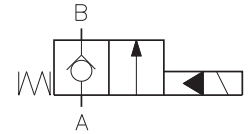


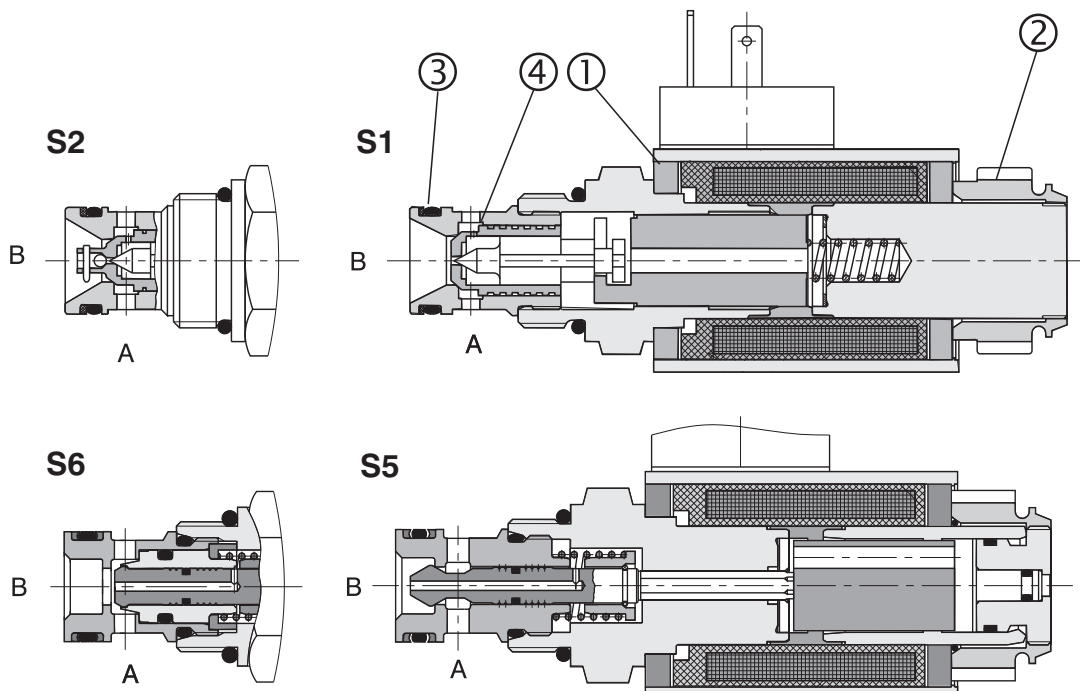
- Screw-in cartridge, modular and in-line design
- Poppet valve - leak-free closing
- High switching reliability after long idling time
- Short switching times
- Installation dimensions size 04 to ISO 4401, CETOP - RP 121H
- Installation dimensions size 06 to ISO 4401, DIN 24 340-A6



Functional Description

2 way directional poppet valves with solenoid operation are designed to check and open the flow of the hydraulic fluid. The opening and closing of the valve is ensured by an electro-hydraulically controlled poppet (4) which sits on the seat (3) and guarantees in its closed position practically leak-free sealing. The operating solenoid (1) is a DC solenoid. For AC

supply the solenoid is provided with a rectifier which is integrated in the DIN connector socket as part of the solenoid. The electrical connector can be turned by 90°. By loosening the retaining nut (2), the solenoid (1) can be turned arbitrarily in the range of 360°, or replaced. The valve body is zinc coated, blocks M and R are phosphate coated.



Ordering Code

ROE3 - **2** /

2 Way Directional Poppet Valve with Solenoid Operation

Seals
no designation NBR
V FPM (Viton)

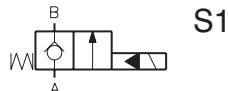
Nominal size

04 **04**
06 **06**

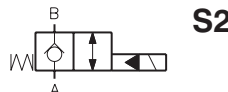
Number of operating positions

Model and functional symbols

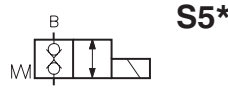
screw-in cartridge



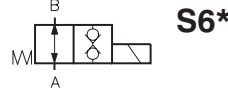
screw-in cartridge



screw-in cartridge



screw-in cartridge



* only for nominal size 04

Model

screw-in cartridge	no designation
modular valve, connection of A2 - A1	MA04
modular valve, connection of B2 - B1	MB04
modular valve, connection of A - B	MX04
modular valve, connection of A - T	MD04
modular valve, connection of B - T	ME04
modular valve, connection of B2 - B1, A2 - A1	MC04
modular valve, connection of B - T, A - T	MF04
modular valve, connection of P - T	MG04
modular valve, connection of A2 - A1	MA06
modular valve, connection of B2 - B1	MB06
modular valve, connection of A - B	MX06
modular valve, connection of A - T	MD06
modular valve, connection of B - T	ME06
modular valve, connection of B2 - B1, A2 - A1	MC06
modular valve, connection of B - T, A - T	MF06
modular valve, connection of P - T	MG06
modular valve, connection of P1 -P2	MP06
tube-mounting valve, thread G3/8	R1
tube-mounting valve, thread G1/2	R2

****Electrical connector, EN 1745301-803**

no designation	without connector
K1	connector without rectifier
K2	connector without rectifier with LED and quenching diode
K3	connector with rectifier
K4	connector with rectifier with LED and quenching diode
K5	connector without rectifier

Type of solenoid coil

E1	with terminal for the connector, EN 1745301-803
E2	with terminal for the connector, EN 1745301-803 and quenching diode
E3	with AMP-Junior-Timer-connectorr
E4	with AMP-Junior-Timer-connectorr and quenching diode
E5	with integrated rectifier and with terminal for the connector, EN 1745301-803

Rated supply voltage of solenoids

01200	12 V DC / 2.41 A
01400	14 V DC / 1.66 A
02100	21 V DC / 1.14 A
02400	24 V DC / 1.16 A
04200	42 V DC / 0.59 A
04800	48 V DC / 0.56 A
06000	60 V DC / 0.41 A
10200	102 V DC / 0.24 A
20500	205 V DC / 0.12 A
02450	24 V AC / 1.44 A / 50 (60) Hz
11550	115 V AC / 0.26 A / 50 (60) Hz
23050	230 V AC / 0.14 A / 50 (60) Hz

The AC coils correspond with E5 type.

