

- Direct operated directional poppet valve with solenoid actuation
- Closed port is leak-free
- Individual electrical connection
- With protected manual override, optional
- Porting pattern to DIN 24340 form A, ISO 4401 and CETOP-RP 121H

Function

General:

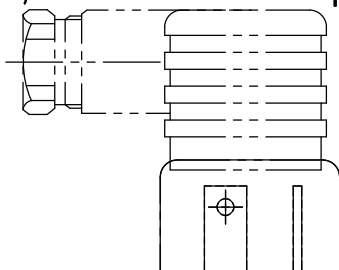
Directional valves type M-SED are directly actuated directional poppet valves with solenoid actuation. They control the start, stop and direction of a flow and basically consist of a housing (1), the solenoid (2), and as the closing device (4). The manual override (6) allows the valve to be switched without energising the solenoid.

Basic function:

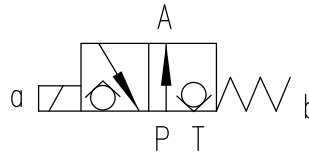
The arrangement of the spring (5) determines the initial position of the valve (open when de-energised "UK" or closed when de-energised "CK"). The chamber (3) behind the closing element (4) is connected to port P and sealed off from port T. Hence the valve is pressure-balanced with respect to the operating forces (solenoid and spring). Due to the special closing element (4) it is possible to apply the maximum operating pressure (35MPa) to ports P, A and T. The flow can also pass in both directions.

The following possibilities are obtainable via the seat orientation:

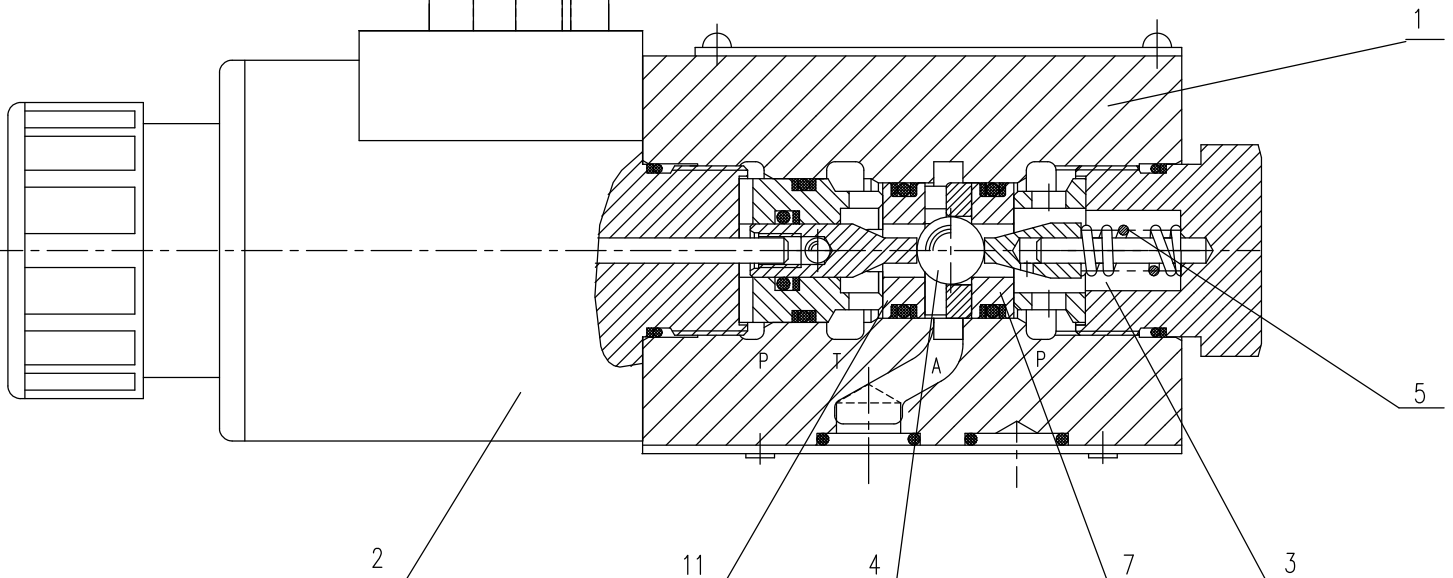
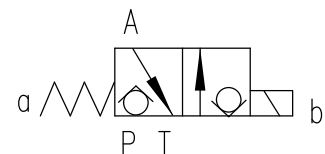
	4/2-way poppet valve	3/2-way poppet valve
Symbol	"D"	"UK"
Initial position	P and A connected B and T connected	P and A connected T closed leak-free
Switched position	P and B connected A and T connected	P closed leak-free A and T connected
Symbol	"Y"	"CK"
Initial position	P and B connected A and T connected	P closed leak-free A and T connected
Switched position	P and A connected B and T connected	P and A connected T closed leak-free



