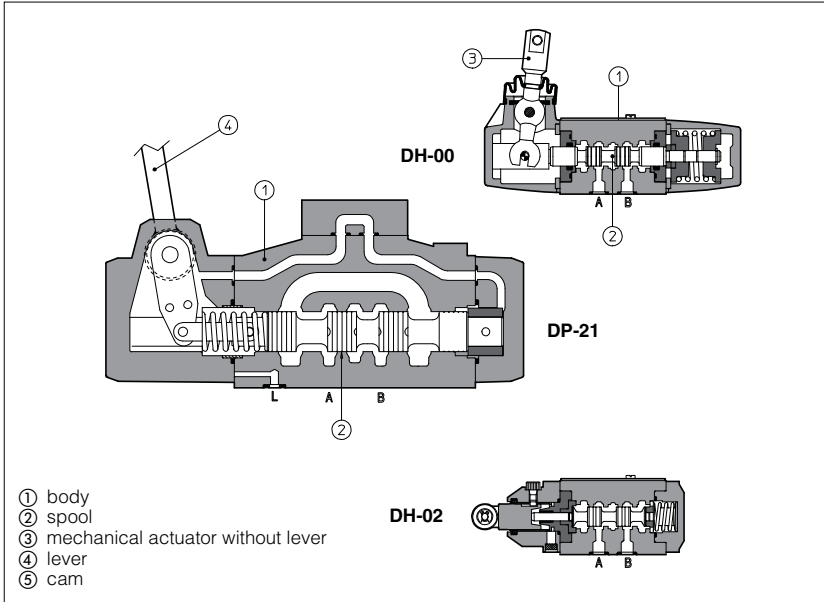


Hand & mechanical directional valves

ISO 4401 sizes 06, 10, 16 and 25



Hand & mechanical operated directional valves are spool type, three or four way, two or three position, designed to operate in oil hydraulic systems.
Available versions:
- mechanical actuator without lever;
- hand-lever;
- cam (only for size 06 and 10).

- DH-0 = ISO 4401 size 06 interface: flow up to 50 l/min.
- DK-10 (11) = ISO 4401 size 10 interface: flow up to 100 l/min.
- DK-12 = ISO 4401 size 10 interface: flow up to 140 l/min.
- DP-2 = ISO 4401 size 16 interface: flow up to 300 l/min.
- DP-3 = ISO 4401 size 25 interface: flow up to 650 l/min.

Max pressure:
350 bar for DH-0, DP-2, DP-3
315 bar for DK-1

1 MODEL CODE

DH-0	1	1	3	/I	**	/*
<p>Directional control valve, size: DH-0 = 06 DK-1 = 10 DP-2 = 16 DP-3 = 25</p> <p>Type of actuator: 0 = mechanical, without lever 1 = hand-lever 2 = cam (only for DH-0 and DK-1)</p> <p>Valve configuration, see section 4 0 = free, without springs 1 = spring centered, without detent 2 = return to internal position (lever toward extern) 3 = return to external position (lever toward the valve) 4 = 3 position, with detent 5 = 2 external positions, with detent 6 = centre plus external positions, with detent 7 = return to external position from the centre position 8 = return to the centre position from the external position</p>					<p>Synthetic fluids: WG = water-glycol PE = phosphate ester</p> <p>Series number</p> <p>Options: /A = actuator device mounted on side of port B</p> <p>Only for hand-lever valves: /C = short hand - lever and reduced actuation force (only for DH-01)</p> <p>Only for configuration 6, 7, 8, of hand-lever valves, see section 4 and 5 for hydraulic connections: /I = in rest position the lever is inclined towards the valve body /E = in rest position the lever is inclined in opposite side</p> <p>Only for DK-1: /Y = external drain</p>	
Spool type, see section 5						

2 HYDRAULIC CHARACTERISTICS

Valve model		DH-0	DK-1 (DK-12)	DP-2	DP-3
Max recommended flow	[l/min]	50	100 (140)	300	650
Max pressure on port P, A, B	[bar]	350	315		350
Max pressure on port T	[bar]		160		250

