710-6567

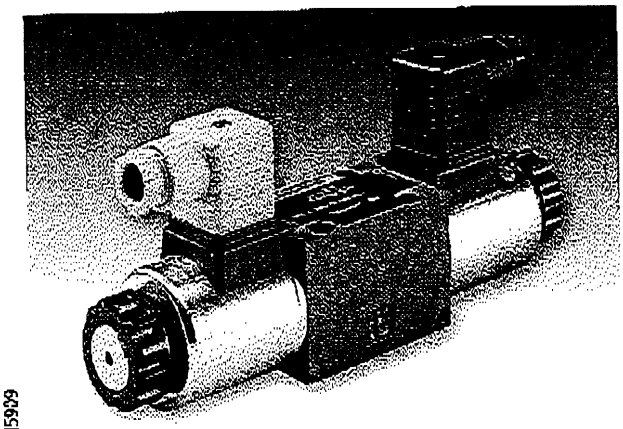
RE 23 178-00/09.99

Replaces: 10.95

engineering
Mannesmann
Rexroth

4/3, 4/2 and 3/2 directional valves with wet pin DC solenoids, Type WE 6 ../.E...SO407

Nominal size 6
Series 6X
Maximum operating pressure 315 bar
Maximum flow 60 L/min



H5939

Type 4WE 6 E6X/EG24N9K4/VSO407 with plug-in connector

Overview of contents

Features

- Direct solenoid actuated directional spool valve and **a reduced electrical power consumption**
- Porting pattern to DIN 24 340 form A, ISO 4401 and CETOP–RP 121 H, For subplates see catalogue sheet RE 45 052 (separate order)
- Wet pin DC solenoids (24V/DC) with removable coil
- Solenoid coil can be rotated through 90 °
- It is not necessary to open the pressure tight chamber when changing the coil
- Electrical connections as individual connections
- With protected hand override

Ordering details

2	3	4	6	7	9	10	11	12	15	19	22	23
	WE	6		6X/		E	G24	N9	K4/		V	SO407

3 service ports = 3
4 service ports = 4

Nominal size 6 = 6

Symbols e.g. C, E, EA, EB etc. for possible designs see below

Series 60 to 69 = 6X
(60 to 69: unchanged installation and connection dimensions)

Spring return = No code

Solenoid wet pin (oil immersed) with removable coil = E

24 V DC = G24

1) Plug-in connectors must be ordered separately (see below)

V = FKM seals

⚠ Attention!
The compatibility of the seals and pressure fluid has to be taken into account!

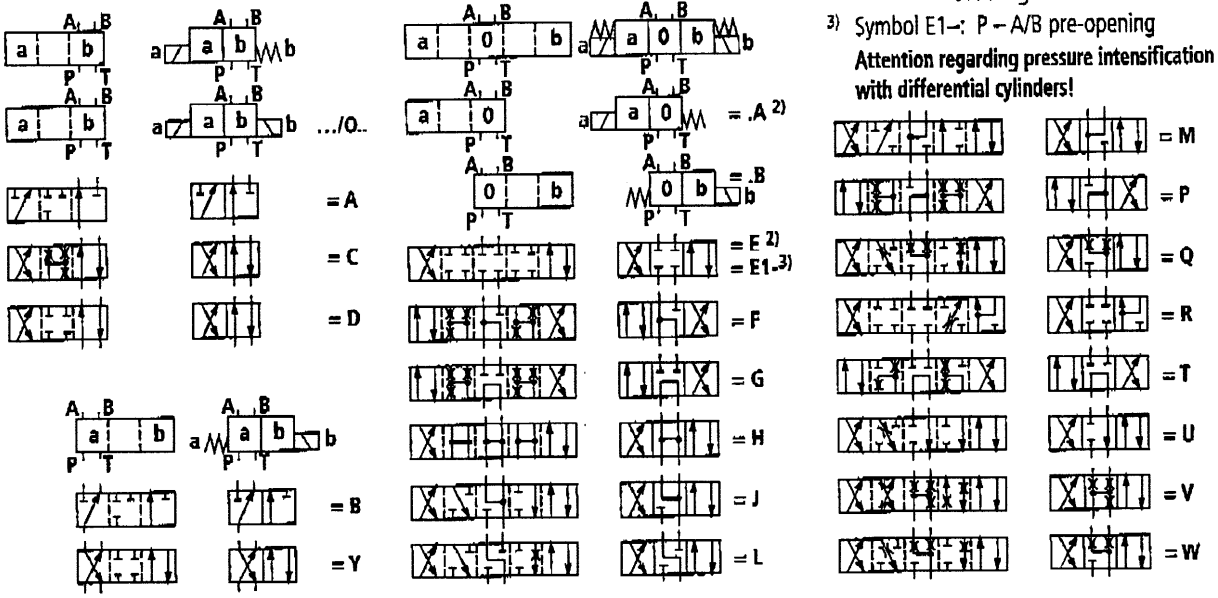
No code = Without cartridge throttle
B 08 = Throttle Ø 0.8 mm
B 10 = Throttle Ø 1.0 mm
B 12 = Throttle Ø 1.2 mm
Used where the flow is > than the performance limit of valve, active in P line

