above solenoids).

** Certificate of conformity PTB No. Ex-95.D.2178

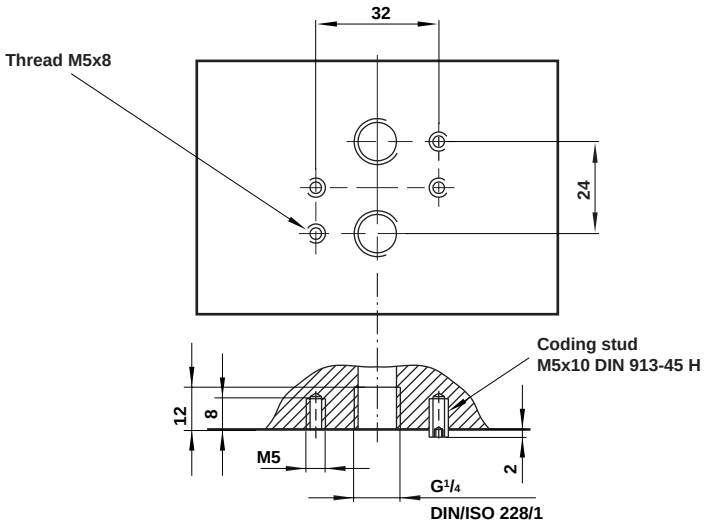
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Pneumatically actuated valves

Symbol	Part No.	Line Connection	Operation	Nominal Size	Operating Pressure (bar) Min	Max	k_v-value (C_v (US) ≈ K_v x 1,2)	Weight (kg)	Valve Drawing No.
	2638060	G1/4	With return spring without throttle	6	0	10	0,9	0,3	05
	2638062	NPT 1/4							
	2638160	G1/4	With return spring with throttle	6	0	10	0,35	0,3	05
	2638162	NPT 1/4							

NAMUR hole pattern



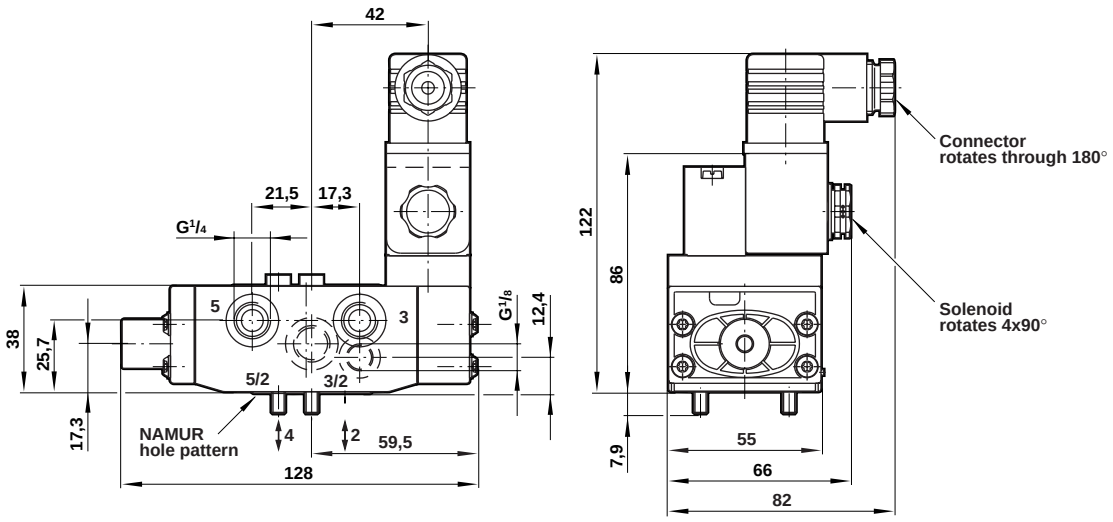
Mounting parts

Designation	Part No.	Application	Weight	Ref. Herion Data Sheet
Flange plate	0559857	Direct attachment to pneumatic linear actuators with NAMUR ribbing and for wall mounting, depending on the tubing position	0,49	7502242.06
Yoke	0540593	In conjunction with a flange plate for attachment to pneumatic linear actuators with NAMUR pillar (round)	0,10	
Silencer	0014600	Pressure connection G1/4. Maximum back pressure = 6 bar.	0,01	7501080.06