3 MAIN CHARACTERISTICS OF HAND & MECHANICAL OPERATED DIRECTIONAL VALVES

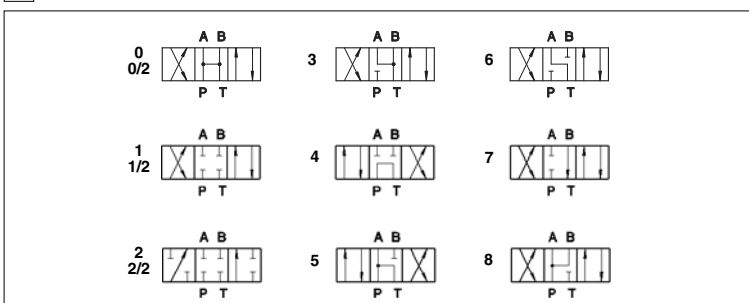
Assembly position / location	Any position.
Subplate surface finishing	Roughness index $\sqrt{0.4}$, flatness ratio 0,01/100 (ISO 1101)
Ambient temperature	-20°C to + 70°C
Fluid	Hydraulic oil as per DIN 51524...535, for other fluids see section 11
Recommended viscosity	15 ÷ 100 mm ² /s at 40°C (ISO VG 15 ÷ 100)
Fluid contamination class	ISO 19/16, achieved with in line filters at 25 µm value and $\beta_{25} \geq 75$ (recommended)
Fluid temperature	-20°C +60°C (standard and /WG seals) -20°C +80°C (/PE seals)

4 VALVE CONFIGURATION

 DH-011 DK-111	 DH-012 DK-112	 DH-013 DK-113	 DH-014 DK-114	 DH-015 DK-115
 DH-016*/I DK-116*/I	 DH-016*/E DK-116*/E	 DH-016*/IA DK-116*/IA DH-016*/EA DK-116*/EA	 DH-017*/I DK-117*/I	 DH-017*/E DK-117*/E
 DH-017*/IA DK-117*/IA DH-017*/EA DK-117*/EA	 DH-018*/I DK-118*/I	 DH-018*/E DK-118*/E	 DH-018*/IA DK-118*/IA DH-018*/EA DK-118*/EA	
 DH-0230/2 DK-1230/2	 DH-0232/2 DK-1232/2	 DH-027* DK-127*	 DH-028* DK-128*	
 DP-211* DP-311*	 DP-212* DP-312*	 DP-213* DP-313*	 DP-214* DP-314*	 DP-215* DP-315*
 DP-216*/I DP-316*/I	 DP-216*/E DP-316*/E	 DP-216*/IA DP-316*/IA DP-216*/EA DP-316*/EA	 DP-217*/I DP-317*/I	 DP-217*/E DP-317*/E
 DP-217*/IA DP-317*/IA DP-217*/EA DP-317*/EA	 DP-218*/I DP-318*/I	 DP-218*/E DP-318*/E	 DP-218*/IA DP-318*/IA DP-218*/EA DP-318*/EA	

- (1) Where the symbol doesn't show the hydraulic connection (*), it depends by the central configuration of the spool, see table 5.
 (2) All the configuration shown for the lever operated valves are also available for valves actuated by mechanic without lever device.