Electrical connections

K4 1) = Individual connection; with component plug DIN 43 650-AM2, without plug-in connector

N9 = **With protected** hand override

Symbols

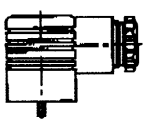


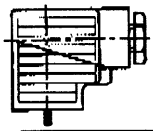
2) **Example:** Spool E with switched position "a" Ordering detail **..EA..**

3) Symbol E1–: P – A/B pre-opening
Attention regarding pressure intensification with differential cylinders!

Ordering details: plug-in connectors to DIN 43 650 A and ISO 4400 for component plug "K4"

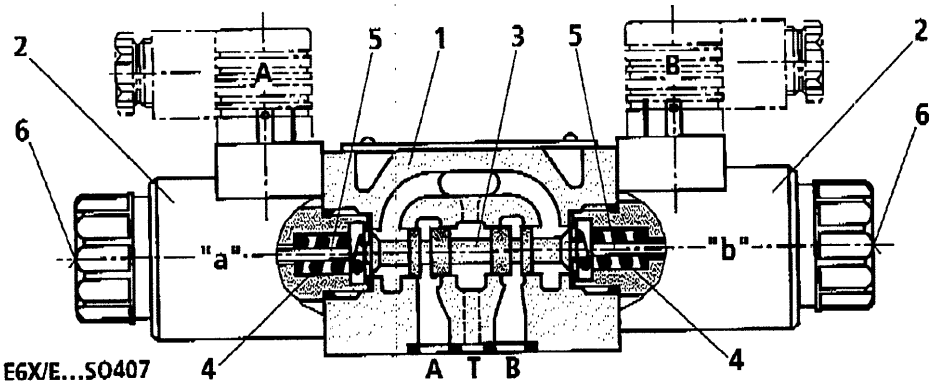
For further plug-in connectors see RE 08 006





Valve side	Colour	Material no. Without circuitry	With indicator light 12 ... 240 V	With indicator light and Z-diode protective circuit 24 V
a	grey	00074683	–	–
b	black	00074684	–	–
a/b	black	–	00057292	00310995

Function, section



Type 4WE 6 E6X/E...SO407

Type WE directional valves are solenoid operated directional spool valves. They control the start, stop and direction of flow.

Essentially the directional control valves consist of housing (1), one or two solenoids (2), the control spool (3), and one or two return springs (4).

In the de-energised condition the control spool (3) is held in the neutral or initial position by means of return springs (4) (except for impulse spools). The control spool (3) is actuated via wet pin solenoids (2). **To guarantee satisfactory operation care should be taken to ensure that the solenoid pressure chamber is filled with oil.**

The force of the solenoids (2) acts via the plunger (5) on the control spool (3) and pushes this from its neutral position to the required end position. This gives free-flow from P to A and B to T or P to B and A to T.

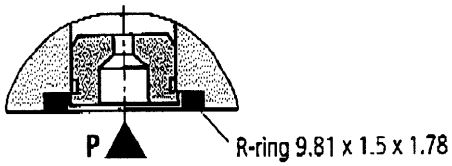
When solenoid (2) is de-energised, the control spool (3) is returned to its neutral position by means of the return springs (4).

A hand override (6) allows movement of the control spool (3) without energising the solenoid.