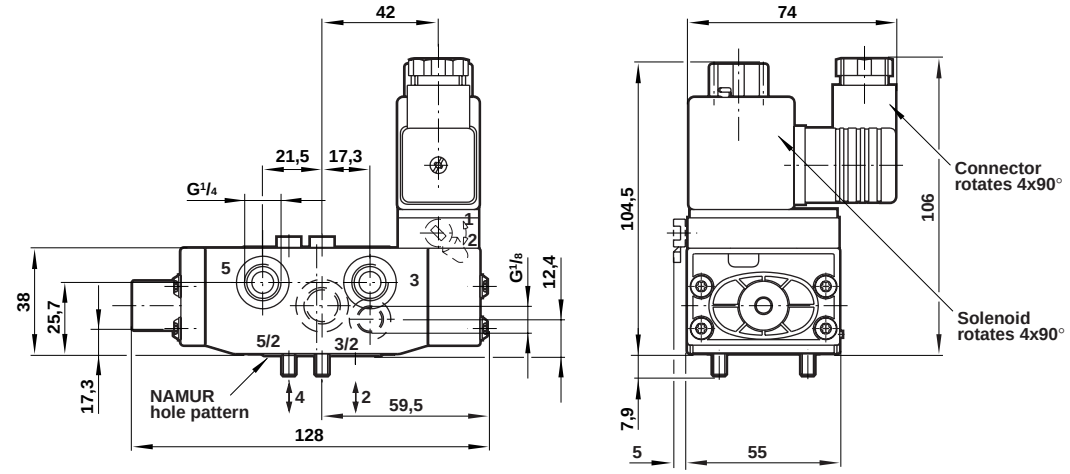
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Valve dimensions

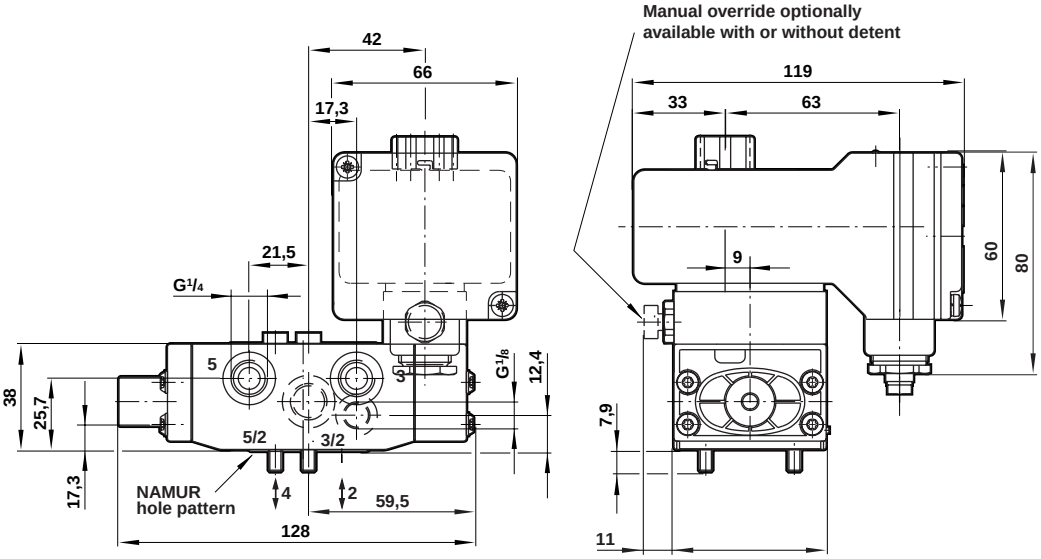
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02



