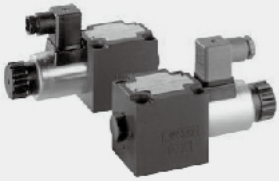
2.20

3/2- and 4/2 directional poppet valves with solenoid operation

Type M-.SED10...L1X

Size 10
Up to 350 bar
Up to 40 L/min



Contents

Features

- Direct operated directional poppet valve with solenoid actuation
- Mounting face as per DIN24 340 A ISO 4401 and CETOP-RP 121H
- Closed port is leak-free isolated
- keep switch flexibility under high pressure
- Pressure-tight chamber does not need to be opened for a change of the coil
- Solenoid coil can be rotated through 90°
- With concealed manual override, optional

Function and configuration

·Type M-3SED10 3/2 directional poppet valve

Directional valves of the type SED are direct operated directional poppet valves with solenoid actuation. They control the start, stop and direction of flow.

The directional poppet valves consist of housing(1), the solenoid(2), the valve seat(7) and (11) and the control spool(4).

The manual override(6) allows for the switching of the valve without solenoid energization.

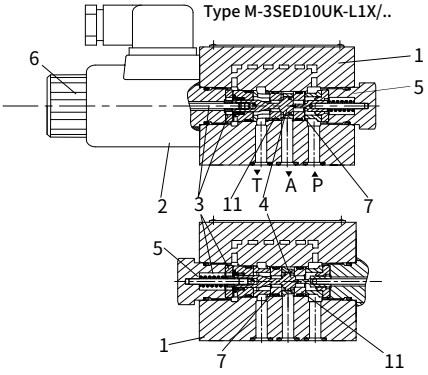
General principle (3/2 directional poppet valve):

The initial position of the valve (normally open "UK" or normally closed "CK") is determined by the arragement of the spring(5). The chamber(3) behind the control spool(4) is connected to port P and sealed against port T. Thus, the valve is pressure-compensated in relation to the actuating forces (solenoid and spring).

By means of the control spool(4), the port P, A and T can be loaded with maximium operating pressure (350bar) and the flow can be directed in both directions (see symbols).

In the initial position, the control spool(4) is pressed onto the seat(11) by the spring(5), in spool position,it is pressed onto the seat(7) by the solenoid(2). The flow is blocked.

Type M-3SED10UK-L1X/..



Type M-3SED10CK-L1X/..

·Type M-4SED10 4/2 directional poppet valve

With a sandwith plate,the Plus-1plate, under the 3/2 directional poppet valves, the function of a 4/2 directional poppet valve is achieved.

1). Initial position:

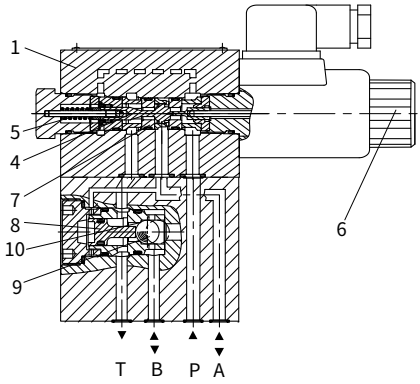
the main valve is not actuated. The spring(5)holds the control spool(4)on the seat(11). Port P is blocked and A is connected to T. Apart from that, one control line is connected from A to the large area of the control spool(8), which is thus unloaded to the tank.The pressure applied via P now pushes the ball(9) onto the seat(10). Now, P is connected to B, and A to T.

2). Transition position:

When the main valve is actuated, the control spool(4) is shifted against the spring(5) and pressed onto the seat(7). During this, port T is blocked, P, A, and B are briefly connected to each other.

3). Spool position:

P is connected to A.As the pump pressure acts via A on the large area of the control spool(8), the ball(9) is pressed onto the seat(12). Thus, B is connected to T, and P to A. The ball(9) in the Plus-1 plate has a "positive spool overlap".



·Throttle insert:

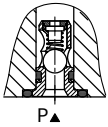
The use of a throttle insert is required, if, due to the operating conditions, flows are to be expected during the switching procedure, which are higher than the started maximum performance limits of the valve.

The throttle is inserted into port P of the valve.