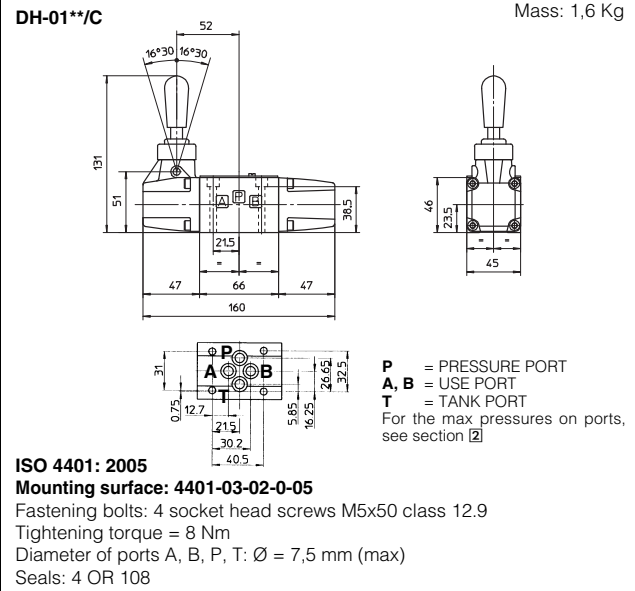
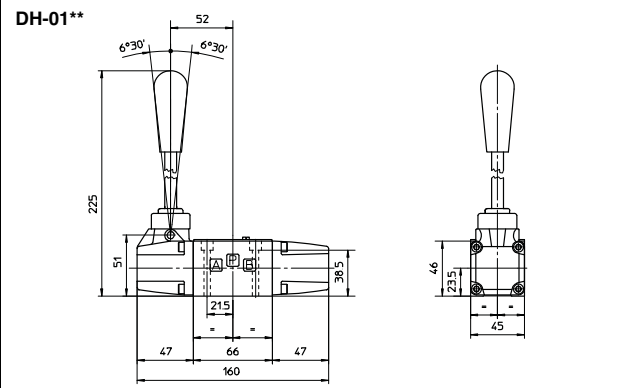
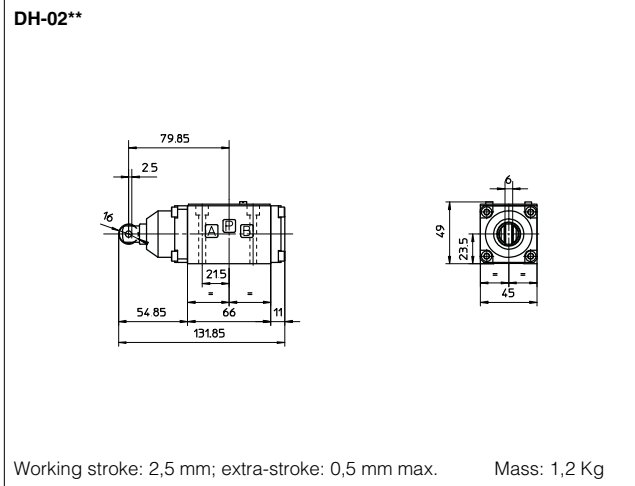
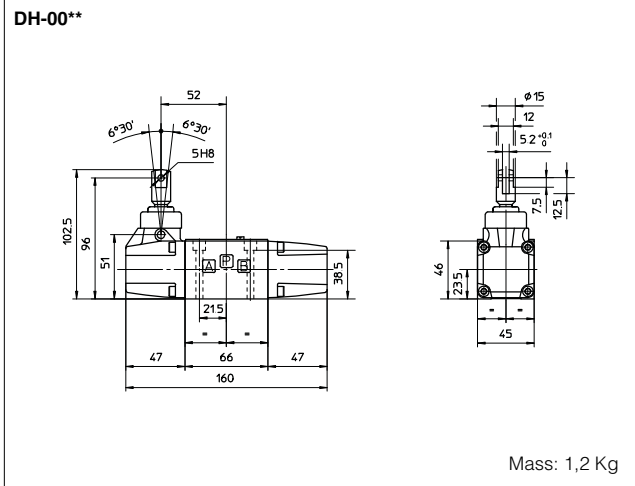
5 SPOOLS - for intermediate passages, see tab. E001