****other information on pages 12 and 14**

FOR PREFERRED TYPES SEE BOLD TYPING IN ORDERING CODE, AND TABLE OF PREFERRED TYPES ON PAGE 14

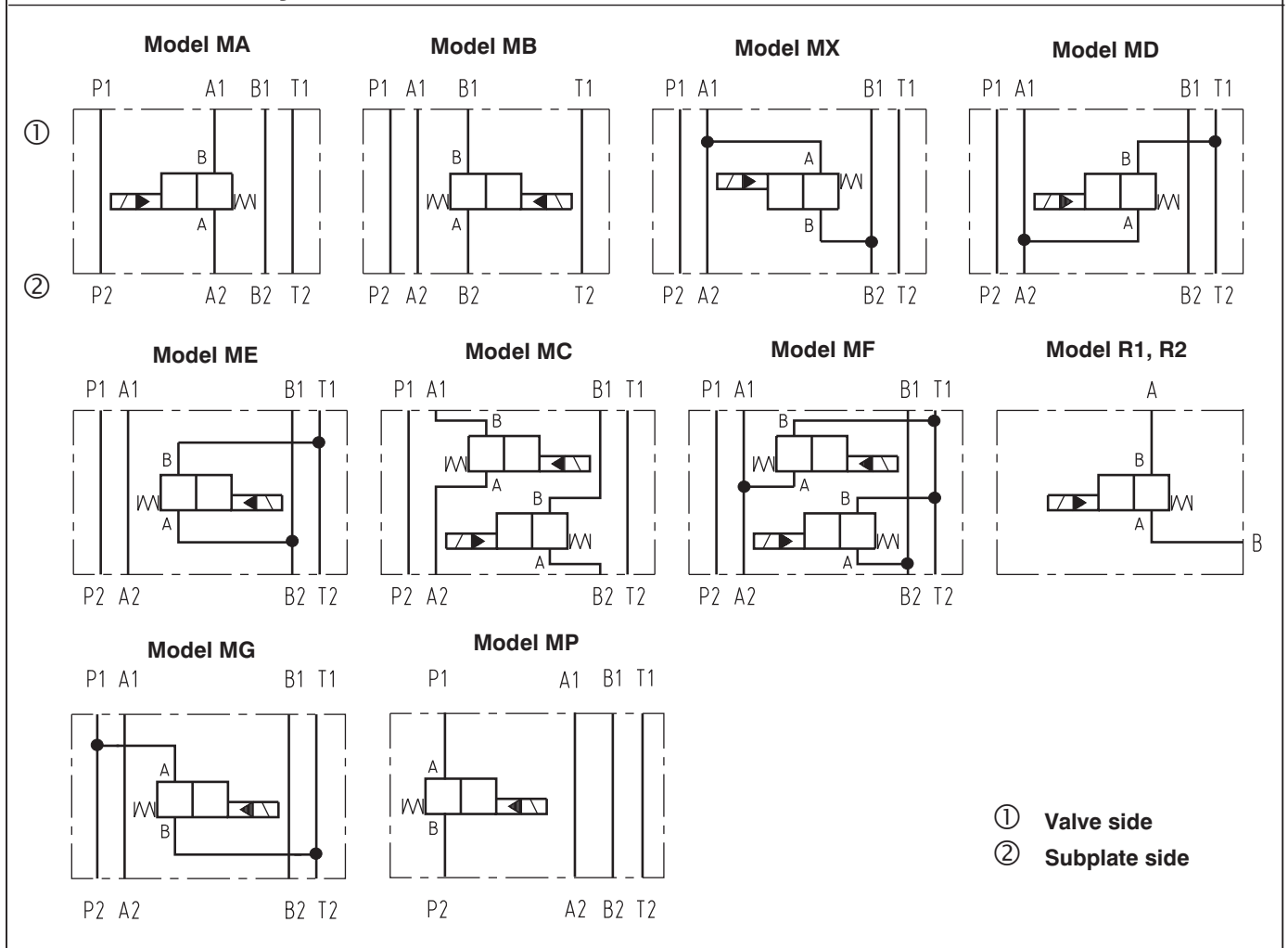
Recommended solenoid coils used with electrical connector with rectifiers - type designation K3, K4

Rated supply source voltage (permissible rated voltage variation ±10 %)	Type designation of the solenoid voltage
24 V AC / 1.44 A / 50 (60) Hz	02100
115 V AC / 0.26 A / 50 (60) Hz	10200
230 V AC / 0.14 A / 50 (60) Hz	20500

Ordering Numbers of Sandwich / Valve Bodies (without screw-in cartridge)

Modular valve - sealing NBR	Ordering number	Modular valve - sealing Viton	Ordering number
MA04-ROE3	405-6000	MA04-ROE3/V	405-6007
MB04-ROE3	405-6001	MB04-ROE3/V	405-6008
MX04-ROE3	405-6002	MX04-ROE3/V	405-6009
MD04-ROE3	405-6003	MD04-ROE3/V	405-6010
ME04-ROE3	405-6004	ME04-ROE3/V	405-6011
MC04-ROE3	405-6005	MC04-ROE3/V	405-6012
MF04-ROE3	405-6006	MF04-ROE3/V	405-6013
MG04-ROE3	405-6018	MG04-ROE3/V	405-6019
MA06-ROE3	404-6000	MA06-ROE3/V	404-6007
MB06-ROE3	404-6001	MB06-ROE3/V	404-6008
MX06-ROE3	404-6002	MX06-ROE3/V	404-6009
MD06-ROE3	404-6003	MD06-ROE3/V	404-6010
ME06-ROE3	404-6004	ME06-ROE3/V	404-6011
MC06-ROE3	404-6005	MC06-ROE3/V	404-6012
MF06-ROE3	404-6006	MF06-ROE3/V	404-6013
MG06-ROE3	404-6015	MG06-ROE3/V	404-6016
MP06-ROE3	404-6017	MP06-ROE3/V	404-6018
Tube-mounting valve		Ordering number	
R1-ROE3		405-6014	
R2-ROE3		405-6015	