HD-M-3SED6UK-10/



HD-M-3SED6CK-10/



Ordering details

HD — M — SED 6 — 10 / C — / — *

Huade Hydraulic =HD

3 actuator ports = 3
4 actuator ports = 4

Nominal size 6 = 6

Actuator ports	3	4	
	•	—	=UK
	•	—	=CK
	—	•	=D
	—	•	=Y
	•		= available

Series 10 to 19 = 10
(10 to 19: unchanged installation and connection dimensions)

Operating pressure 35MPa = 350

Further details
in clear text

No code = NBR seals
V = FKM seals

No code = without cartridge
check valve,
without throttle insert
P = with cartridge check valve
B12 = throttle Ø1.2mm
B15 = throttle Ø1.5mm
B18 = throttle Ø1.8mm
B20 = throttle Ø2.0mm
B22 = throttle Ø2.2mm

Electrical connection
K4 1) = individual connection;
with component

N9 = with protected manual override
No code = without manual override

G24 = 24VDC
G205 2) = 205VDC

C = Wet-pin solenoid with removable coil

AC supply (permissible voltage tolerance±10%)	Nominal voltage of the DC solenoid when used with an AC voltage	Order detail
110V - 50/60Hz	96V	G96
120V - 60Hz	110V	G110
230V - 50/60Hz	205V	G205

Note: Other types of actuators e.g.pneumatic,hydraulic,
rotary knob,rotary knob with lock,plunger,lever,roller
lever) on request!

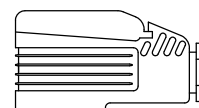
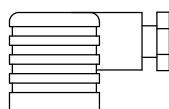
1) Plug-in connectors have to be ordered separately (see
below).

2) For the connection to an AC supply a DC solenoid must be
used which is controlled via a rectifier (see table on the left).

For individual connections a large plug-in connector with
integrated rectifier can be used (separate order, see below).

Ordering details: plug-in connector

DIN 43 650
ISO 4400



Without
indicator light

With indicator light

Without
indicator light

With indicator light and
Z-diode protective circuit

a grey

Material
no.

074 683

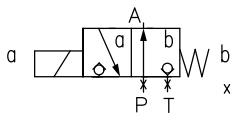
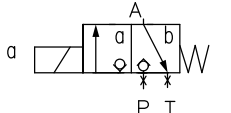
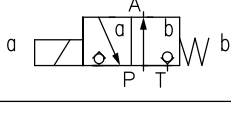
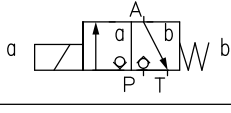
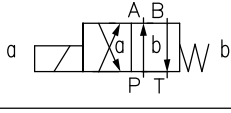
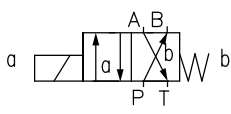
008 616

313 923/24V

313 932

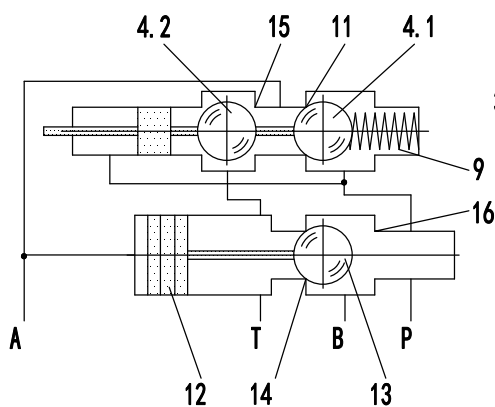
3310 994

Performance limits (measured at $v = 41 \text{ mm}^2/\text{s}$ and $\vartheta = 50^\circ \text{ C}$)

	Symbol	Description	Operating pressure in (MPa)				Flow in L/min
			P	A	B	T	
2-way circuit	“UK” 	with a 2/2-way circuit ports P or T has to be plugged by the customer!	35	35		35	25
	“CK” 		35	35		35	25
3-way circuit	“UK” 		35	35		35	25
	“CK” 		35	35		35	25
4-way circuit	“D” 	symbol "UK" in conjunction with a plus-1 plate: P A B T	35	35	35	P/A/B-4	25
	“Y” 	symbol "CK" in conjunction with a plus-1 plate: P A B T	35	35	35	P/A/B-4	25

Attention: The performance limit was determined with the solenoids at operating temperature, 10% under voltage and with the tank not pressurised.