NOTES

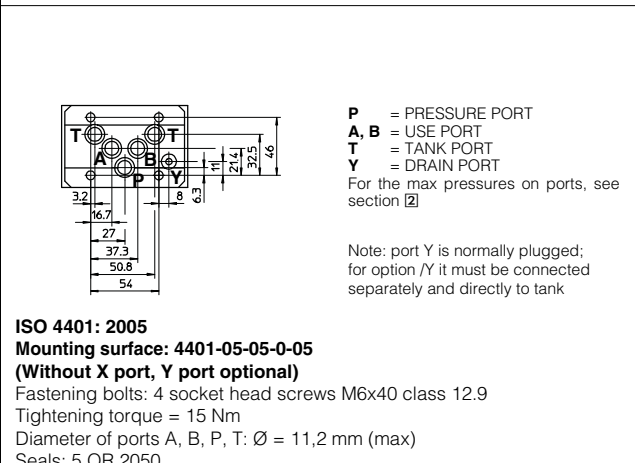
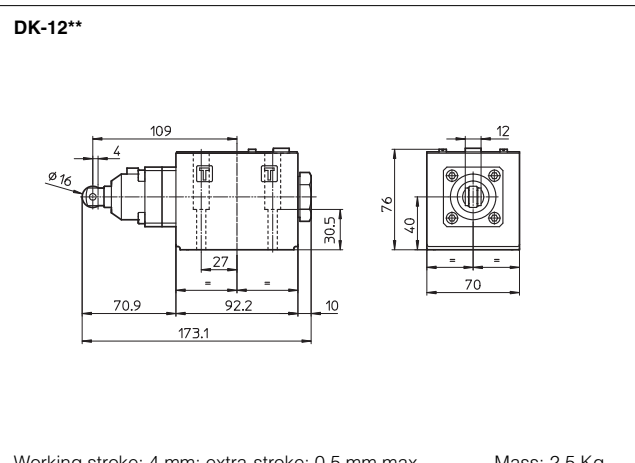
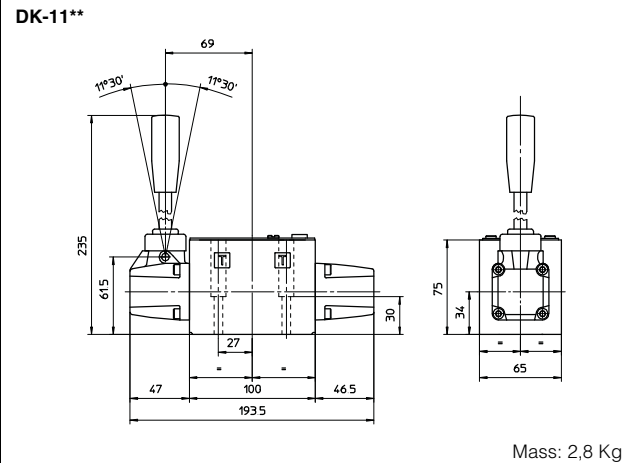
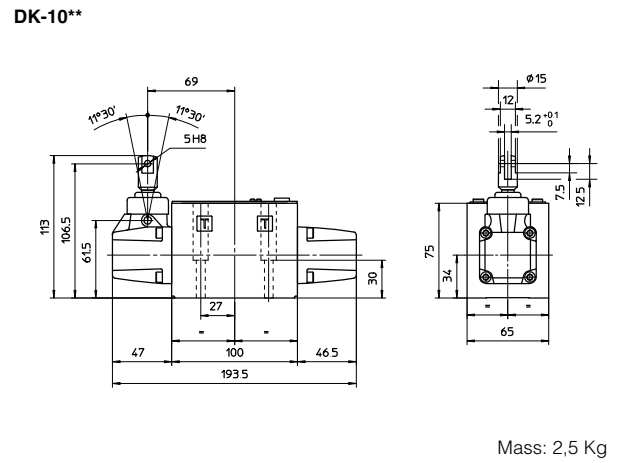
- Spools type 0/2, 1/2, 2/2 are only used for valves type DH-023*/2 and DK 123*/2;
- Spools type 0 and 3 are also available as 0/1 and 3/1, where in centre position oil passage from ports to tank are restricted;
- Spools type 1,4 and 5 are also available as 1/1, 4/8 and 5/1. They are properly shaped to reduce water-hammer shocks during the switching;
- On request, other type of spools are available.