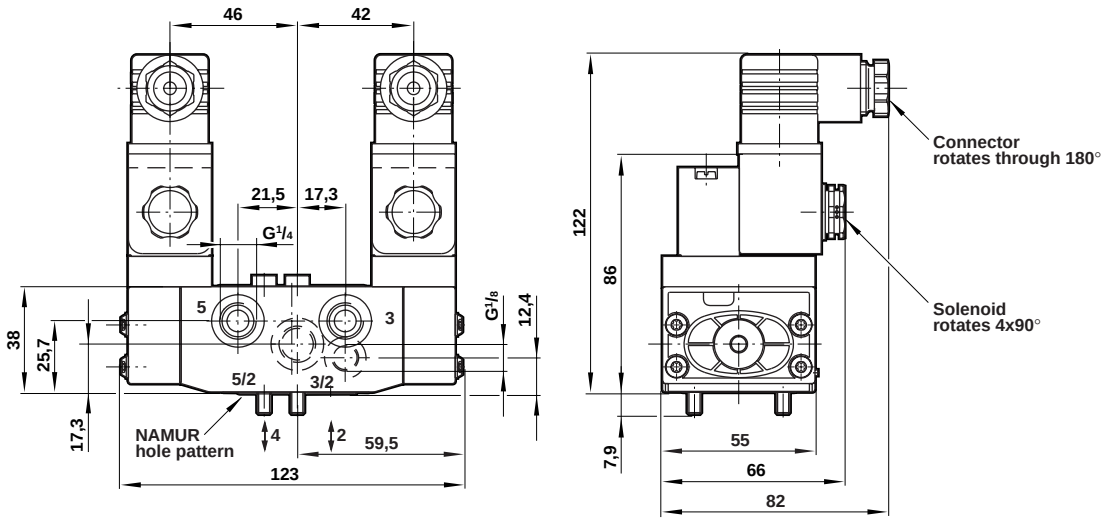
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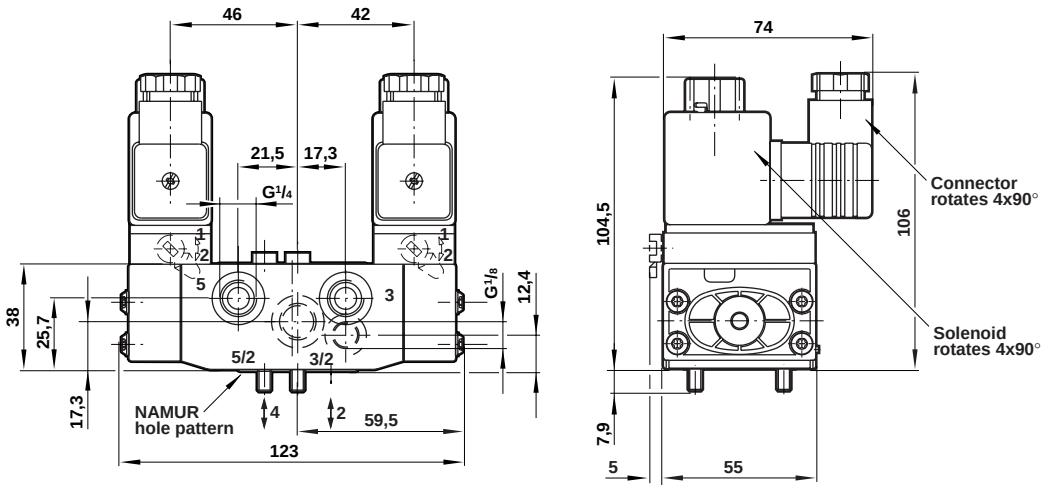
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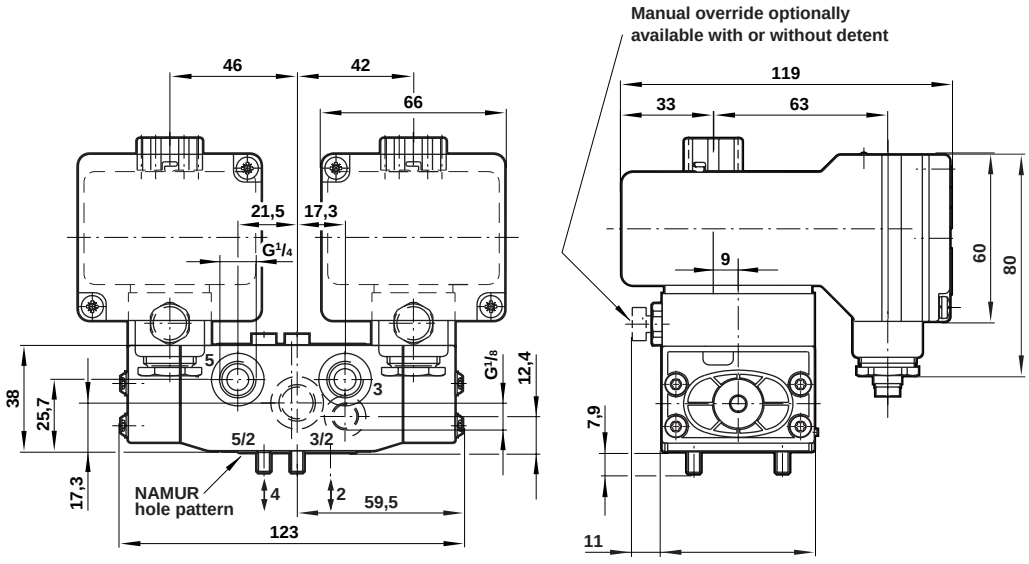
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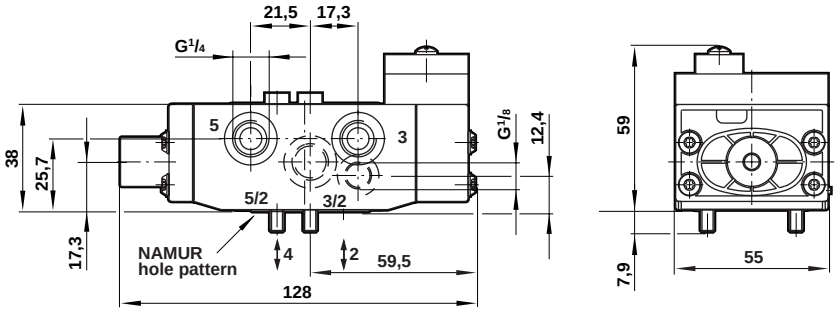
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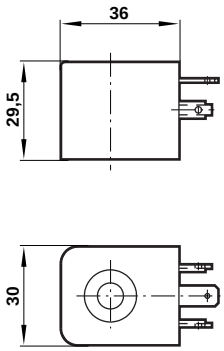
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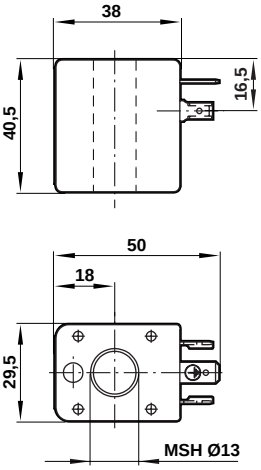


