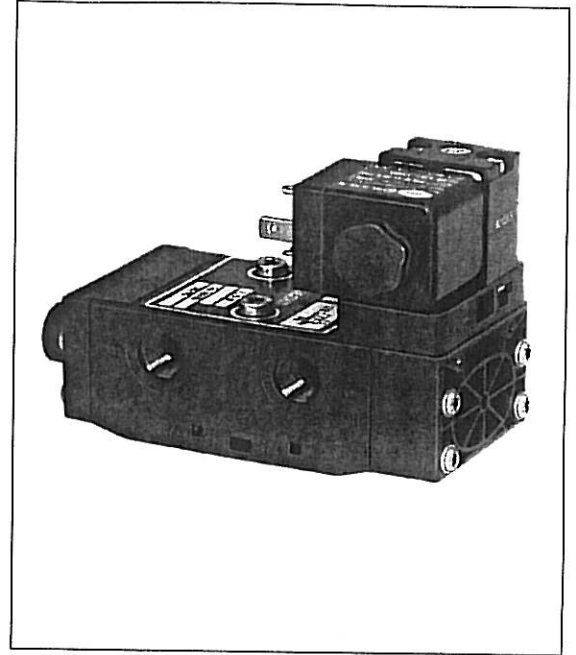


3/2 and 5/2 directional control valves  
NAMUR module system  
Solenoid pilot actuated  
soft seal spool valve  
G1/4 or NPT1/4

- 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 +60°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. **2638010.3035** for a G1/4 port size single solenoid 5/2 valve with return spring without throttle operation and a Form A solenoid IP65.

#### Connectors

see data sheet 7503364



## 3/2 and 5/2 Directional Control Valves

### General Information

#### Valves for use with Type 'A' Solenoids

Symbol	Part No.	Line Connection	Operation	Nominal Size	Operating Pressure (bar)		k <sub>v</sub> -value (Cv(US)=K <sub>v</sub> x 1,2)	Weight (kg)	Valve Drawing No.
					Min	Max			
	2638010	G1/4	Return spring without throttle	6	1,5	8	0,9	0,3	M01
	2638012	NPT 1/4							
	2638110	G1/4	Return spring with throttle	6	1,5	8	0,35	0,3	M01
	2638112	NPT 1/4							
	2638210	G1/4	Double solenoid without throttle	6	1,5	8	0,9	0,4	M04
	2638212	NPT 1/4							
	2638310	G1/4	Double solenoid with throttle	6	1,5	8	0,35	0,4	M04
	2638312	NPT 1/4							

#### Type 'A' Solenoids

	Part No.	Power Consumption		Rated Current at		Protection Class	Temperatures		Weight (kg)	Solenoid Drawing No.	Circuit Diagram No.
		24V dc (W)	230V ac (VA)	24V dc (mA)	230V ac (mA)		Fluid max. (°C)	Ambience (°C)			
	3034	0,7	-	30	-	IP00 without connector	+80	-15 to +50	0,1	M10	SB01
	3035	0,7	-	30	-	IP65 with connector	+80	-15 to +50	0,1	M10	SB01
	3044*	0,9	-	30	-	EEx m II T6 IP65 3m cable	+80	-15 to +50	0,4	M13	SB01
	3045*	-	0,9	-	5	EEx m II T6 IP65 3m cable	+80	-15 to +50	0,4	M13	SB08

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

#### For intrinsically safe circuits with safety rating EEx ia IIC T6

	Part No.	Nominal resistance R <sub>v</sub> coil (Ω)	Min required switching current (mA)	Resistance R <sub>wes</sub> coil	Required Voltage at Terminal R <sub>wes</sub>	Ambient Temperature (°C)	Maximum Fluid Temperature (°C)	Weight (kg)	Solenoid Drawing No.	Circuit Drawing No.
	3039**	275	37	330	12	-15 to +50	+80	0,83	M10	SB13

When selecting an intrinsically safe power supply, the permissible 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.

\* 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.



## Valves for use with Type 'B' Solenoids

Symbol	Part No.	Line Connection	Operation	Nominal Size	Operating Pressure (bar)		K <sub>v</sub> -value (C <sub>v</sub> (US)→K <sub>v</sub> x 1,2)	Weight (kg)	Valve Drawing No.
					Min	Max			
	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		Rated Current at		Protection Class	Temperatures		Weight (kg)	Solenoid Drawing No.	Circuit Diagram No.
		24V dc (W)	230V ac (VA)	24V dc (mA)	230V ac (mA)		Fluid max. (°C)	Ambience (°C)			
	3032	2,7	-	112	-	IP00 without connector	+80	-15 to +50	0,1	M10	SB01
	3033	2,7	4,9	112	20	IP65 with connector	+80	-15 to +50	0,1	M10	SB01
	3042*	3,3	-	135	-	EEx m II T5 3m cable	+80	-15 to +50	0,4	M13	SB01
	3043*	-	3,3	-	14	EEx m II T5 3m cable	+80	-15 to +50	0,4	M13	SB08