·Cartridge check valve:

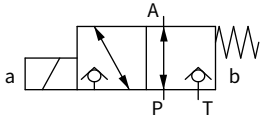
The cartridge check valve allows free flow from P to A and provides leak-free closed from A to P.

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

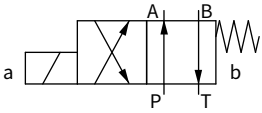


Spool symbols

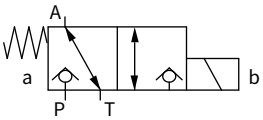
Type M-3SED10UK-L1X/..



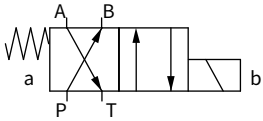
Type M-4SED10D-L1X/..



Type M-3SED10CK-L1X/..



Type M-4SED10Y-L1X/..



Ordering code

M – | SED | 10 | – L1X / 35 | C | | N | / | |

3 service port = 3
4 service port = 4

Poppet valve

Size 10 =10

Spool symbols

Series L10 to L19 =L1X
(L10 to L19: unchanged installation and connection dimensions)

Operating pressure 350 bar =35

Wet-pin solenoid with detachable coil =C

12VDC = G12
24VDC = G24
110VDC = G110
205VDC = G205
220VDC = G220
Plug rectification 110V =W110R
Plug rectification 220V =W220R

With manual override =N

No code = NBR seals
V = FKM seals

No code = Without catridge check valve, without throttle insert
P = With catridge check valve
B12 = Throttle Φ1.2 mm
B15 = Throttle Φ1.5 mm
B18 = Throttle Φ1.8 mm
B20 = Throttle Φ2.0 mm
B22 = Throttle Φ2.2 mm

K4 = Din4365 sockets without plug
Z4 = Square plug
Z5L= Square plug with lamps
Z5 = Rectification plug
(only suitable for W110R and W220R)
Note: K4, Z4, Z5L is not suitable for W110R and W220R

Technical data

Installation position			Optional
Environment temperature		°C	-30 to +50 (NBR seal)
			-20 to +50 (FKM seal)
Weight	Two tee Solenoidic directional valve	Kg	2.6
	Two four-way Solenoidic directional valve	Kg	3.9
Max operation pressure		bar	350
Max flow		L/min	40
Hydraulic fluid			Mineral oil suitable for NBR and FKM seal
			Phosphate ester for FKM seal
Fluid temperature range		°C	-30 to +80 (NBR seal)
			-20 to +80 (FKM seal)
Viscosity range		mm^2/s	2.8 to 500
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406

Electrical data

Voltage type		DC	AC+ rectifier
Voltage version	V	12, 24, 110, 205, 220	110,220 (only possible via Z5 rectifier)
Permissible voltage(deviation)	%	+10 ～ -15	
Input power	W	30	
Continuous power-on time		Continuous	

Switching time to ISO 6403

Pressure bar	Flow L/min	DC solenoid						AC + rectifier					
		On/ms (without oil tank pressure)				Off/ms		On/ms (without oil tank pressure)				Off/ms	
		UK	CK	D	Y	UK, CK	D, Y	UK	CK	D	Y	UK, CK	D, Y
70	40	40	30	40	35	10	10	35	30	40	35	40	40
140	40	40	30	40	35	10	10	40	30	40	35	40	40
210	40	45	35	45	35	10	10	45	35	45	35	40	40
280	40	45	35	45	35	10	10	45	35	45	35	40	40
315	40	50	35	50	35	10	10	50	40	50	35	40	40
350	40	50	45	50	45	10	10	50	45	50	45	40	40

Note: The switching types relate to a flow of P to A and A to T.
With reversed flows deviations are possible.

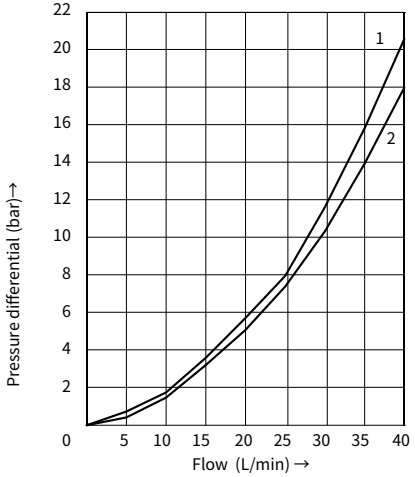
Switching frequency	Cycles/h	to 15000
IP rating as per DIN 40050		IP65
Max coil temperature	°C	+150

Note: for electrical connection, protective wire (PE ⏚) shall be earthed as required.