原理图: 初始位置



3/2-way directional poppet valve

Plus-1 plate

Symbol "D": 

Symbol "Y": 

Cartridge throttle

The use of the cartridge throttle is necessary when, due to operational conditions during the switching process, flows can occur that exceed the valve performance limits.

Example:

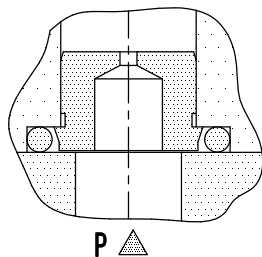
- Accumulator operation,
- Use as a pilot valve with internal pilot oil supply.

3/2-way poppet valve

The cartridge throttle is fitted into port P of the poppet valve.

4/2-way poppet valve

The cartridge throttle is fitted into port P of the plus-1 plate.



P ▲

Cartridge check valve

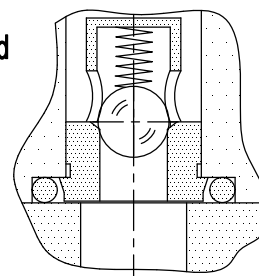
The cartridge check valve allows free flow from P to A and provides leak-free closure from A to P.

3/2-way poppet valve

The cartridge check valve is inserted into port P of the poppet valve.

4/2-way poppet valve (see page 4)

The cartridge check valve is inserted into port P of the plus-1 plate.



P ▲

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

General

Installation	optional	
Max. ambient temperature °C	-30~+50	
Weight 3/2-way poppet valve kg	1.5	
4/2-way poppet valve kg	2.3	
Hydraulic data		
Max. operating pressure MPa	see table on page 3	
Max. flow L/min	25	
Pressure fluid	Mineral oil or Phosphate ester	
Pressure fluid temperature range °C	- 30 to + 80 (with NBR seals)	
	- 20 to + 80 (with FKM seals)	
Viscosity range mm ² /s	2.8 to 500	
Degree of contamination (µm)	Degree of contamination Maximum permissible degree of contamination of the pressure is to NAS 1638 class 9. We, therefore, recommend a filter with a minimum retention rate of $\beta_{10} \geq 75$.	
Electrical data		
Type of voltage	DC	AC
Available voltages ¹⁾ V	12, 24, 42, 96, 110, 205, 220	only possible via rectifier
Voltage tolerance (nominal voltage) %	±10	
Power consumption W	30	
Duty	continuous	
Switching time to ISO 6403	see table below	
Switching frequency cycles/h	15000	
Protection to DIN 40 050	IP65	
Max. coil temperature °C	150	

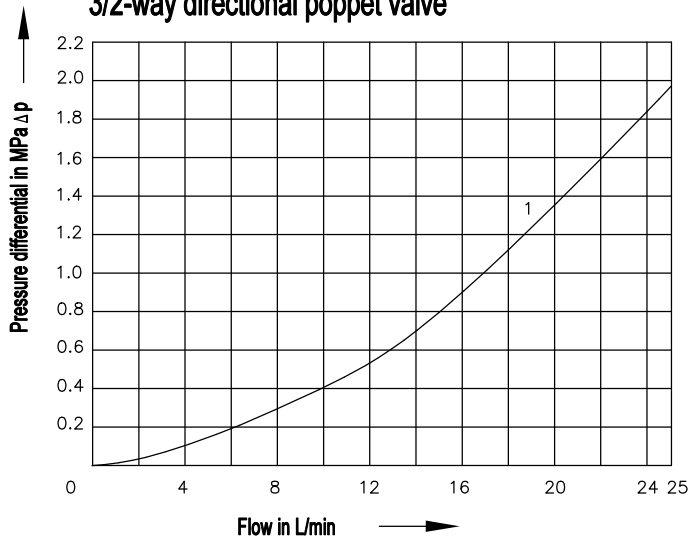
1) Special voltages on request

When connecting the electrics, the protective conductor (PE \equiv) must be connected according to the relevant regulations.