Functional Symbols



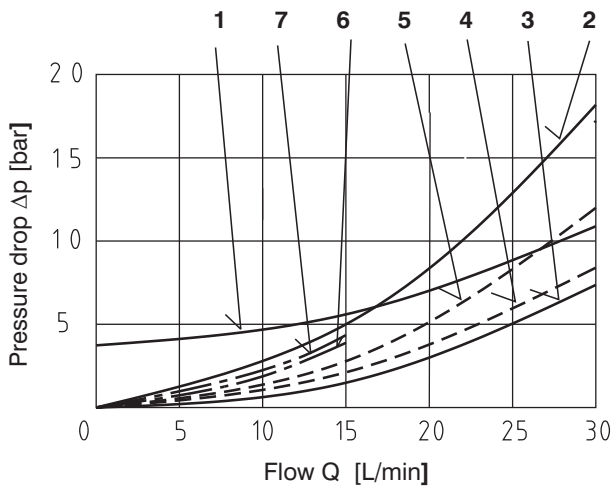
Technical Data

Nominal size	mm	04	06
Maximal flow	L/min	25	63
Maximal operating pressure	bar	250	250
Pressure drop	bar	see Δp -Q characteristics	
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524	
Fluid temperature range (NBR / Viton)	°C	-30 ... +80 / -20 ... +80	
Ambient temperature, max.	°C	+50	
Viscosity range	mm ² /s	20 ... 400	
Maximum degree of fluid contamination		Class 21/18/15 according to ISO 4406 (1999)	
Permissible rated voltage variation	%	DC ±10 AC ±10	DC ±10 AC ±10
Maximal switching frequency	1/h	15 000	10 000
Switching time, ON; at rated voltage and $v = 32 \text{ mm}^2/\text{s}$	ms	DC 25 ... 35 AC 25 ... 35	DC 30 ... 50 AC 30 ... 110
Switching time, OFF; at $v = 32 \text{ mm}^2/\text{s}$	ms	DC 15 ... 25 AC 50 ... 100	DC 80 ... 130 AC 100 ... 150
Duty cycle	%	100	
Service life		10 ⁷	
Enclosure type to EN 60 529		IP 65	
Weight - screw-in cartridge - model MA, MB, MX, MD, ME, MG, MP - model MC, MF - model R1, R2	kg	0.5 1.15 1.65 1.6	0.5 1.45 1.95 1.6
Mounting position		optional	

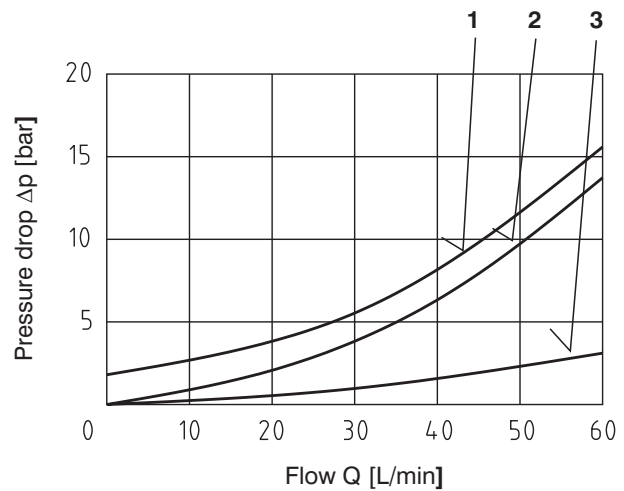
Δp -Q Characteristics

Measured at $v = 32 \text{ mm}^2/\text{s}$

For the screw-in cartridge without valve body



- 1 - S1, S2 (B - A) Solenoid OFF
- 2 - S1, S2 (A - B) Solenoid ON
- 3 - S2 (B - A) Solenoid ON
- 4 - S5 (A - B)
- 5 - S5 (B - A)
- 6 - S6 (A - B)
- 7 - S6 (B - A) flow up to 15 L/min



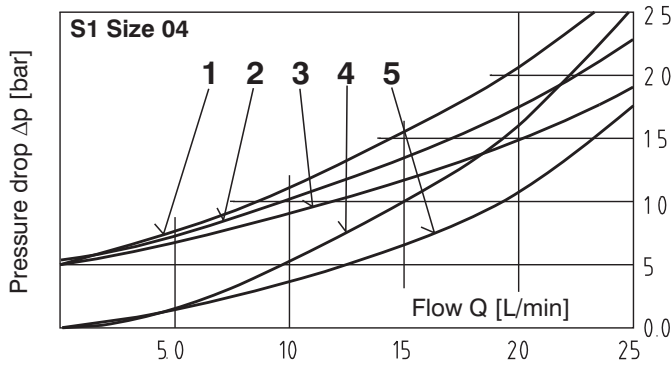
- 1 - S1, S2 (B - A) Solenoid OFF
- 2 - S1, S2 (A - B) Solenoid ON
- 3 - S2 (B - A) Solenoid ON

In connection with a valve body, the additional pressure loss of the valve body is to be considered.

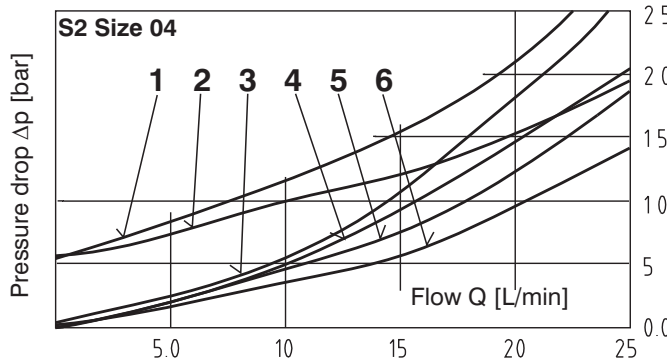
Δp-Q Characteristics

Measured at $v = 32 \text{ mm}^2/\text{s}$

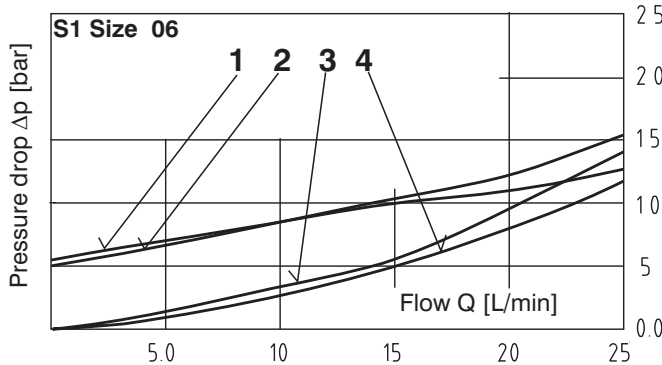
Pressure drops of valves S1, S2 in sandwich blocks Blocks R1, R2 for thread connection



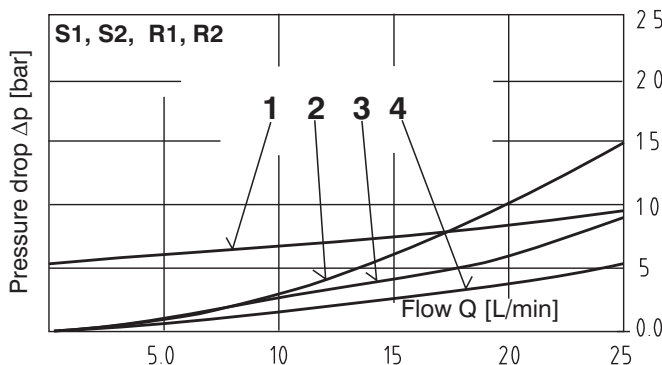
- 1 - MD 04 (T-A)
- 2 - MX 04 (B-A)
- 3 - MA 04 (A1-A2)
- 4 - MX 04 (A-B), MD 04 (A-T), MG 04 (P-T)
- 5 - MA 04 (A2-A1)