Cartridge throttle (type 4WE 6..6X/.../B..)

If, due to particualr operating conditions during the switching sequences, flows can occur which are larger than the valve performance curves allow, then it will be necessary to fit a cartridge throttle.

This is inserted in the P channel of the directional control valve.



Technical data (for applications outside these parameters, please consult us!)

General

Installation			optional
Max. ambient temperature		°C	50
Weight	Valve with 1 solenoid	kg	1.45
	Valve with 2 solenoids	kg	1.95

Hydraulic

Max. operating pressure	Ports A, B, P	bar	315
	Port T	bar	210 with symbols A and B, port T must be used as a drain port if the operating pressure is above the permitted tank pressure.
Max. flow		L/min	60
Flow cross-section (switched position 0):			
	For symbol Q	mm^2	approx. 6 % of the nominal cross-section
	For symbol W	mm^2	approx. 3 % of the nominal cross-section
Pressure fluid			mineral oil (HL, HLP) to DIN 51 524 [1]; fast bio-degradable pressure fluids to VDMA 24 568 (also see RE 90 221); HETG (rape seed oil) [1]; HEPG (polyglycol) [2]; HEES (synthetic ester) [2]; other pressure fluids on request
Pressure fluid temperature range			– 20 to + 80 (FKM seals)
Viscosity range		mm^2/s	2.8 to 500
Degree of contamination			maximum permissible degree of contamination of the pressure fluid is to NAS 1638 class 9. We, therefore, recommend a filter with a minimum retention rate of $\beta_{10} \geq 75$.

Electrical

Voltage type			DC
Available voltages		V	24
Voltage tolerance (nominal voltage)		%	±10
Power consumption		W	8
Duty			continuous
Switching time to ISO 6403	ON	ms	up to 60
	OFF	ms	up to 30
Switching frequency		cycles/h	up to 7200
Protection to DIN 40 050			IP 65
Max. coil temperature		°C	110

[1] Suitable for NBR **and** FKM seals

[2] **Only** suitable for FKM seals

With electrical connections the protective conductor (PE ⏚) must be connected according to the relevant regulations.

Performance limits (measured at $\nu = 41$ mm²/s and $\vartheta = 50$ °C)

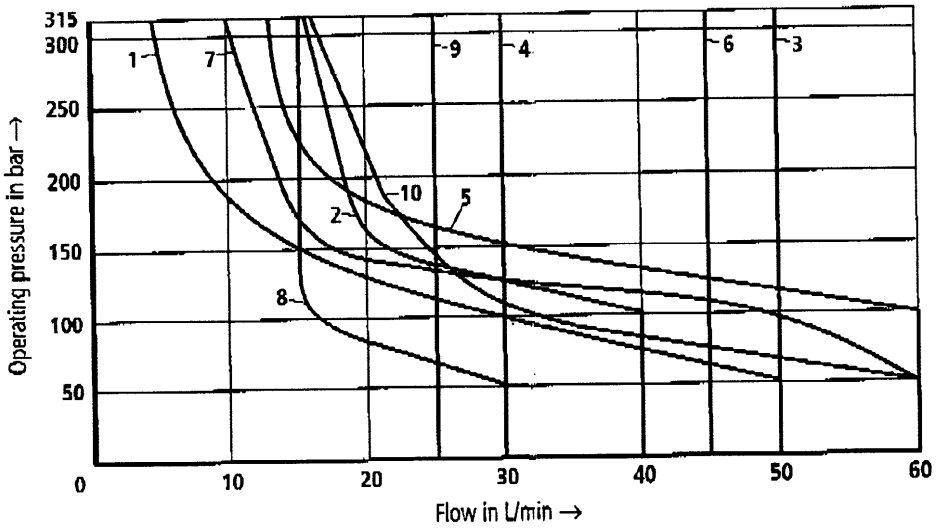
⚠ Attention!

The given switching power limits are for applications with two flow directions (e. g. from P to A and simultaneous flow from B to T).

Due to the flow forces active within the valves the permissible switching power limit may be significantly less if there is only one direction of flow (e. g. from P to A and port B blocked)!

(Please consult us for applications of this kind.)