Switching time t in ms (installation: solenoid vertical)

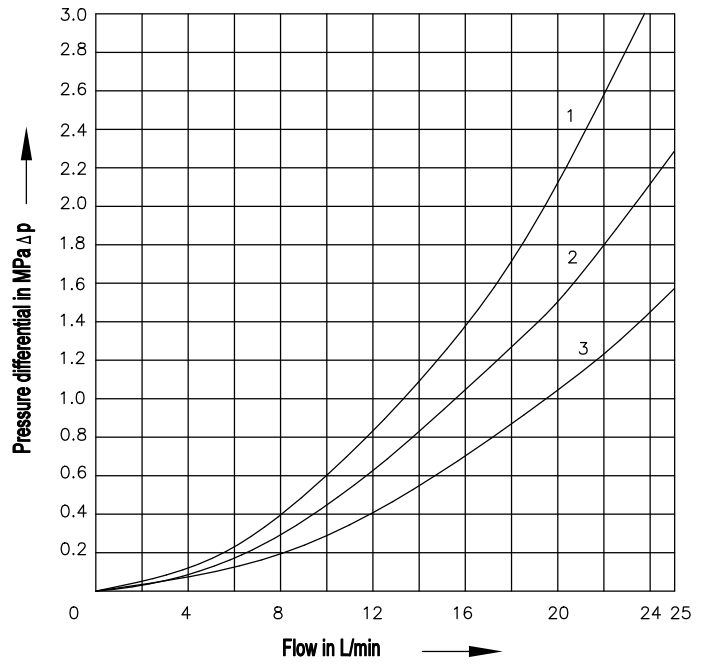
Pressure p in MPa	Flow qV in L/min	DC solenoid						DC solenoid + rectifier					
		Symbols Uk, Ck, D, Y						Symbols UK, CK, D, Y					
		t _{on}				t _{off}		t _{on}				t _{off}	
		Without tank pressure				Uk	D	Without tank pressure				Uk	D
		Uk	Ck	D	Y	Ck	Y	Uk	Ck	D	Y	Ck	Y
14	25	45	40	50	10	15	45	40	45	40	40	40	
28		60					45		55				55
32			65	65				60	60				
42		65					65	65	45	45			
50													
60													