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

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



## 3/2 and 5/2 Directional Control Valves

### Valves for use with Type 'C' Solenoids

Symbol	Part No.	Line Connection	Operation	Nominal Size	Operating Pressure (bar)		k <sub>v</sub> -value (C <sub>v</sub> (US) = k <sub>v</sub> x 1,2)	Weight (kg)	Valve Drawing No.
					Min	Max			
	2638020	G1/4	Return spring without throttle	6	1,5	10	0,9	0,3	M02
	2638022	NPT 1/4							
	2638120	G1/4	Return spring with throttle	6	1,5	10	0,35	0,3	M02
	2638122	NPT 1/4							
	2638220	G1/4	Double solenoid without throttle	6	1,5	10	0,9	0,4	M05
	2638222	NPT 1/4							
	2638320	G1/4	Double solenoid with throttle	6	1,5	10	0,35	0,4	M05
	2638322	NPT 1/4							

### Type 'C' Solenoids

	Part No.	Power Consumption		Rated Current at		Nominal Voltage		Protection Class	Temperatures		Weight (kg)	Solenoid Drawing No.	Circuit Diagram No.
		24V dc (W)	230V ac (VA)	24V dc (mA)	230V ac (mA)	Tolerance (%)			Fluid max. (°C)	Ambience (°C)			
	0242	2,7	-	113	-	10	10	IP00 w/o connector IP65 with connector	+80	-25 to +60	0,15 0,18	M11	SB01
	0240												
	0245	10/4,2	-	45/18	10	10	IP00 w/o connector IP65 with connector	+80	-25 to +60	0,15 0,18	M11	SB01	
	0241												
	0278	3,2	-	135	-	10	15	EEx m II (T4) IP65* 3m cable	+70	-20 to +70	0,4	M14	SB04
	0279	-	3,5	-	15	10	15	EEx m II (T6) IP65* 3m cable	+70	-20 to +70	0,4	M14	SB07
	3910	3,9	-	161	-	10	20	IP65 EEx em II (T5/6)**	-20 to +80 (T5) -40 to +60 (T6)		0,85	M15	SB04
	3911	-	4,9	-	21	10	15	IP65 EEx em II (T5/6)**	-20 to +80 (T5) -40 to +60 (T6)		0,85	M15	SB07
	3722	5	-	228	-	10	15	NEMA 4, 4X, 6, 6P, 7, 9 †	-20 to +60		0,4	M17	SB01
	3723	-	6	-	25	10	15	NEMA 4, 4X, 6, 6P, 7, 9 †	-20 to +60		0,4	M17	SB05

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



Valves for use with Type 'D' Solenoids

Symbol	Part No.	Line Connection	Operation	Nominal Size	Operating Pressure (bar)		k <sub>v</sub> -value (C <sub>v</sub> (US)=K <sub>v</sub> x 1,2)	Weight (kg)	Valve Drawing No.
					Min	Max			
	2638030	G1/4	Return spring without throttle	6	1,5	10 <sup>Δ</sup>	0,9	0,4	M03
	2638032	NPT 1/4							
	2638130	G1/4	Return spring with throttle	6	1,5	8	0,35	0,4	M03
	2638132	NPT 1/4							
	2638230	G1/4	Double solenoid without throttle	6	1,5	8	0,9	0,6	M06
	2638232	NPT 1/4							
	2638330	G1/4	Double solenoid with throttle	6	1,5	8	0,35	0,6	M06
	2638332	NPT 1/4							

Type 'D' Solenoids

	Part No.	Power Consumption		Rated Current at		Nominal Voltage		Protection Class	Temperatures		Weight (kg)	Solenoid Drawing No.	Circuit Diagram No.
		24V dc (W)	230V ac (VA)	24V dc (mA)	230V ac (mA)	Tolerance (%) + -	Fluid max. (°C)		Ambience (°C)				
	02531 <sup>††</sup>	1,6	-	67	-	10	15	IP00 w/o connector IP65 with connector	+80	-25 to +60	0,14	M11	SB01
	07631 <sup>††</sup>	1,9	-	78	-	10	15	IP00 w/o connector IP65 with connector	+80	-25 to +60	0,3	M12	SB01
	0278	3,2	-	135	-	10	15	IP65 with connector EEx em II (T4)*	+70	-25 to +70	0,4	M14	SB04
	0279	-	3,5	-	15	10	15						SB07
	3900	0,7	-	29	-	10	20	IP65 EEx em II (T5/6)**	-20 to +80 (T5) -40 to +70 (T6)		0,85	M15	SB04
	3910	3,9	-	161	21	10	15						SB04
	3911	-	4,9	-	-	10	15						SB07
	3720	1,4	-	59	-	10	15	NEMA 4, 4X, 6, 6P, 7, 9 <sup>†</sup>	+60		0,4	M17	SB01