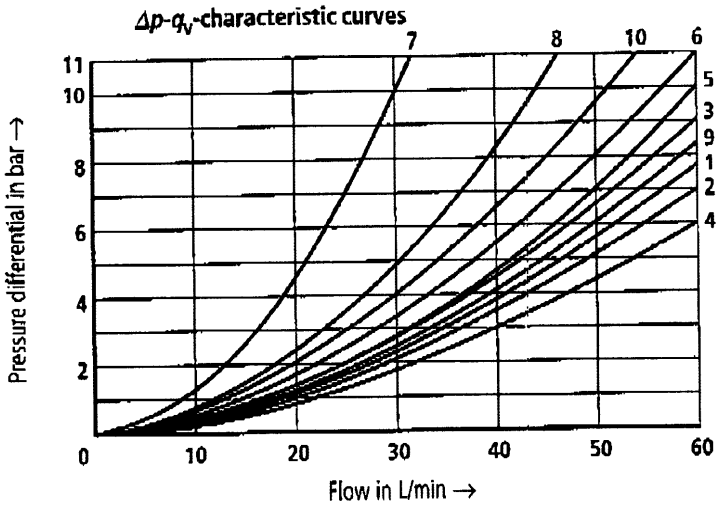
The switching power limits were measured with the solenoids at operating temperature, 10% under voltage and without tank back pressure.



Char. curve	Symbol
1	A
2	C, D, Y
3	M
4	G
5	E
6	H
7	J
8	V
9	T
10	R [1]

[1] Return flow from actuator to tank

Characteristic curves (measured at $\nu = 41$ mm²/s and $\vartheta = 50$ °C)