Characteristic curves

(Measured at ϑ_{oil}=40°C ±5°C , using HLP46)

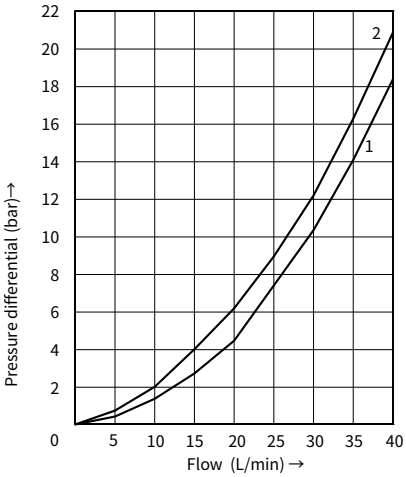
Δp-qv characteristic curves
3/2 directional poppet valve



1 M-3SED10$^{CK}_{UK}$ ..., P to A

2 M-3SED10$^{CK}_{UK}$ ..., P to A

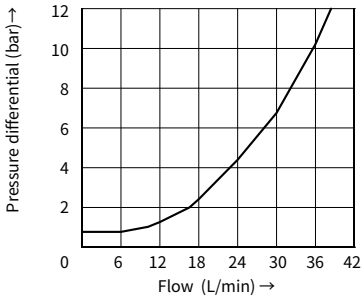
Δp-qv characteristic curves
4/2 directional poppet valve



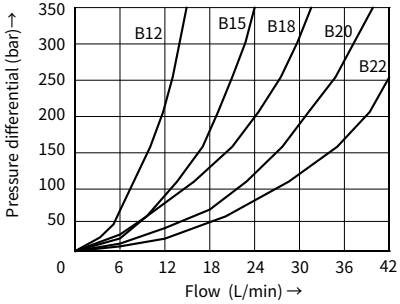
1 M-4SED10$^{D}_{Y}$ ..., P to B, A to T