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

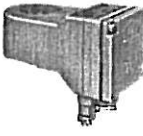
\* Certificate of conformity KEMA No. Ex-93.C.8283 X  
\*\* Certificate of conformity PTB No. Ex-92.C.2175 X  
† CSA-LR 57643-6, FM-File 2z2A6.AE

†† 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



## 3/2 and 5/2 Directional Control Valves


### Solenoid actuators for intrinsically-safe circuits, protection class EEx ia IIC T6\*\* zone 1 and 2

Type	Nominal resist. R <sub>v</sub> Coil (Ω)	Min. required switching current (mA)	Resistance R <sub>w 65</sub> Coil* (Ω)	Required voltage at terminal R <sub>w 65</sub>	Ambient temperature (°C)	Max. Fluid- temperature (°C)	Weight (kg)	Dimensional drawing No.	Circuit diagram No.
	2030	124	43	150	-40 to +65	+65	0,83	M15	SB10
	2031	159	38	193					
	2032	198	34	240					
	2033	248	30	301					
	2034	306	27	371					
	2035	378	25	458					
	2036	467	23	566					
	2037	566	21	686					
	2038	692	19	839					

When selecting an intrinsically safe power supply, the permissible maximum values according to the Certificate of Conformity PTB No. Ex-95.D.2178 should be taken into account. On the other hand, the low effective inductivity and capacity can be ignored.

### Solenoid actuators with FM-approval

Intrinsically safe: IS/I, II, III/1/ABCDEFGH/ T6 Ta = 65 °C; I/O AEx ia IIC/ T6 Ta = 65 °C - 0588672/B; Entity  
Nonincendive: NI/II/2/ABCD/ T6 Ta = 65 °C; S/II,III/2/FG/T6 Ta = 65 °C; NEMA Type 4

Type	Nominal resist. R <sub>v</sub> Coil (Ω)	Min. required switching current (mA)	Resistance R <sub>w 65</sub> Coil* (Ω)	Required voltage at terminal R <sub>w 65</sub>	Ambient temperature (°C)	Max. Fluid- temperature (°C)	Weight (kg)	Dimensional drawing No.	Circuit diagram No.
	2040	124	43	150	-40 to +65	+65	0,83	M16	SB10
	2041	159	38	193					
	2042	198	34	240					
	2043	248	30	301					
	2044	306	27	371					
	2045	378	25	458					
	2046	467	23	566					
	2047	566	21	686					
	2048	692	19	839					

When selecting an intrinsically safe power supply, the permissible maximum values according to the FM-approval should be taken into account. On the other hand, the low effective inductivity and capacity can be ignored.

\* R<sub>w 65</sub> 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 permissible output from intrinsically safe circuits for above solenoids).  
\*\* Certificate of Conformity PTB No. Ex-95.D.2178

\* R<sub>w 65</sub> 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 permissible output from intrinsically safe circuits for above solenoids).

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



Valves with pilot system

Symbol	Part No. *	Line connection	Operation	Operating pressure (bar)		k <sub>v</sub> value (C <sub>v</sub> (US) = k <sub>v</sub> x 1,2)	Weight (kg)	Dimensional drawing No.
				Min.	Max.			
	2638090.208X	G 1/4	Return spring without throttle	2	6	0,9	0,4	M07
	2638092.208X	1/4 NPT						
	2638190.208X	G 1/4	Return spring with throttle	2	6	0,35	0,4	M07
	2638192.208X	1/4 NPT						
	2638290.208X	G 1/4	Double solenoid without throttle	2	6	0,9	0,6	M08
	2638292.208X	1/4 NPT						
	2638390.208X	G 1/4	Double solenoid with throttle	2	6	0,35	0,6	M08
	2638392.208X	1/4 NPT						

Ordering example

2638090. 2080. 001. 00  
 Valve Pilot 5 mW Electr. connection -

\* Please insert code for electrical connection:

- 001 Pg 9
- 002 Pg 11
- 003 M 12 x 1,5
- 004 Round connector

Pilot system

	Part. No.	Rated power P <sub>N</sub>	Voltage at terminal U <sub>N</sub>	Rated current I <sub>on</sub>	Rated current I <sub>off</sub>	Resistance coil R <sub>N</sub>	Max. values EEx i			Type of protection #	Ambient temperature	Circuit diagram No.
							U <sub>0</sub>	I <sub>k</sub>	P <sub>max</sub>			
	2080	5 mW	≥ 5 V	≥ 1 mA	≤ 0,1 mA	5100 Ω	28 V	120 mA	0,75 W	EEx ia IIC T4 EEx ia IIC T6	-40 to +65 °C -40 to +45 °C	SB10
							25,2 V	155 mA	0,75 W			
	2081	50 mW	≥ 10 V	≥ 2,7 mA	≤ 1,3 mA	3700 Ω	28 V	120 mA	0,75 W	EEx ia IIC T4 EEx ia IIC T6	-40 to +65 °C -40 to +45 °C	SB10
							25,2 V	155 mA	0,75 W			
							22 V	224 mA	0,75 W			