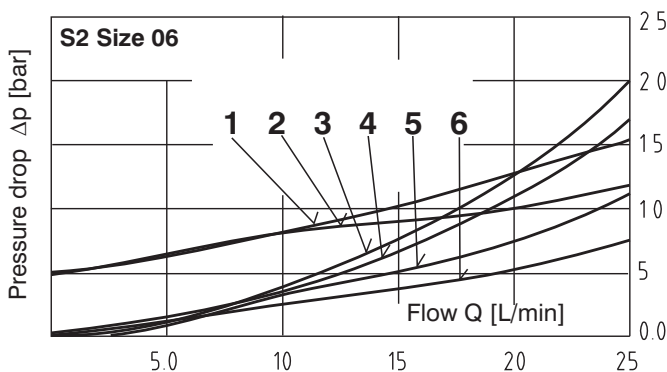
- 1 - MD 04 (T-A) Magnet OFF
MX 04 (B-A) Magnet OFF
- 2 - MA 04 (A1-A2) Magnet OFF
- 3 - MD 04 (A-T)
- 4 - MA 04 (A2-A1)
MD 04 (T-A) Magnet ON
- 5 - MX 04 (B-A) Magnet ON
- 6 - MA 04 (A1-A2) Magnet ON



- 1 - MA 06 (A1-A2), MX 06 (B-A)
- 2 - MD 06 (T-A)
- 3 - MD 06 (A-T), MG 06 (P-T)
- 4 - MA 06 (A2-A1), MX 06 (A-B)



- 1 - S2 R1 (A-B) Magnet OFF
S2 R2 (A-B) Magnet OFF
S1 R1 (A-B), S1 R2 (A-B)
- 2 - S2 R1 (B-A), S2 R2 (B-A)
- 3 - S1 R1 (B-A), S1 R2 (B-A)
- 4 - S2 R1 (A-B) Magnet ON
S2 R2 (A-B) Magnet ON

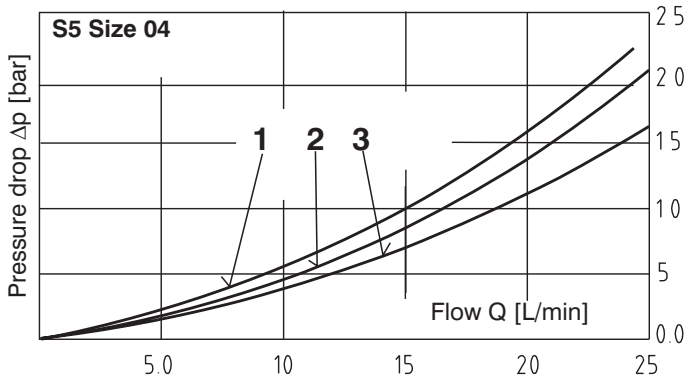


- 1 - MD 06 (T-A) Magnet OFF
- 2 - MX 06 (B-A) Magnet OFF
MA 06 (A1-A2) Magnet OFF
- 3 - MD 06 (A-T)
- 4 - MA 06 (A2-A1), MX 06 (A-B)
- 5 - MD 06 (A-T)
- 6 - MA 06 (A1-A2) Magnet ON
MX 06 (B-A) Magnet ON

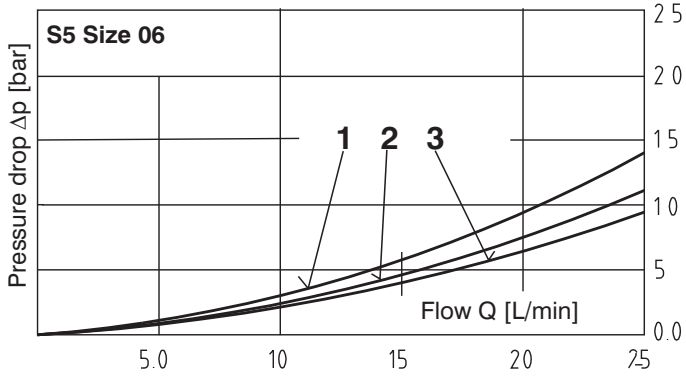
Δp-Q Characteristics

Measured at $v = 32 \text{ mm}^2/\text{s}$

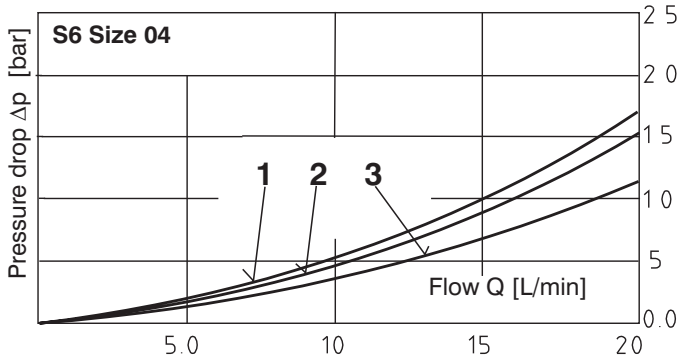
Pressure drops for valves S5, S6 in modular blocks Blocks R1, R2 for thread connection



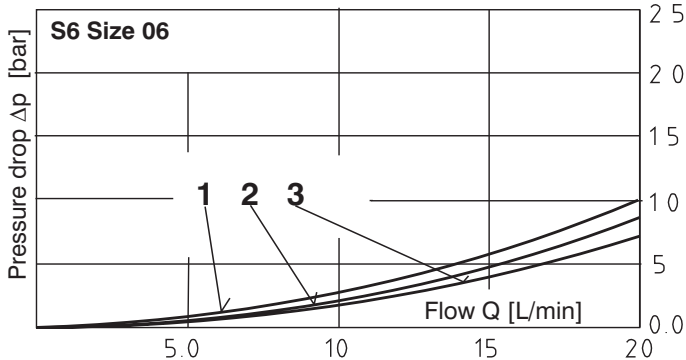
- 1** - MD 04 (A-T, T-A), ME 04 (B-T, T-B)
MF 04 (A-T, T-A)
- 2** - MX 04 (A-B, B-A)
- 3** - MA 04 (A1-A2, A2-A1), MB 04 (B1-B2, B2-B1)