Δp -q-characteristic curve
3/2-way directional poppet valve



1 M-3SED6 $\frac{Uk}{Ck}$... P to A and A to T

Δp -q-characteristic curves
4/2-way directional poppet valve

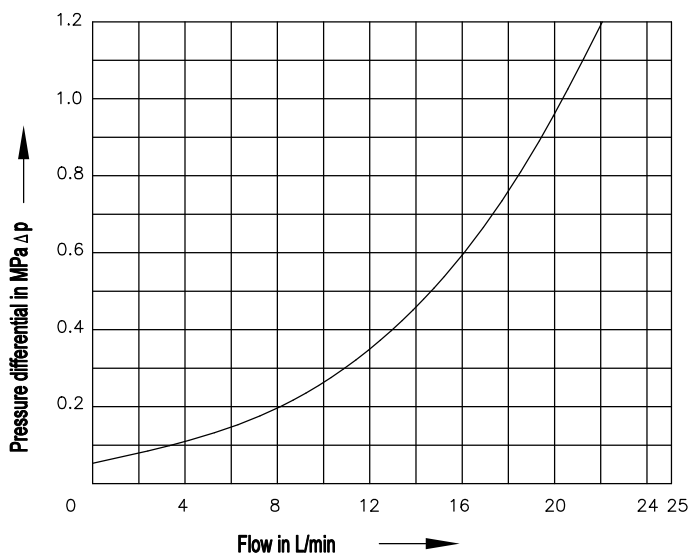


1 M-4SED6 $\frac{D}{Y}$... A to T

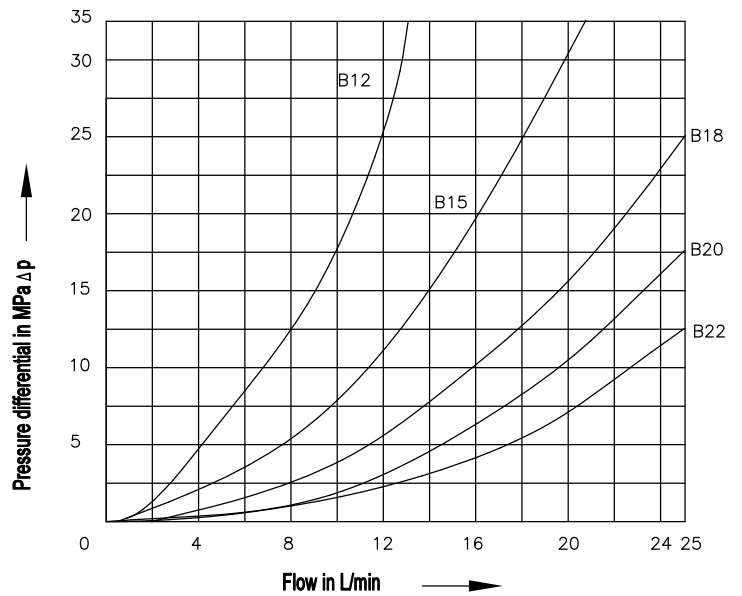
2 M-4SED6 $\frac{D}{Y}$... P to A

3 M-4SED6 $\frac{D}{Y}$... B to T and P to B

Δp -q-characteristic curve
Cartridge check valve

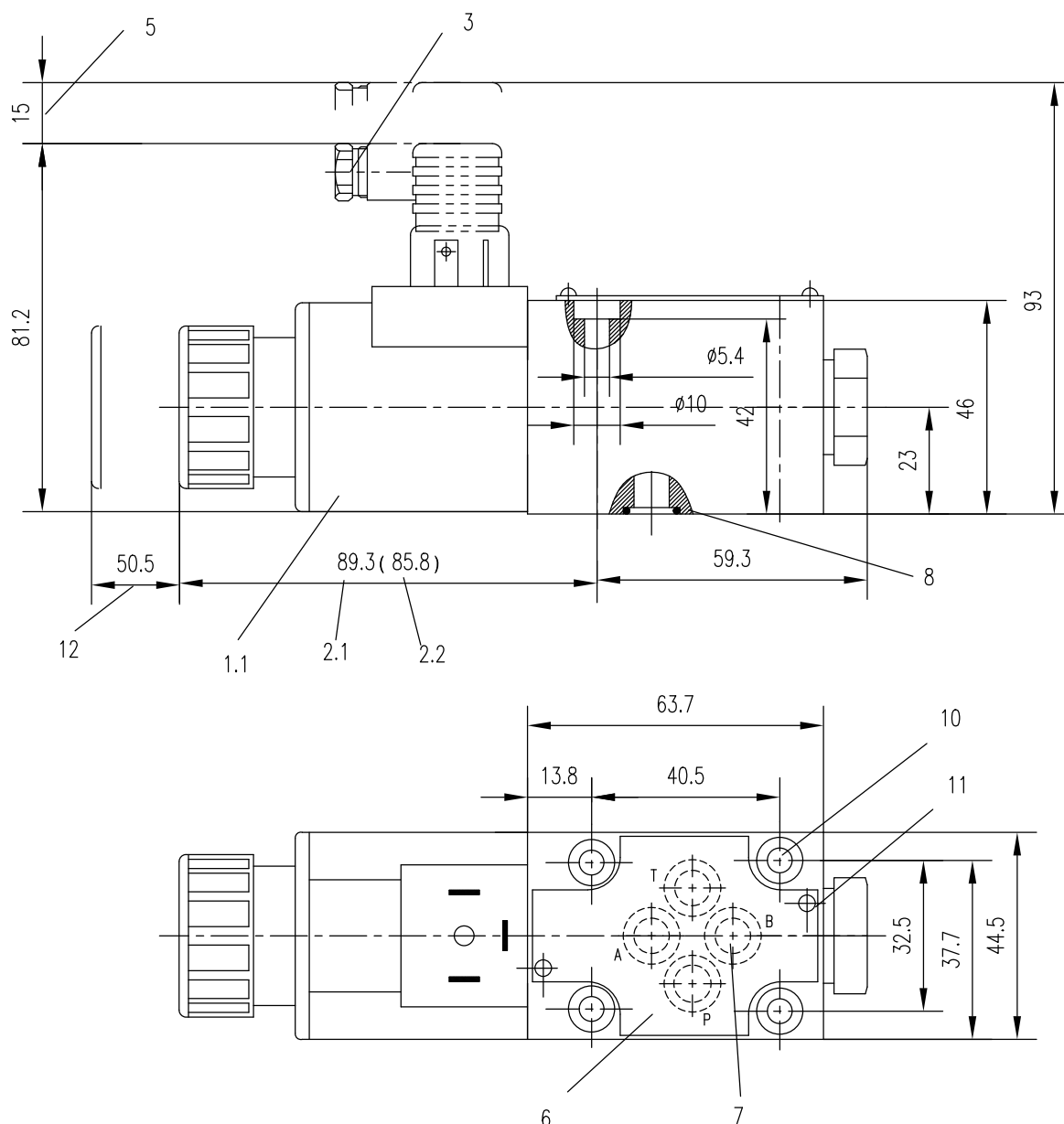


Δp -q-characteristic curves
Throttle inser



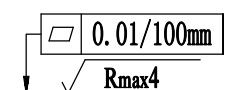
Unit dimensions: 3/2-way directional poppet valve

(Dimensions in mm)