# Category 2IIG, EC Type Examination Certificate No. PTB 00 ATEX 2050

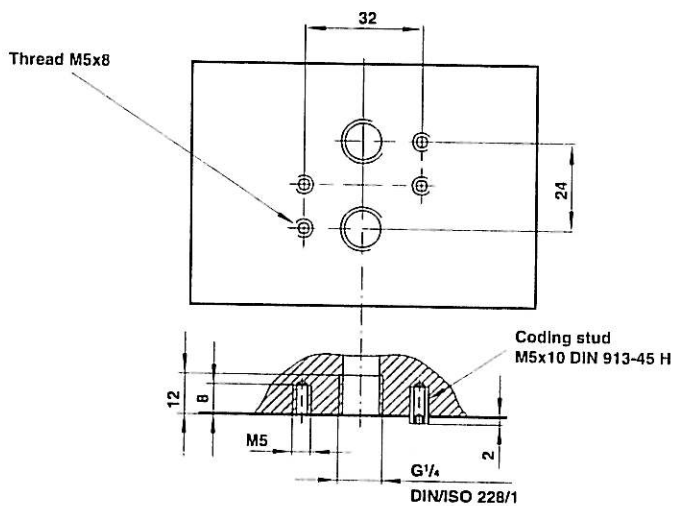


## 3/2 and 5/2 Directional Control Valves

### Pneumatically actuated valves

Symbol	Part No.	Line Connection	Operation	Nominal Size	Operating Pressure (bar)		k <sub>v</sub> -value (C <sub>v</sub> (US)~K <sub>v</sub> x 1,2)	Weight (kg)	Valve Drawing No.
					Min	Max			
	2638060	G1/4	With return spring without throttle	6	0	10	0,9	0,3	M09
	2638062	NPT 1/4							
	2638160	G1/4	With return spring with throttle	6	0	10	0,35	0,3	M09
	2638162	NPT 1/4							

### NAMUR hole pattern



### Mounting parts

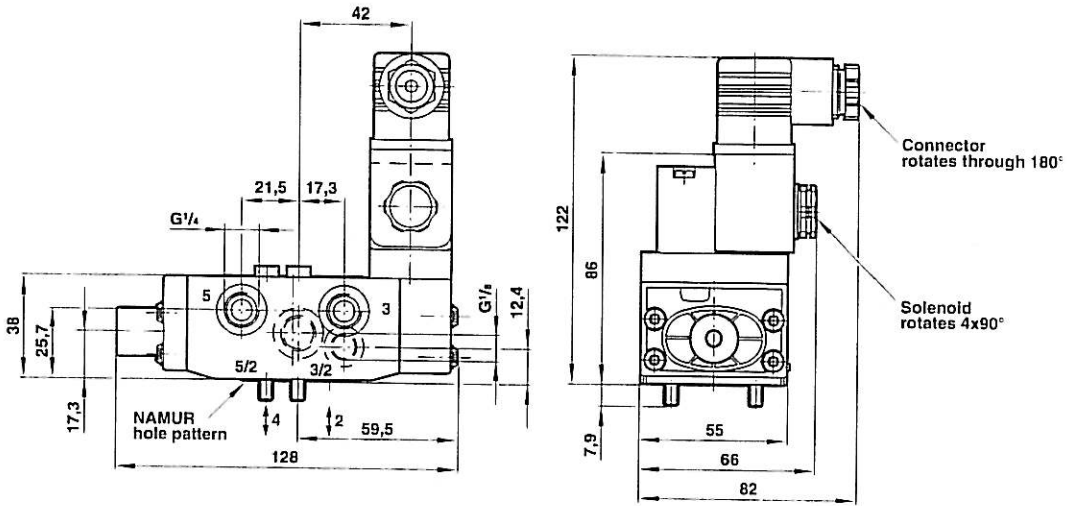
Designation	Part No.	Application	Weight	Ref. Herion Data Sheet
Flange plate	0559857	Direct attachment to pneumatic linear actuators with NAMUR ribbing and for wall mounting, depending on the tubing position	0,49	7502242.06
Yoke	0540593	In conjunction with a flange plate for attachment to pneumatic linear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