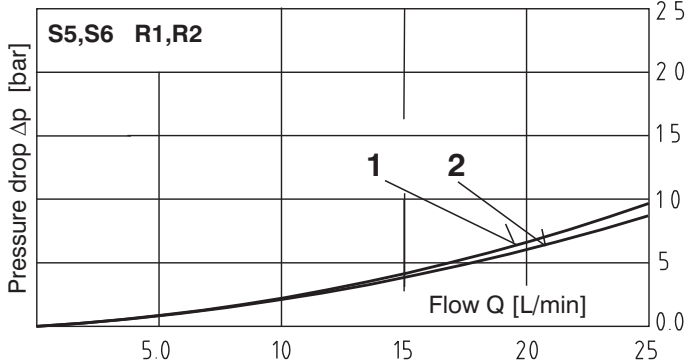
- 1** - MD 06 (A-T, T-A), ME 06 (B-T, T-B)
MF 06 v(A-T, B-T / T-A, T-B)
- 2** - MA 06 (A1-A2), MB 06 v(B1-B2),
MC 06 (A1-A2 / B1-B2), MX (B-A)
- 3** - MA 06 (A2-A1), MB 06 (B1-B2)
MC 06 (A2-A1/B2-B1), MX 06 (A-B)



- 1** - MD 04 (A-T, T-A), ME 04 (T-B, B-T)
MF 04 (A-T, B-T / T-A, T-B)
- 2** - MX 04 (A-B, B-A)
- 3** - MA 04 (A1-A2, A2-A1), MB (B1-B2, B2-B1)
MC 04 (A1-A2, A2-A1 / B1-B2, B2-B1)



- 1** - MD (T-A), ME (T-B), MF (T-A, T-B)
- 2** - MD (A-T), ME (B-T), MF (A-T, B-T)
- 3** - MA (A1-A2, A2-A1), MB (B1-B2, B2-B1)
MC (A1-A2, A2-A1 / B1-B2, B2-B1)



- S5** **1** - R1 (A-B, B-A)
- 2** - R2 (A-B, B-A)

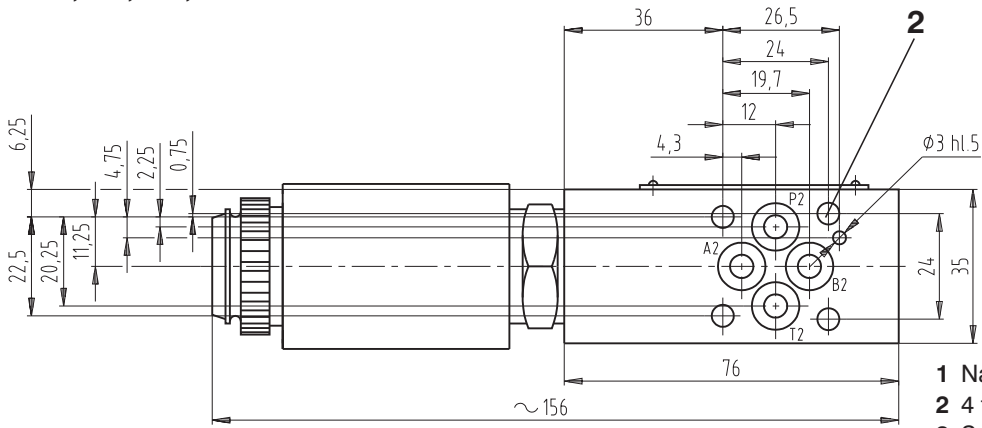
- S6** **1** - R1 (A-B, B-A)
- 2** - R2 (A-B, B-A)

Valve Dimensions

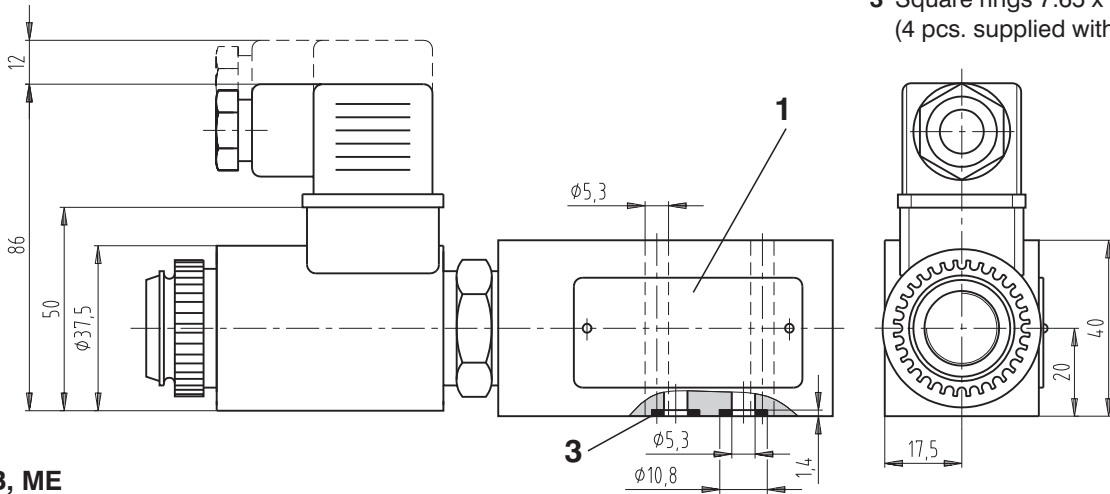
Dimensions in millimetres

Size 04 (Installation dimensions to ISO 4401, CETOP - RP 121H)