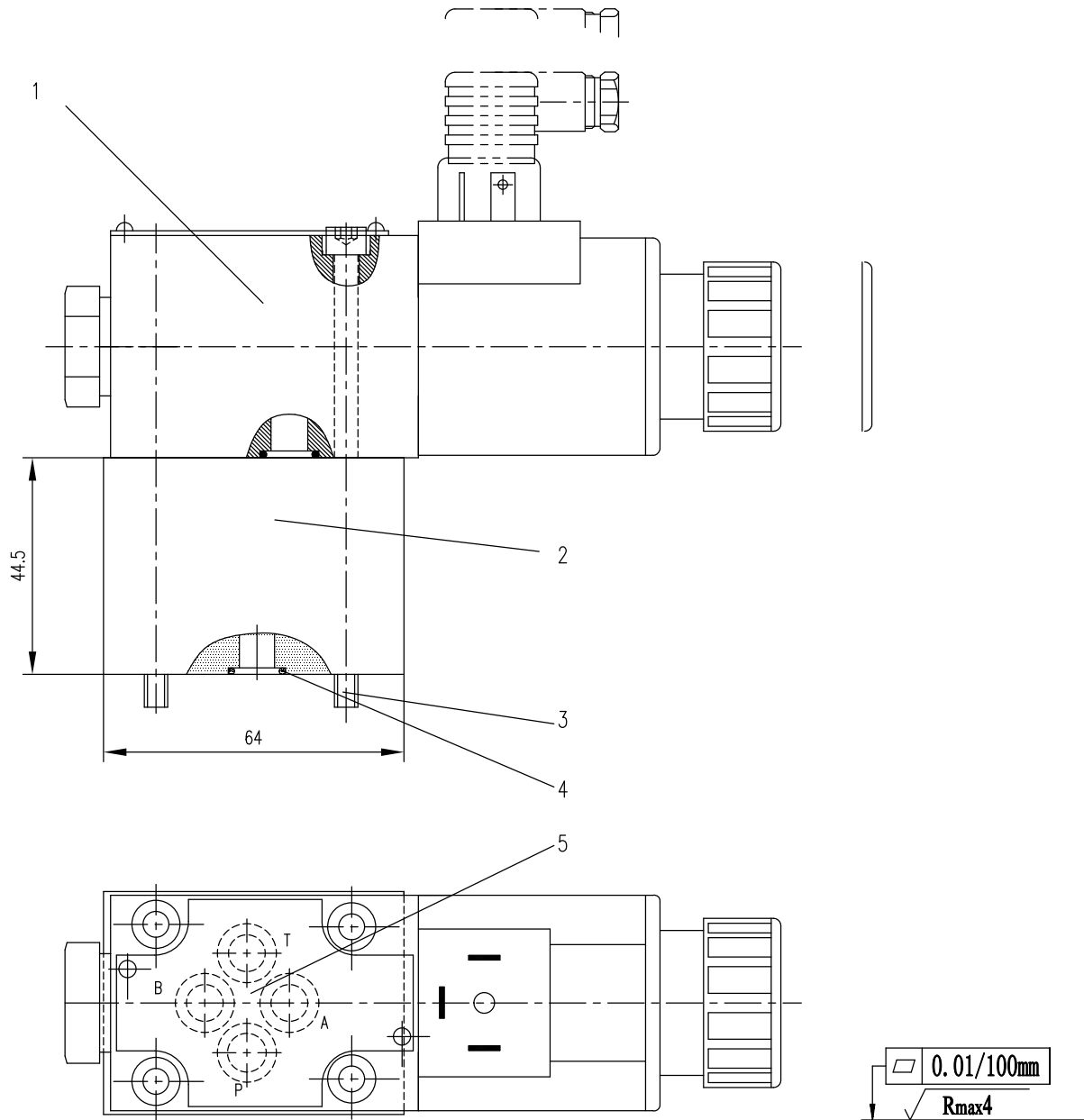


- 1.1 Solenoid "a" (plug-in connector colour grey)
- 1.2 Solenoid "b" (plug-in connector colour black)
- 2.1 Protected manual override "N9"
- 2.2 Without manual override
- 3 Plug-in connector without circuitry to DIN 43 650
- 4 Plug-in connector with circuitry to DIN 43 650
- 5 Space required to remove the plug-in connector
- 6 Name plate

- 7 Attention! On 3/2-way directional poppet valves, port B is a blind counterbore.
- 8 O-rings 9.25 x 1.78