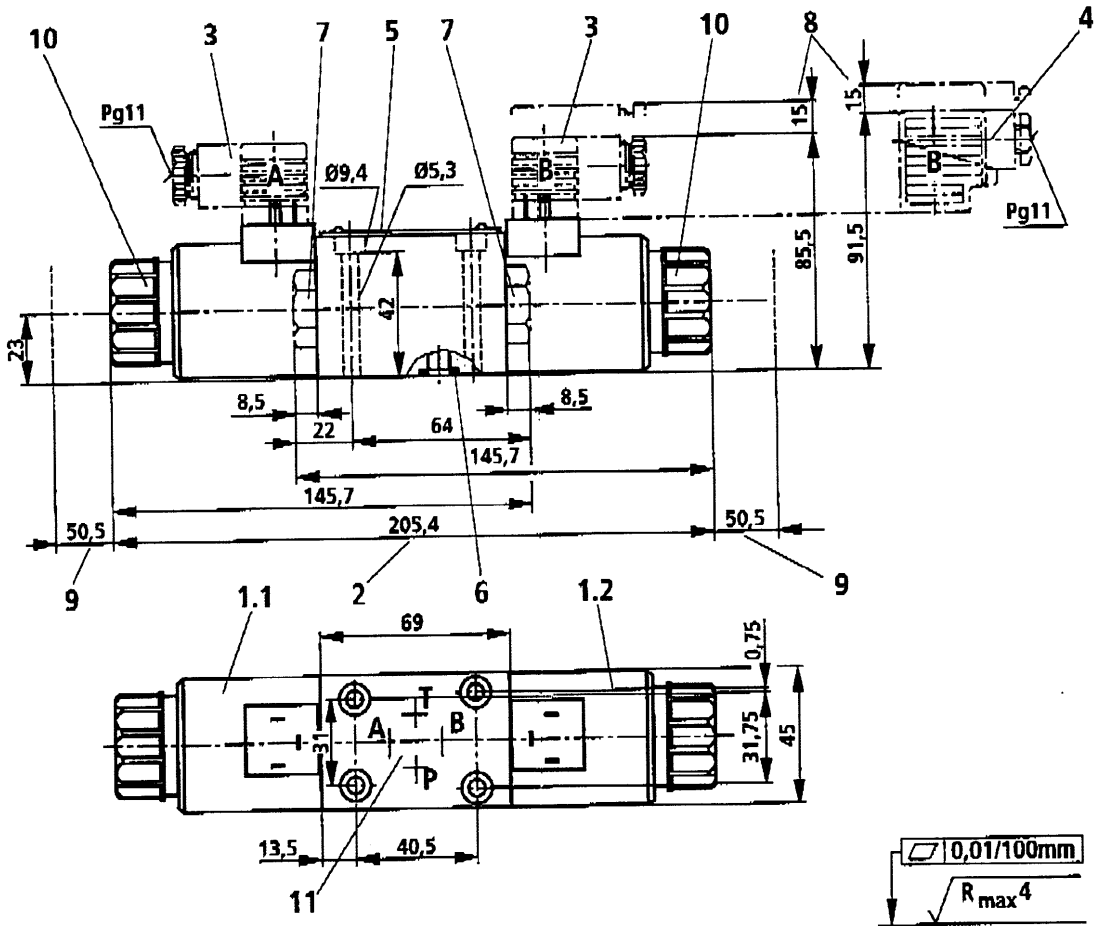
7 Symbol "R" in switched position A – B

8 Symbols "G" and "T" in mid position P - T

Symbol	Flow direction			
	P–A	P–B	A–T	B–T
A, B	3	3	–	–
C	1	1	3	1
D, Y	5	5	3	3
E	3	3	1	1
F	1	3	1	1
T	10	10	9	9
H	2	4	2	2
J, Q	1	1	2	1
L	3	3	4	9
M	2	4	3	3
P	3	1	1	1
R	5	5	4	–
V	1	2	1	1
W	1	1	2	2
U	3	3	9	4
G	6	6	9	9

Unit dimensions

(Dimensions in mm)



Required surface finish of mating piece

1.1 Solenoid "a" (plug-in connector colour grey)

1.2 Solenoid "b" (plug-in connector colour black)

2 Dim. for solenoid **with protected** hand override "N9"
- The hand override can only be actuated up to a tank pressure of approx 50 bar.

Avoid damage to the hand override pin bore!

3 Plug-in connector **without** circuitry to DIN 43 650 [1)]

4 Plug-in connector **with** circuitry to DIN 43 650 [1)]

5 Name plate

6 R-ring 9.81 x 1.5 x 1.78

7 Plug for valves with one solenoid

8 Space required to remove plug-in connector

9 Space required to remove coil

10 Securing nut, tightening torque $M_A = 4$ Nm

11 Porting pattern to DIN 24 340 form A, ISO 4401 and CETOP–RP 121 H

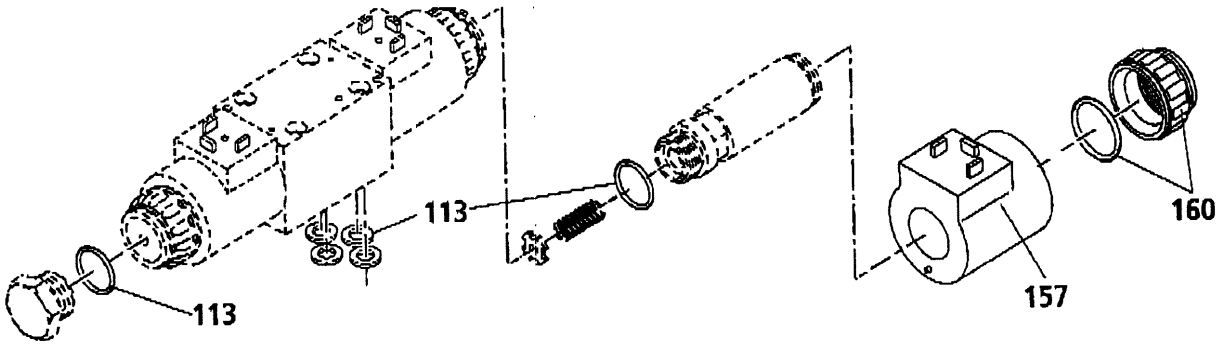
Subplates G 341/01 (G 1/4)
G 342/01 (G 3/8)
G 502/01 (G 1/2)

to catalogue sheet RE 45 052 and

Valve fixing screws
M5 x 50 DIN 912-10.9, $M_A = 8.9$ Nm, must be ordered separately.

[1)] Must be ordered separately, see page 2.

Ordering details: available spare parts and seals



Spare parts – solenoid

Item	Description	DC	
		Voltage	Material no.
157	Coil for individual connections	24 V	00021437
160	Nut: **with protected** hand override „N9"		00068604

Seal kit – valve

Item	Seal material	Material number
113	FKM seals	00313163