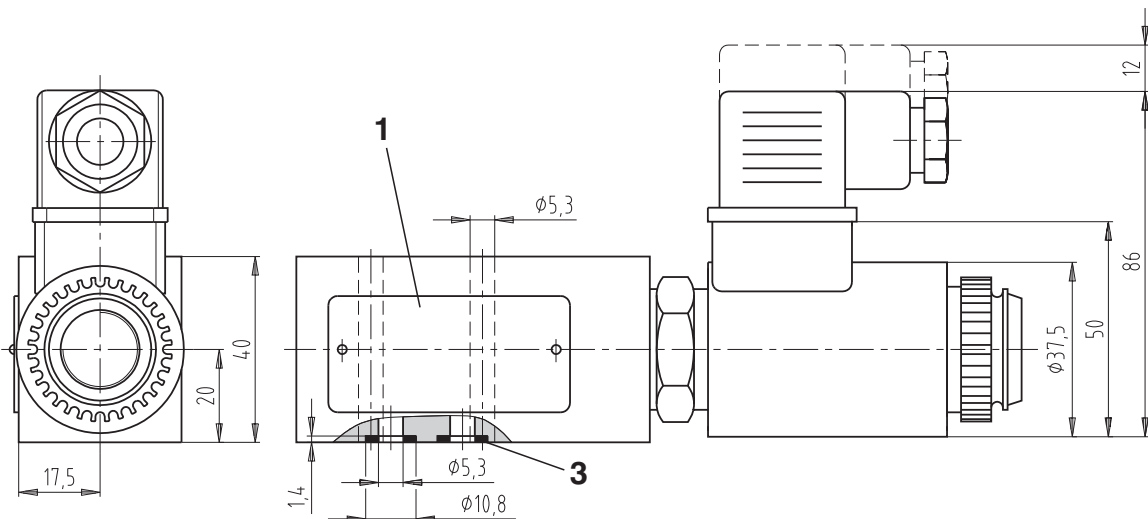
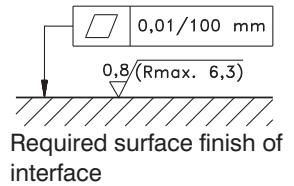
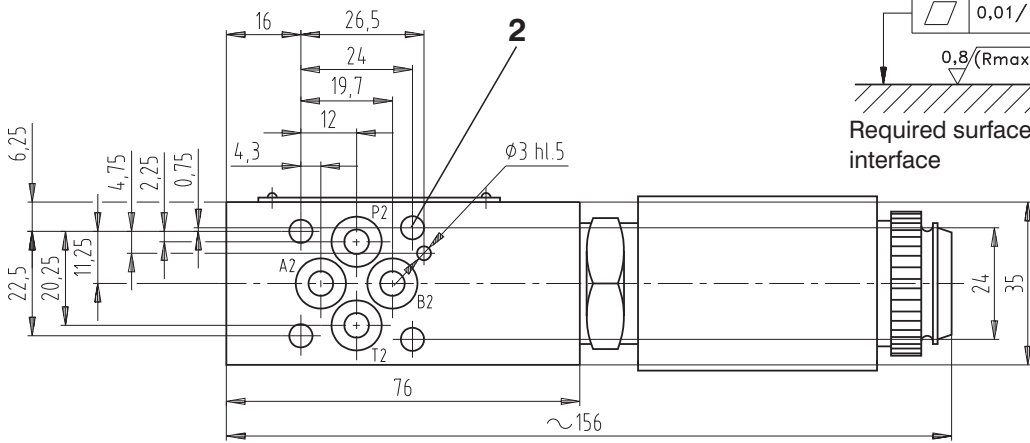
Model MA, MX, MD, MG



- 1 Name plate
- 2 4 through mounting holes
- 3 Square rings 7.65 x 1.68 (4 pcs. supplied with valve)