- 10 Valve fixing screws 4 off, M5 x 50 DIN 912-10.9, MA = 8.9 Nm, must be ordered separately.
- 11 Subplates G 341/01 (G1/4)
G 342/01 (G3/8)
G 502/01 (G1/2)



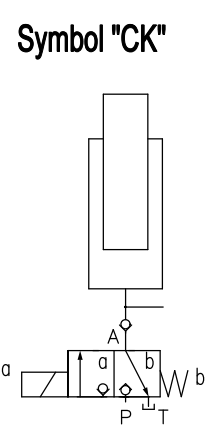
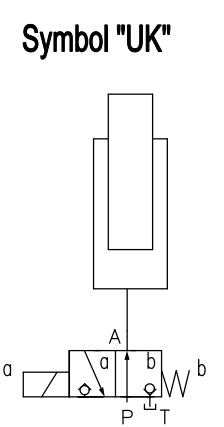
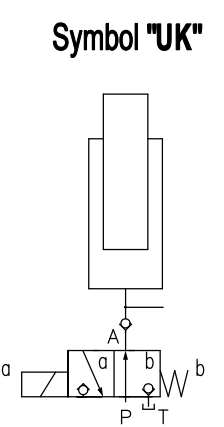
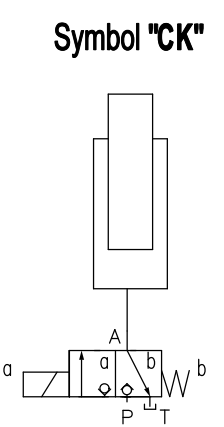
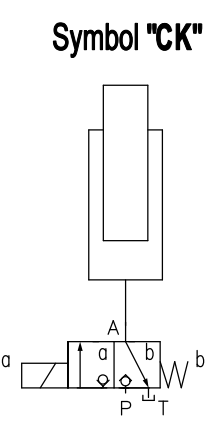
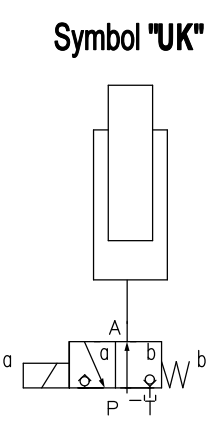
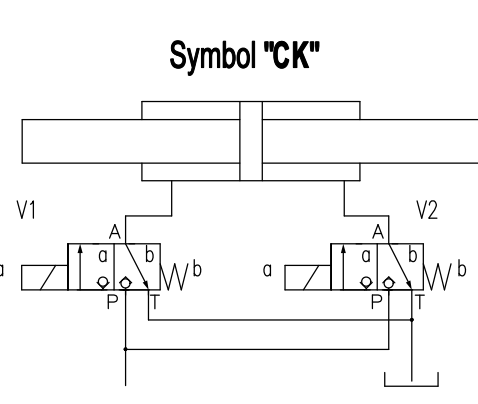
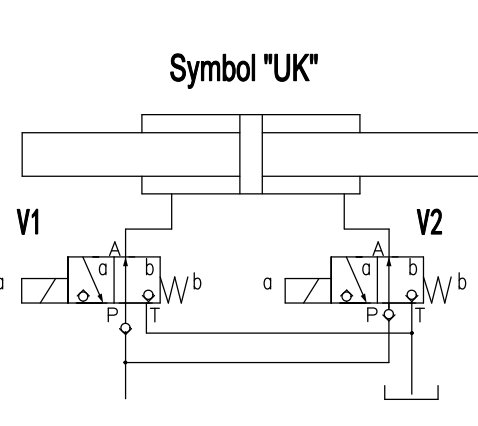
Required surface finish of the mating piece