2 M-4SED10$^{D}_{Y}$ ..., B to T, P to A

Δp-qv characteristic curves
Cartridge check valve

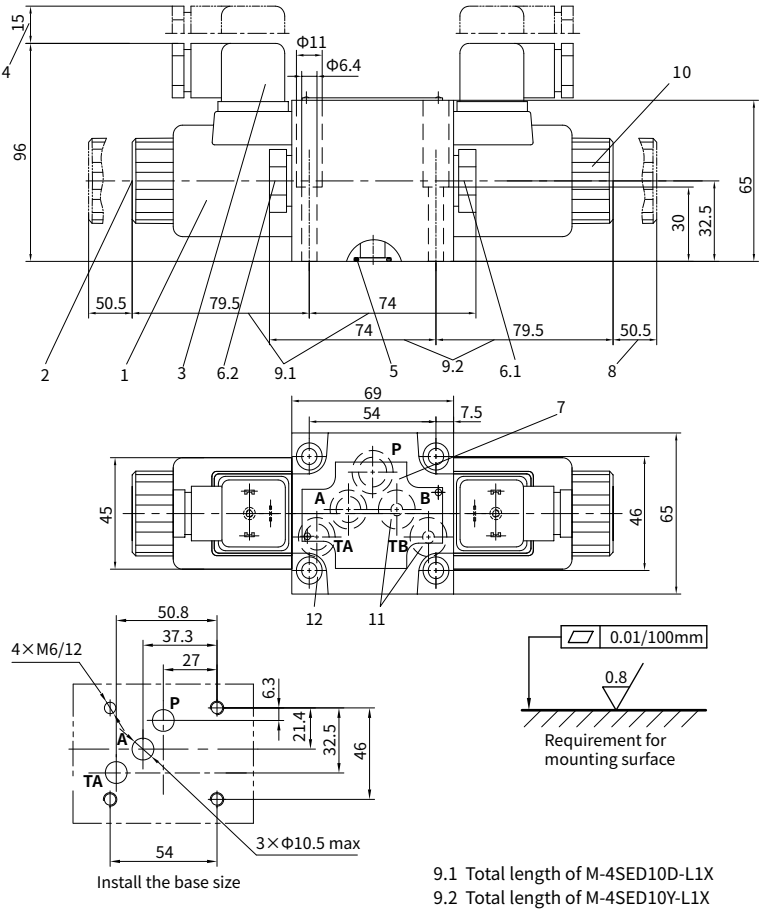


Δp-qv characteristic curves
Throttle insert



Unit dimensions

·M-3SED10 $^{CK}_{UK}$ -L1X/...solenoid directional poppet valve

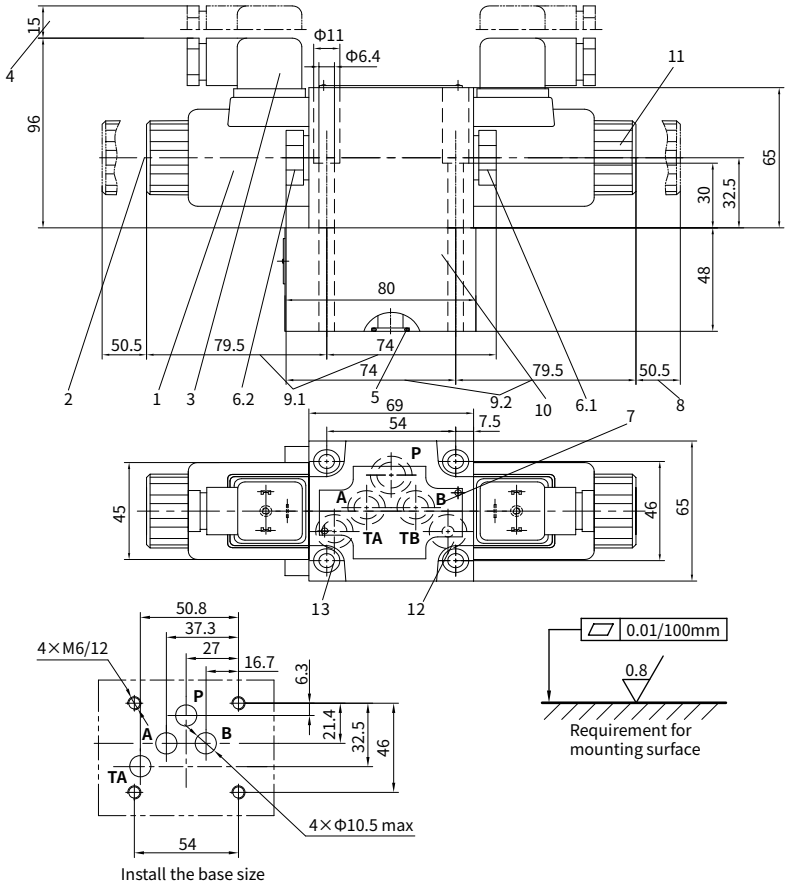


1 Solenoid
2 Manual override
3 Plug-in connector to DIN 43650 (rotatable 90°)
4 Space required to remove the Plug-in connector
5 O-rings 12×2 for ports A,B,TA,TB
O-rings 14×2 for port P
6.1 Plug for M-4SED10D-L1X/
6.2 Plug for M-4SED10Y-L1X/
7 Name plate
8 Space required to remove the coil
9.1 Total length of M-4SED10D-L1X
9.2 Total length of M-4SED10Y-L1X
10 Plus-1 Plate
11 Securing nut tighting torque M_A = 4Nm
12 Port TB is a blind counterbore
13 Valve fixing screws
Internal hexagon screw: M6×40 GB/T 70.1-10.9,
tighting torque M_A = 15.5 Nm

It must be ordered separately,
if connection plate is needed.
Type:
G 66/01 (G 3/8), G 66/02 (M18×1.5)
G 67/01 (G 1/2), G 67/02 (M22×1.5)

Unit dimensions

· M-4SED10 $^{D}_{Y}$ -L1X/...solenoid directional poppet valve



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6.2 Plug for M-3SED10CK-L1X/
7 Name plate
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9.1 Total length of M-3SED10UK-L1X/
9.2 Total length of M-3SED10CK-L1X/
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