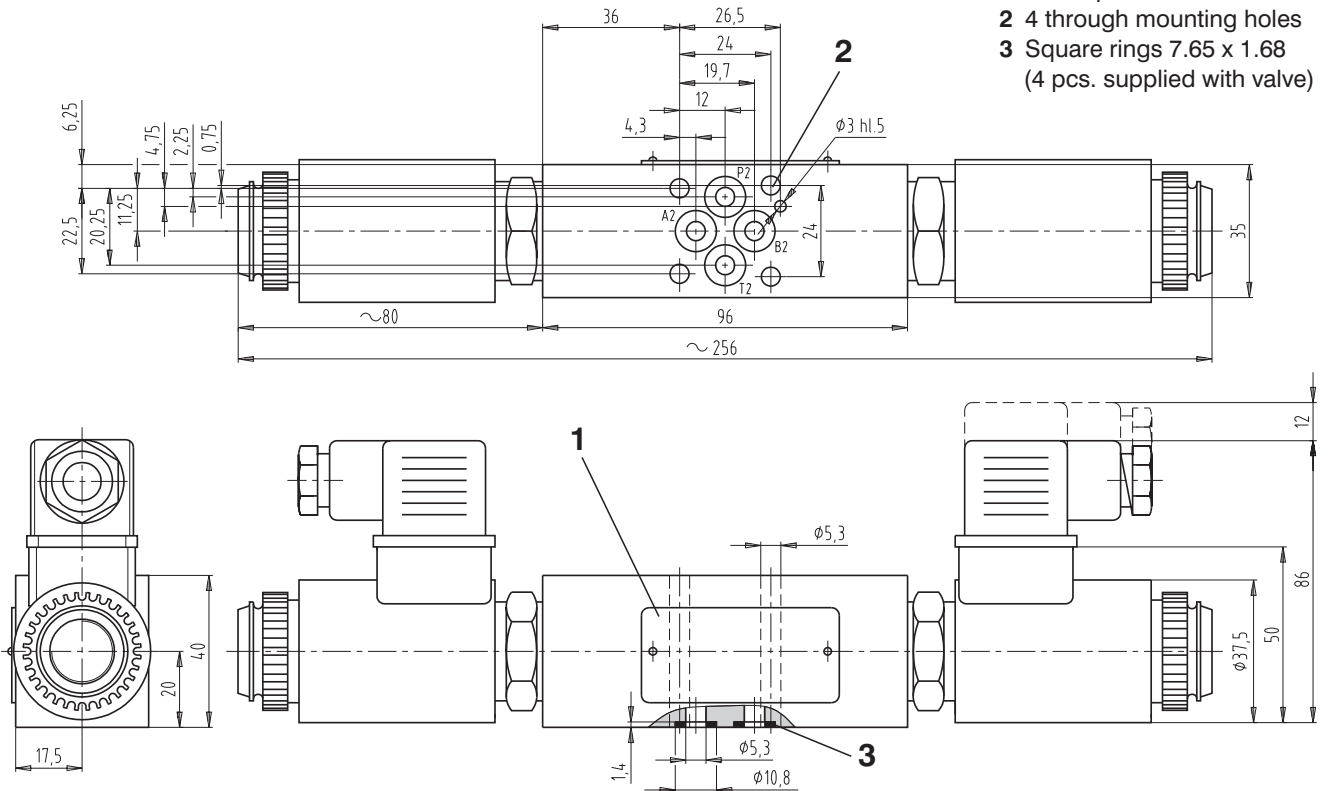
Model MB, ME



Valve Dimensions

Dimensions in millimetres

Model MC, MF



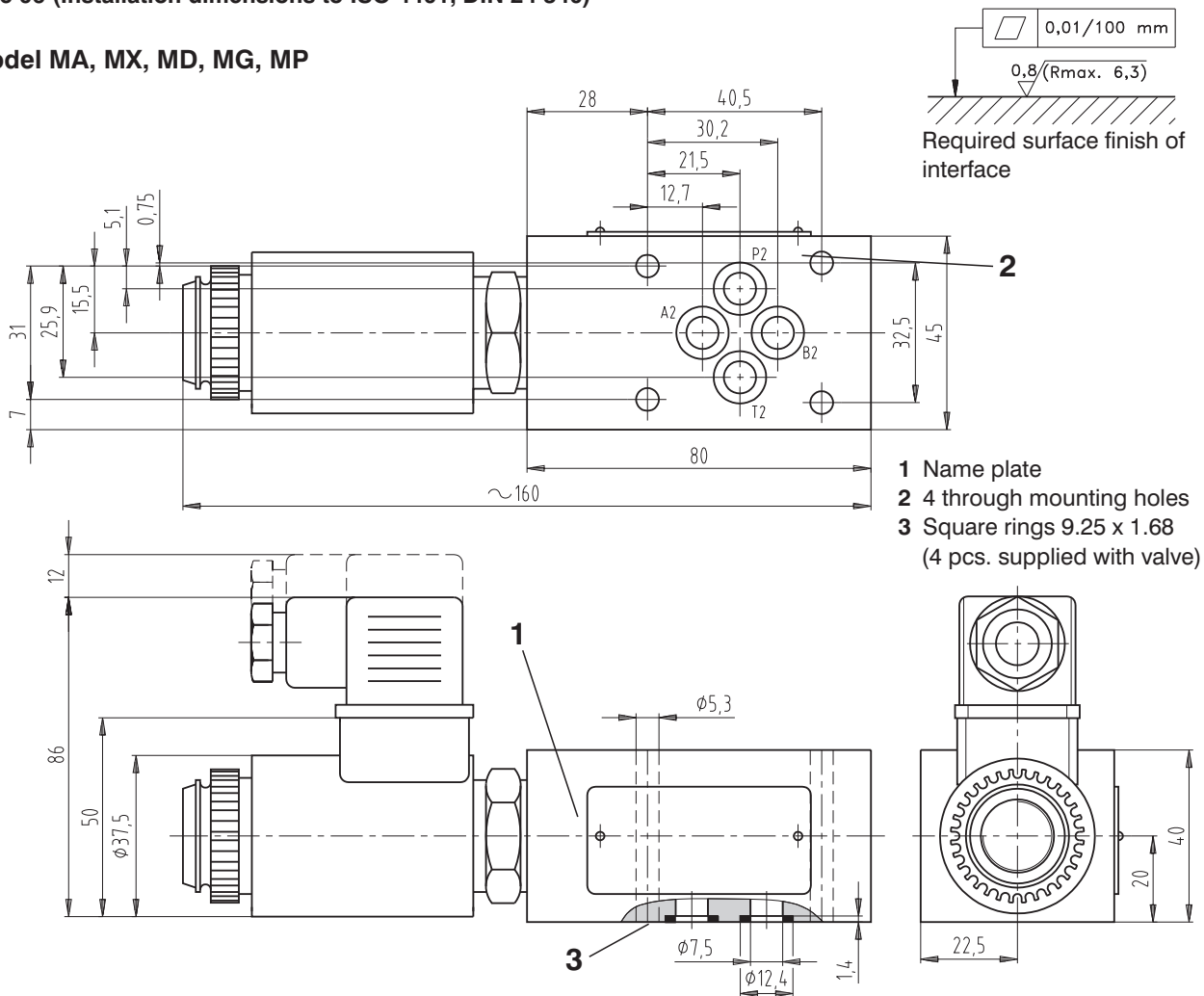
- 1 Name plate
- 2 4 through mounting holes
- 3 Square rings 7.65 x 1.68 (4 pcs. supplied with valve)

Valve Dimensions

Dimensions in millimetres

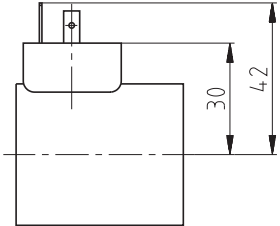
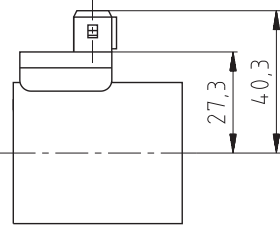
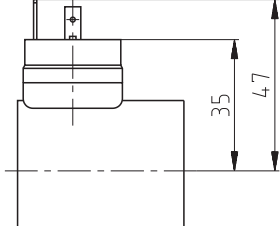
Size 06 (Installation dimensions to ISO 4401, DIN 24 340)

Model MA, MX, MD, MG, MP

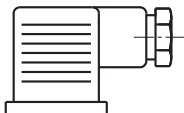


- 1 Name plate
- 2 4 through mounting holes
- 3 Square rings 9.25 x 1.68 (4 pcs. supplied with valve)