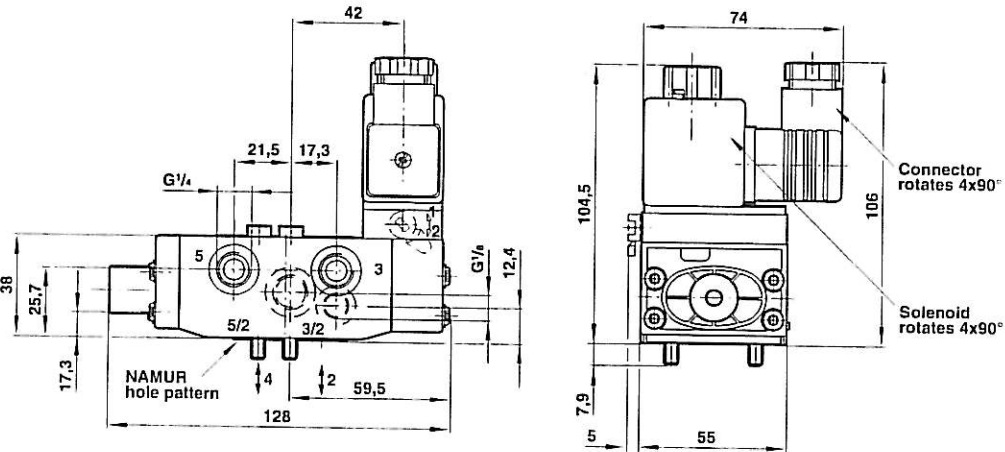


Valve dimensions

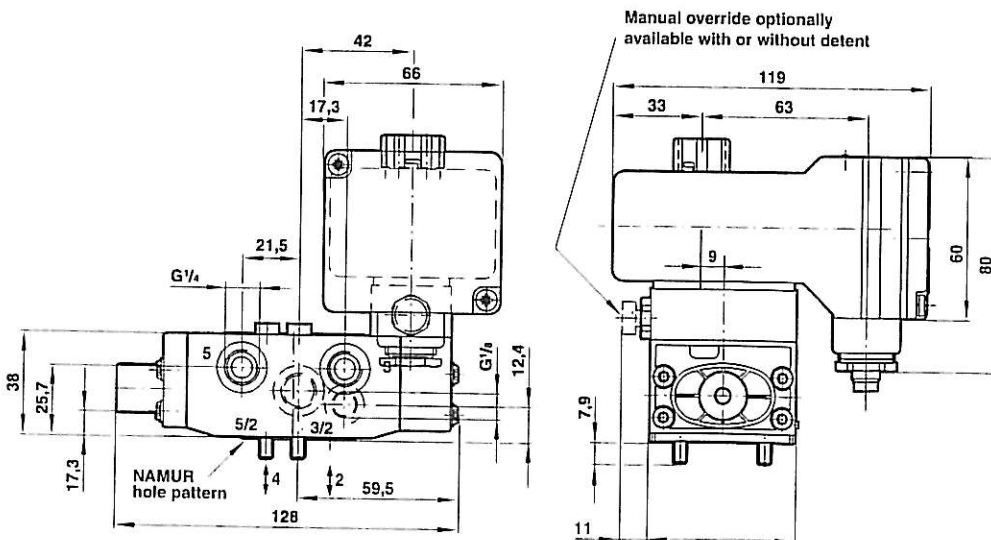
M01



M02



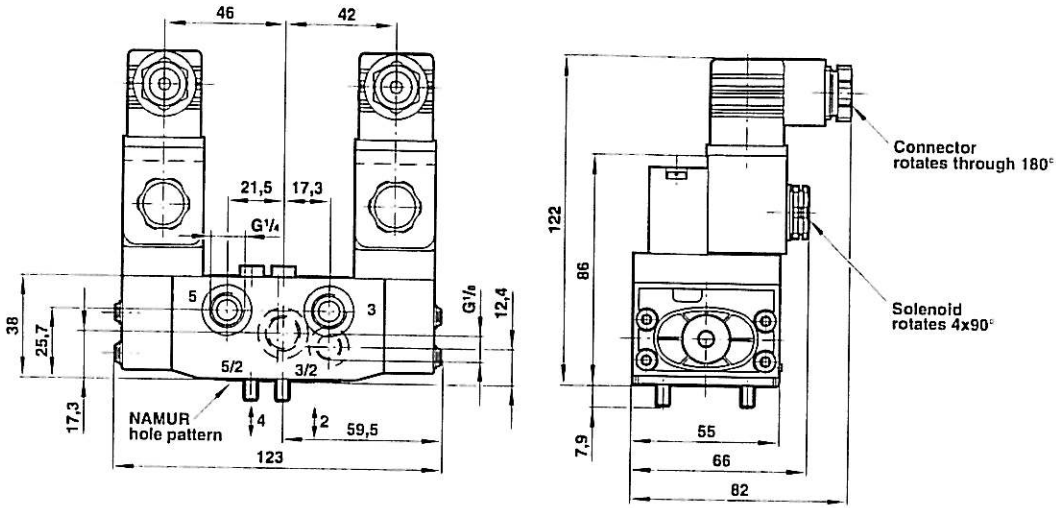
M03