Required surface finish of the mating piece

- 1 3/2-way directional poppet valve
- 2 Plus-1 plate
- 3 Valve fixing screws
4 off, M5 x 90 GB70-85-10.9,
M A ≙ 8.9 Nm
are included within the scope of supply.
- 4 O-rings 9.25 x 1.78 for port A B and T
O-rings 10.82 x 1.78 for P

- 5 Porting pattern to DIN 24 340 form A,
ISO 4401 and CETOP-RP 121 H
Subplates
G 341/01 (G1/4)
G 342/01 (G3/8)
G 502/01 (G1/2)
must be ordered separately.

<p>Symbol "CK"</p> 	<p>2/2-way circuit with a two poppet valve and check valve at port A</p> <p>The check valve must be installed in the pipework.</p> <p>Initial position: Flow blocked, maximum pressure permissible. Pressure is held in the actuator, even when the pump is switched off, due to the check valve at port A.</p> <p>Switched position: Free-flow, maximum pressure permissible. Leakage drained via port T. The only leakage occurring is that which flows to T during the switching process.</p>	<p>Symbol "UK"</p> 	<p>3/2-way circuit with a single poppet valve</p> <p>Initial position: Lifting</p> <p>Holding only due to limitation of travel and pressure in port P.</p> <p>Switched position: Lowering</p>
<p>Symbol "UK"</p> 	<p>2/2-way circuit with a single poppet valve and check valve at port A</p> <p>The check valve must be fitted in the pipework.</p> <p>Initial position: Free-flow, maximum pressure permissible. Pressure is held in the actuator, even when the pump is switched off, due to the check valve at port A.</p> <p>Switched position: Flow blocked, maximum pressure permissible. Leakage drained via port T. The only leakage occurring is that which flows to T during the switching process.</p>	<p>Symbol "CK"</p> 	<p>3/2-way circuit with a two poppet valve and cartridge check valve in port P</p> <p>The check valve is fitted in the P port of the 3/2-way poppet valve.</p> <p>Initial position: Lowering</p> <p>Switched position: Lifting</p> <p>The load can be held in any position while the pump is switched off and the solenoid energised.</p>
<p>Symbol "CK"</p> 	<p>3/2-way circuit with a two poppet valve</p> <p>Initial position: Lowering</p> <p>Switched position: Lifting</p> <p>Holding only due to limitation of travel and pressure in port P.</p>	<p>Symbol "UK"</p> 	<p>3/2-way circuit with a single poppet valve and cartridge check valve in port P</p> <p>The check valve is fitted into the P port of the 3/2-way poppet valve.</p> <p>Initial position: Lifting</p> <p>The load can be held in any position while the pump is switched off.</p> <p>Switched position: Lowering</p>
<p>Symbol "CK"</p> 	<p>4/3- (4/4-) way circuit with a 2 two poppet valves</p> <p>V1 and V2 in the initial position: Both cylinder sides are connected to the tank port.</p> <p>V2 in the switched position: The piston moves to the left</p> <p>V1 in the switched position: The piston moves to the right</p> <p>V1 and V2 in the switched position: Both cylinders sides are connected to the pump port. Rapid traverse is possible when a single rod cylinder with an area ratio of 2 : 1, is used.</p> <p>Attention!</p> <p>When using single rod cylinders, the performance limit (double flow) and the maximum permissible operating pressure (pressure intensification) of the valve must be taken into account.</p>		
<p>Symbol "UK"</p> 	<p>4/3- (4/4-) way circuit with a 2 two poppet valves and cartridge check valve in port P of the 3/2-way poppet valves</p> <p>V1 and V2 in the initial position: The piston is locked externally to prevent movement.</p> <p>V2 in the switched position: The piston moves to the right</p> <p>V1 in the switched position: The piston moves to the left</p> <p>V1 and V2 in the switched position: Both cylinder sides are connected to the tank port.</p> <p>Attention!</p> <p>When using single rod cylinders, the performance limit (double flow) and the maximum permissible operating pressure (pressure intensification) of the valve must be taken into account!</p>		