Type of the Solenoid Coil

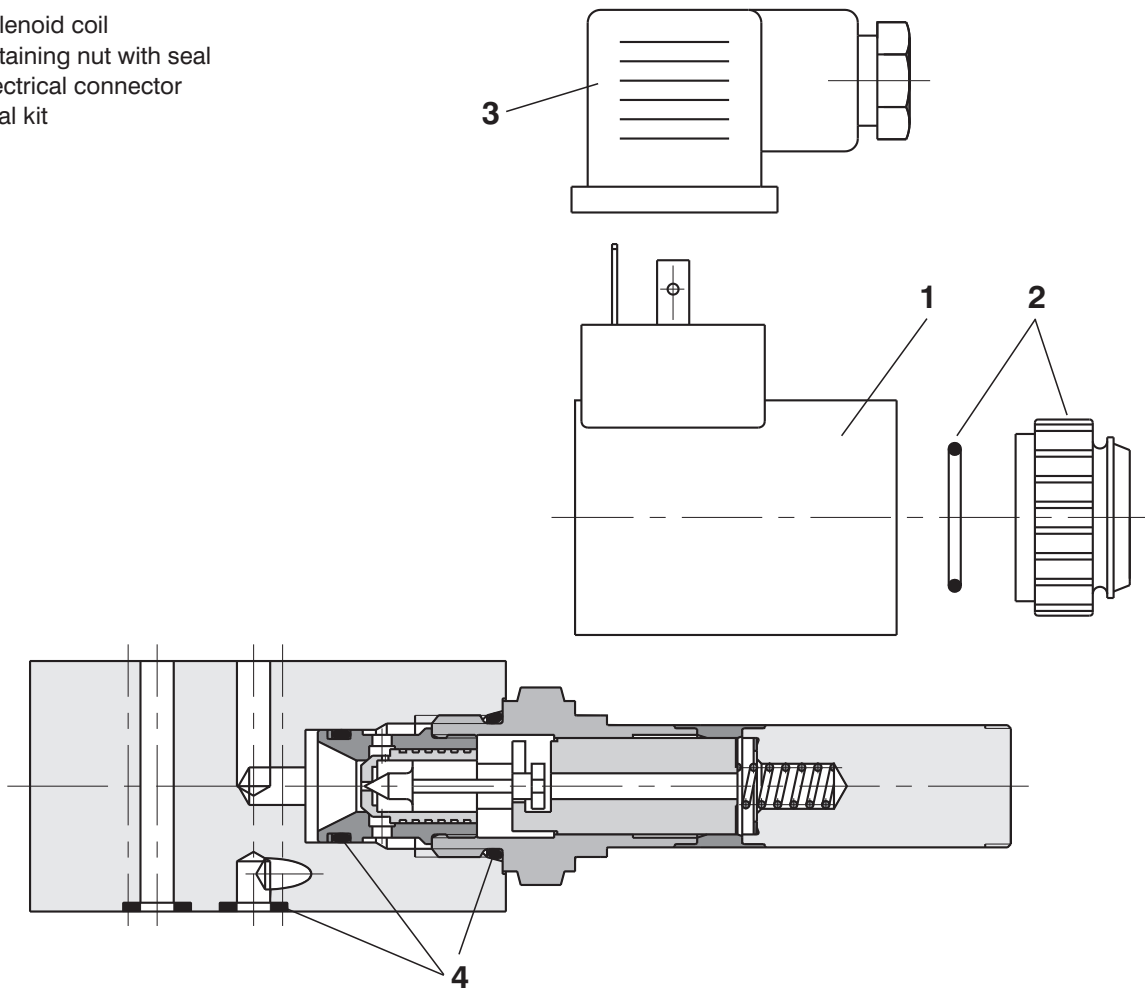
Designation	Dimensional sketch	Description
E1		Solenoid coil with terminal for the electrical connector, EN 175301-803
E2		Solenoid coil with integrated quenching diode (bipolar transil diode) and terminal for the electrical connector, EN 175301-803
E3		Solenoid coil with terminal for AMP electrical connector.
E4		Solenoid coil with integrated quenching diode (bipolar transil diode) and terminal for AMP electrical connector.
E5		Solenoid coil with integrated rectifier and terminal for the electrical connector, EN 175301-803

Electrical Connector, EN 175301-803

Designation	Type	Model	Max. input voltage	
K1	Connector B (black)	without rectifier - M16x1.5 (bushing bore \varnothing 6-8 mm)	230 V AC/DC	
	Connector A (grey)			
K5	Connector B (black)	without rectifier - M16x1.5 (bushing bore \varnothing 4-6 mm)	230 V AC/DC	
	Connector A (grey)			
K2	Connector B (black)	without rectifier with LED and quenching diode - M16x1.5 (bushing bore \varnothing 6-8 mm)	12...24 V DC	
	Connector A (grey)			
K3	Connector B (black)	with rectifier - M16x1.5 (bushing bore \varnothing 6-8 mm)r	230 V AC	
	Connector A (grey)			
K4	Connector B (black)	with rectifier with LED and quenching diode - M16x1.5 (bushing bore \varnothing 6-8 mm)	230 V AC	
	Connector A (grey)			

Spare Parts

- 1 Solenoid coil
- 2 Retaining nut with seal
- 3 Electrical connector
- 4 Seal kit



Solenoid coil

Type designation of the coil voltage	Type of the coil				
	E1	E2	E3	E4	E5
	Ordering number				
01200	936-0022	936-0690	936-0670	936-0680	
01400	936-0650	936-0691	936-0673	936-0681	
02100	936-0651	936-0692	936-0674	936-0682	
02400	936-0026	936-0693	936-0672	936-0683	
04200	936-0653	936-0695	936-0676	936-0685	
04800	936-0031	936-0696	936-0677	936-0686	
06000	936-0654	-	-	-	
10200	936-0655	-	-	-	
20500	936-0036	-	-	-	
02450					
11550					936-2175
23050					936-2185

Solenoid retaining nut with seal		
Type of the nut	Seal ring	Ordering number
Standart nut for S1, S2	18 x 1,5	403-1001
Standard nut for S5, S6	18 x 1.5	486-9010

Electrical connector, EN 175301-803		
Type designation	Connector A grey	Connector B black
	Ordering number	
K1	936-9902	936-9901
K5	936-9906	936-9905
K2	936-9908	936-9907
K3	936-9904	936-9903
K4	936-9910	936-9909

Seal kit			
Type	Model	Dimensions, number	Ordering number
Screw-in cartridge ROE3	O-ring - NBR 80	19.4 x 2.1 (1 pc.)	405-9001
	O-ring - NBR 80	14 x 1.78 (1 pc.)	
	Back-up ring	14.73 x 17.43 x 1.14 (1 pc.)	
Screw-in cartridge ROE3	O-ring - Viton	19.4 x 2.1 (1 pc.)	404-9002
	O-ring - Viton	14 x 1.78 (1 pc.)	
	Back-up ring	14.73 x 17.43 x 1.14 (1 pc.)	
Subplate size 04	Square ring - NBR 70	7.65 x 1.68 (4 pcs.)	405-9004
Subplate size 06	Square ring - NBR 70	9.25 x 1.68 (4 pcs.)	404-9003
Subplate size 04	O-ring - Viton	7.65 x 1.68 (4 pcs.)	405-9005

Preferred Types of Valves

Type	Ordering Number	Type	Ordering Number
ROE3-042S2/01200E1	405-0526	ROE3-042S5/01200E1	406-0020
ROE3-042S2/02400E1	405-0506	ROE3-042S5/02400E1	406-0021
ROE3-042S2/23050E5	405-0544	ROE-042S5/23050E5	406-0012
ROE3-062S2/01200E1	404-1042	ROE3-042S6/01200E1	406-0040
ROE3-062S2/02400E1	404-1043	ROE3-042S6/02400E1	406-0041
ROE3-062S2/23050E5	404-1118	ROE3-042S6/23050E5	406-0121
R2-ROE3	405-6015		

Caution!

- The packing foil is recyclable.
- The protecting plate can be returned to the manufacturer.
- Mounting studs must be ordered separately. Tightening torques are 5 Nm (size 04) and 8.9 Nm (size 06).
- The technical information regarding the product presented in this catalogue is for descriptive purposes only. It should not be construed in any case as a guaranteed representation of the product properties in the sense of the law.

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