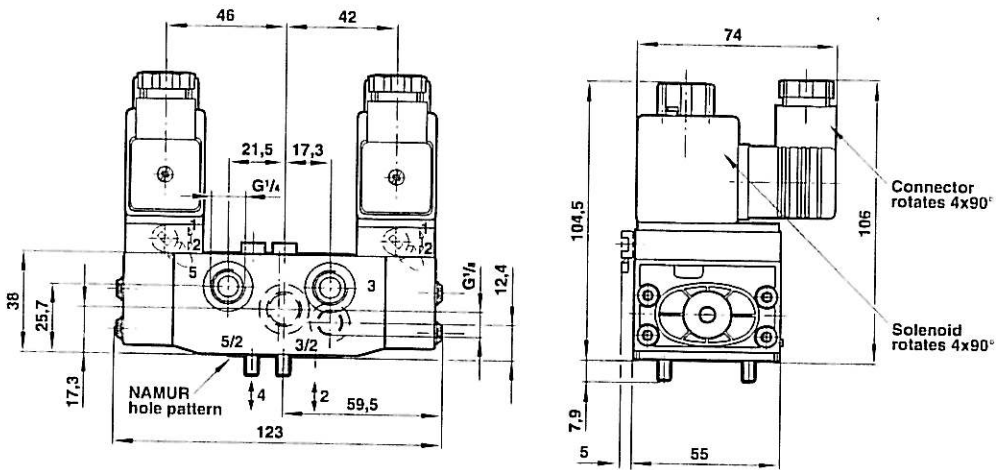


## 3/2 and 5/2 Directional Control Valves

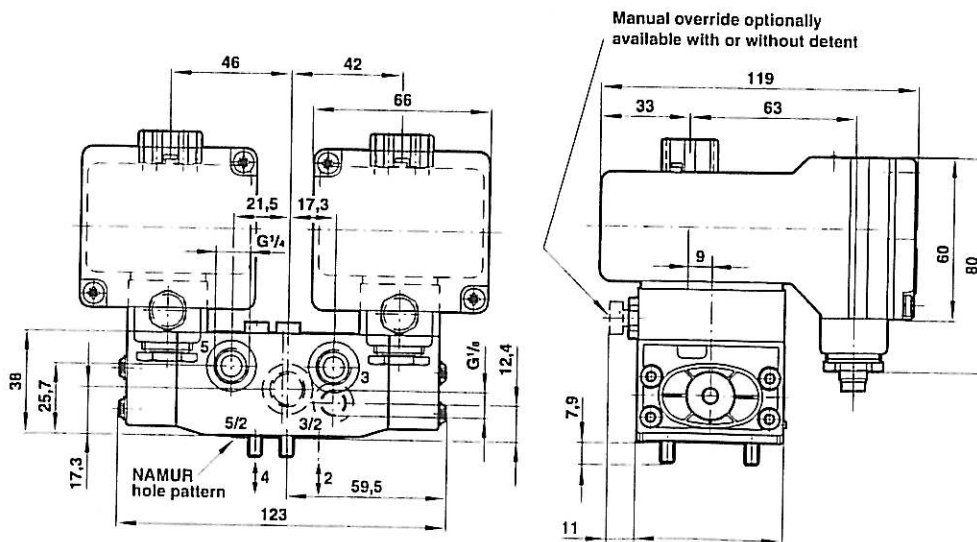
### M04



### M05

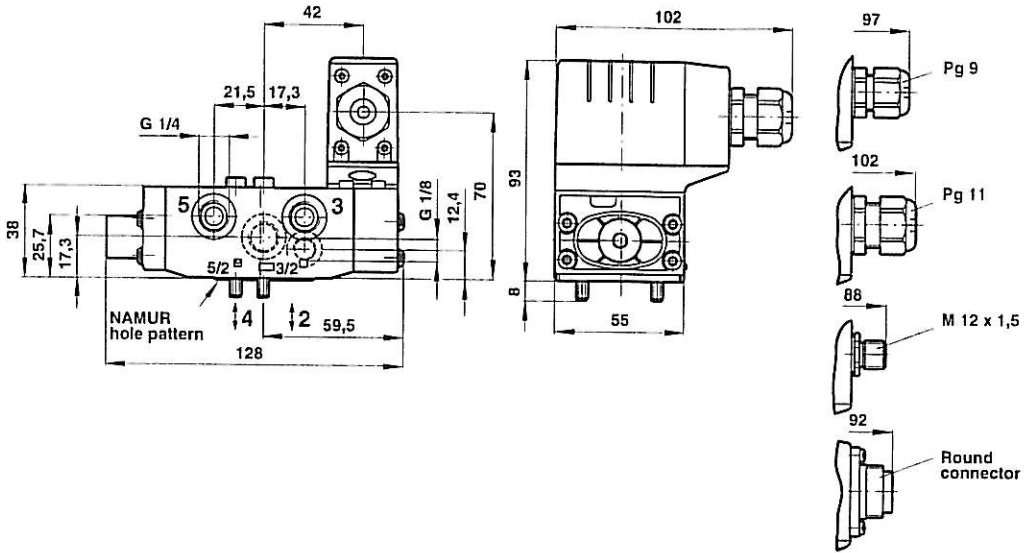