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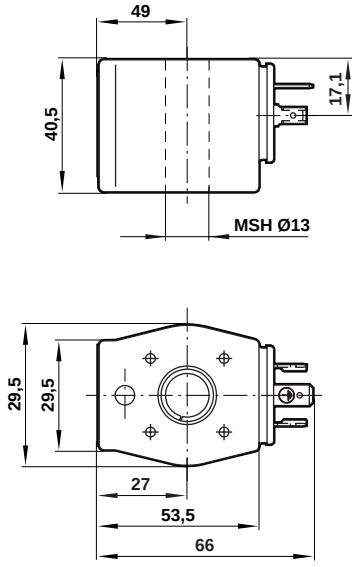
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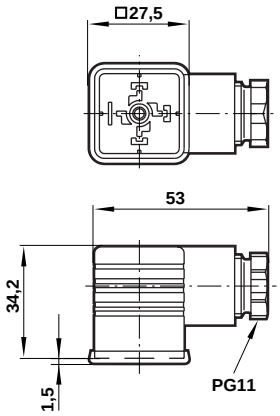
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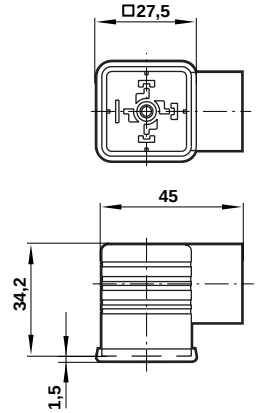


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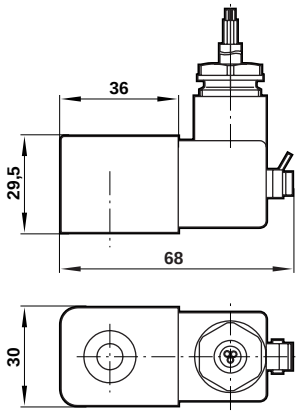
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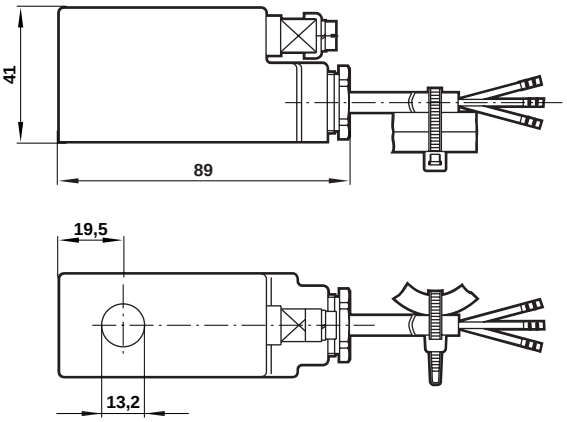
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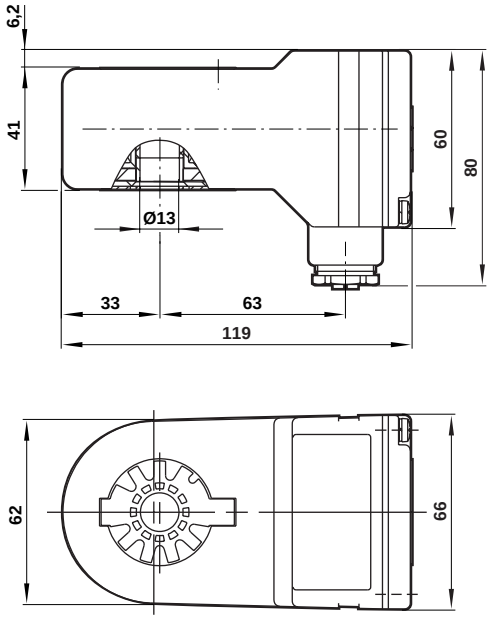
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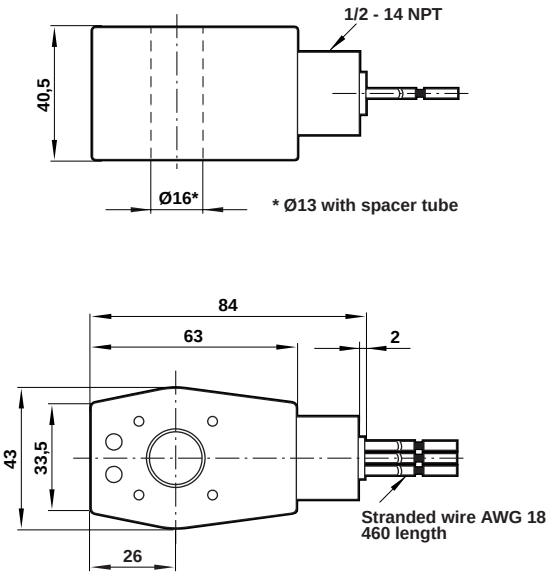
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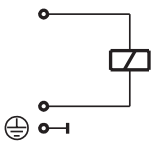


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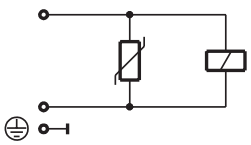