### M06

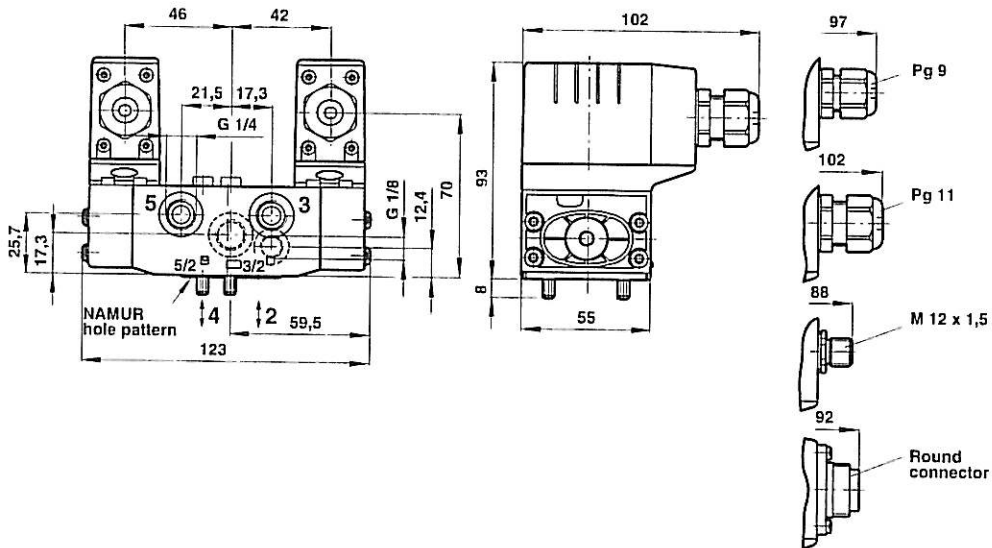




M07



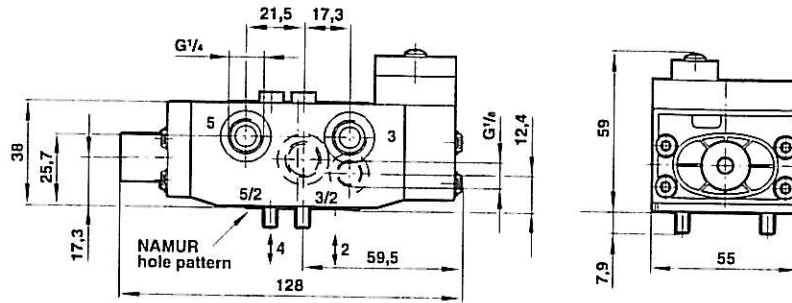
M08





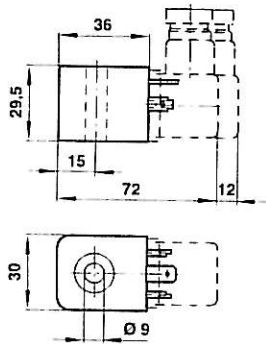
## 3/2 and 5/2 Directional Control Valves

M09

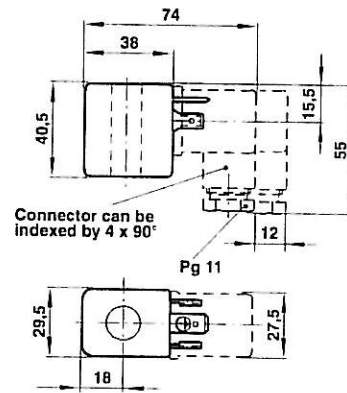


### Solenoid dimensions

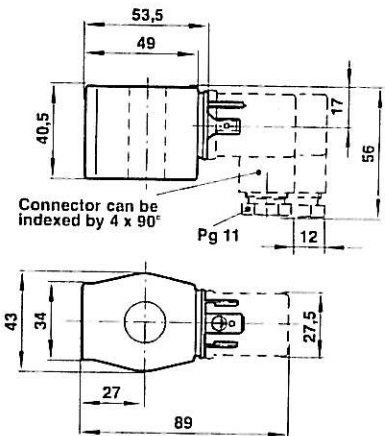
M10



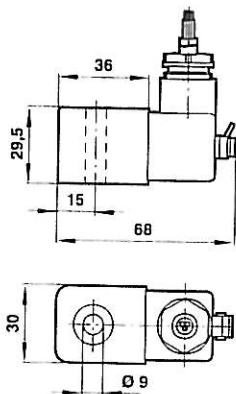
M11



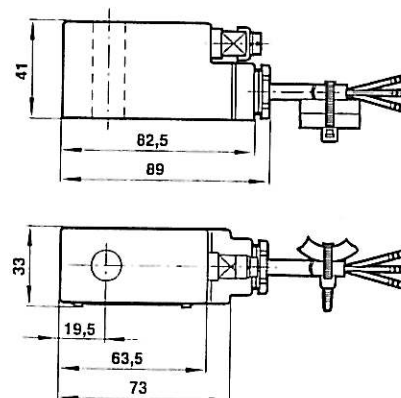
M12



M13

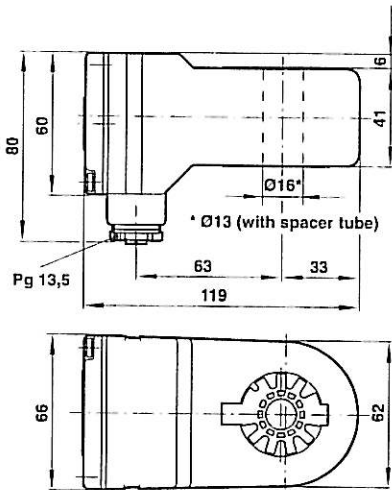


M14

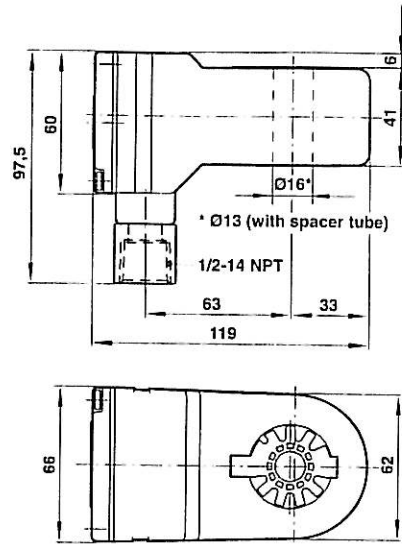




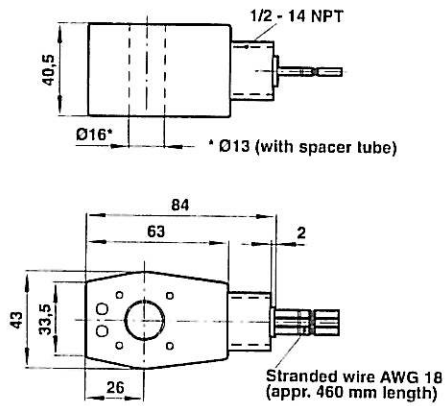
M15



M16

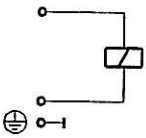


M17

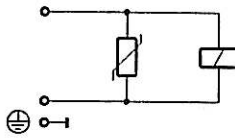


Circuit diagrams

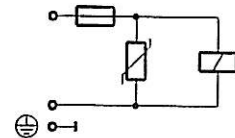
SB01



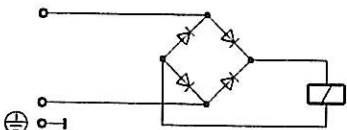
SB02



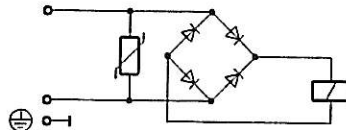
SB04



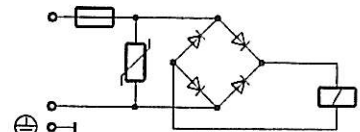
SB05



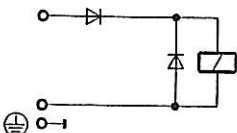
SB06



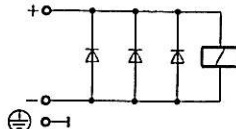
SB07



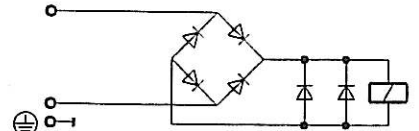
SB08



SB10



SB13

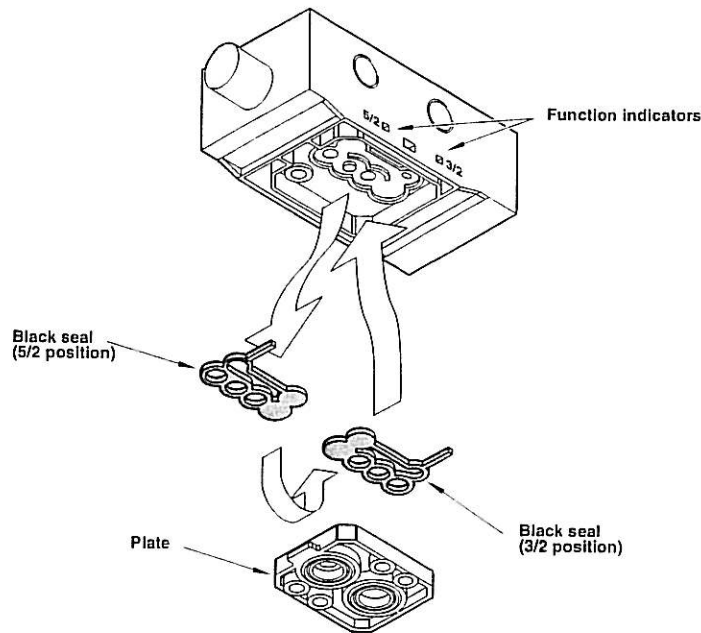




## 3/2 and 5/2 Directional Control Valves

### 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.



### Assembly note

Max. torque for M5-screws for assembling the valve:  $M_A = 3,4^{+0,5} \text{ N}$ .

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 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 where applicable.