Circuit diagrams

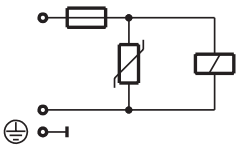
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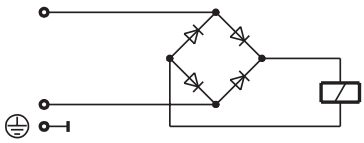
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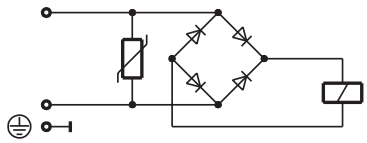
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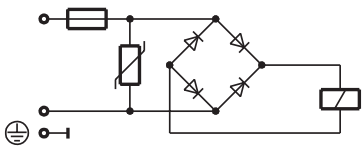
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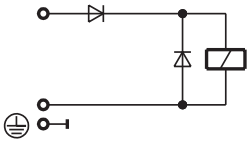
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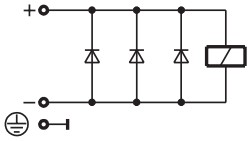
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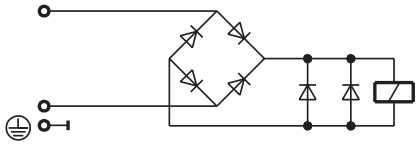
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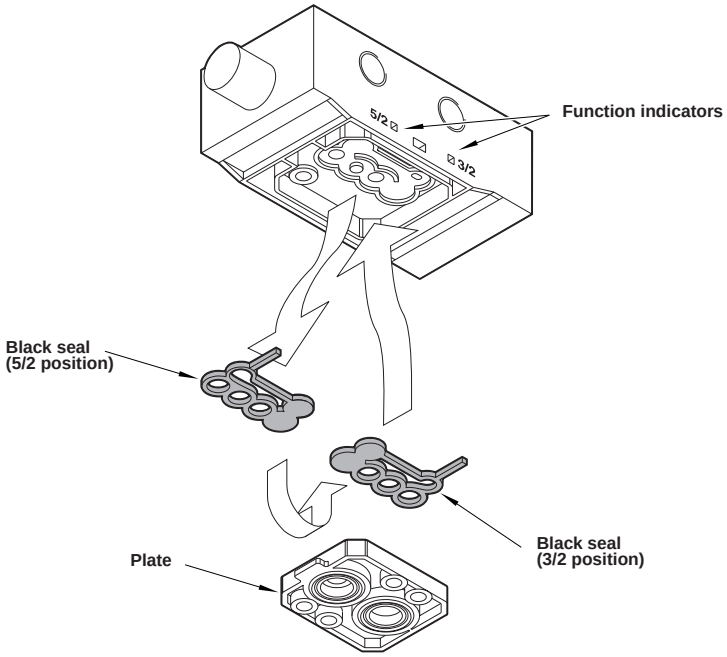


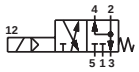
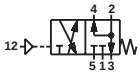
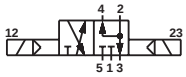
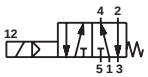
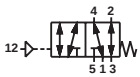
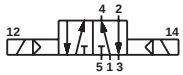
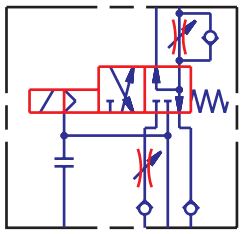
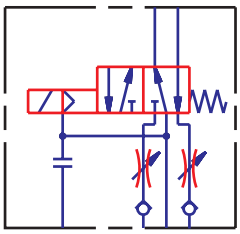
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Converting valve function from 5/2 to 3/2

1. Remove plate
2. Turn black seal through 180° and replace it carefully in space provided for it.
3. Mount plate again. The 3/2 directional control valve function is now displayed in the window.



Function		Pneumatically actuated	Electromagnetically actuated
3-way/2-position with exhaust-air recirculation	Spring return		
	Double solenoid		
5-way/2-position	Spring return		
	Double solenoid		
All valve versions are available with a built-in exhaust air-flow control valve (check valve). (in the case of the 3-way/2-position version, the flow control valve is shown in a position corresponding to its direction of action).		5/2 directional control valve 	3/2 directional control valve 

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 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.
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 a failure.
System designers must provide a warning to end users in the system instruction 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 where applicable.

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