6 DIMENSIONS OF HAND & MECHANICAL OPERATED VALVES ISO 4401 SIZE 06 [mm]



Mounting subplates: see tab. E010

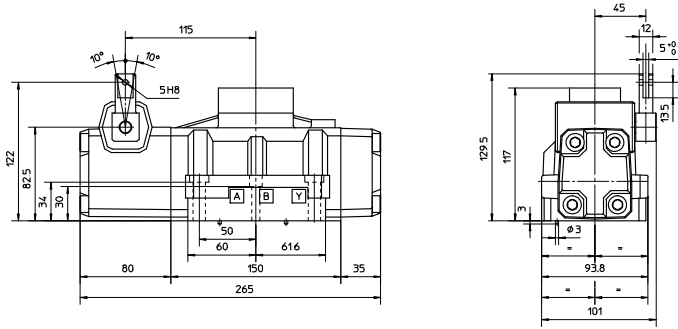
7 DIMENSIONS OF HAND & MECHANICAL OPERATED VALVES ISO 4401 SIZE 10 [mm]



Mounting subplates: see tab. E020

8 DIMENSIONS OF HAND & MECHANICAL OPERATED VALVES ISO 4401 SIZE 16 [mm]

DP-20

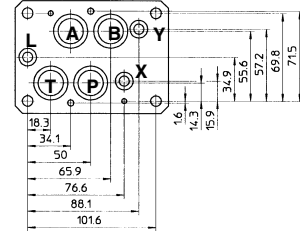


Mass: 9,7 Kg

ISO 4401: 2005

Mounting surface: 4401-07-07-0-05

Fastening bolts:
 4 socket head screws M10x50 class 12.9
 Tightening torque = 70 Nm
 2 socket head screws M6x40 class 12.9
 Tightening torque = 15 Nm
 Diameter of ports A, B, P, T : $\varnothing = 20$ mm
 Diameter of ports X, Y: $\varnothing = 7$ mm
 Seals: 4 OR 130, 3 OR 109/70

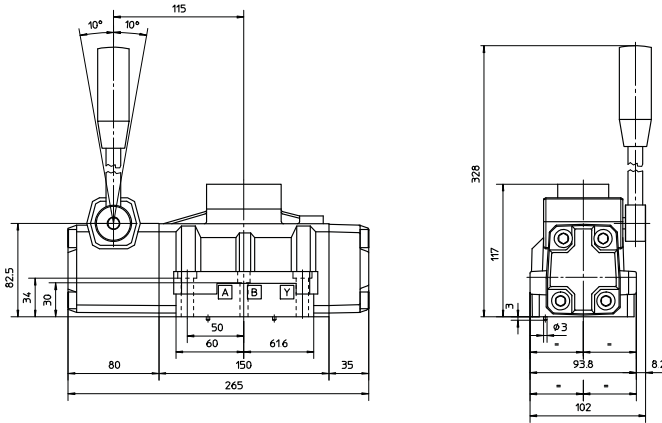


- P** = PRESSURE PORT
- A, B** = USE PORT
- T** = TANK PORT
- X** = EXTERNAL OIL PILOT PORT not used
- Y** = DRAIN PORT
- L** = DRAIN PORT FOR HYDRAULIC CENTERING DEVICE not used

For the max pressures on ports, see section 2

Note: ports X, L are not used.
 Port Y for drain must be connected directly to tank.
 No counter pressure are allowed on Y port.

DP-21

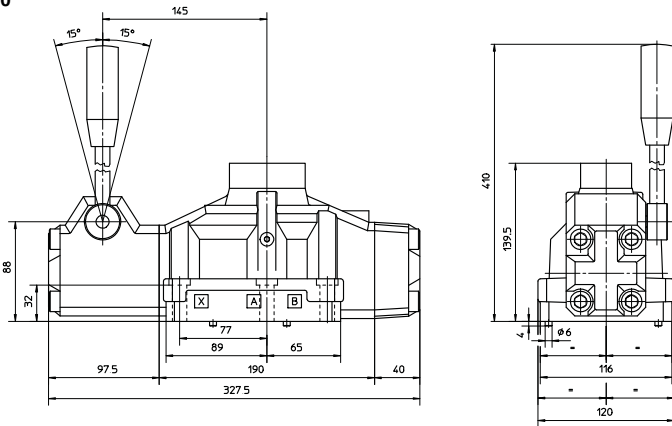


Mass: 10 Kg

Mounting subplates: see tab. E080

9 DIMENSIONS OF HAND & MECHANICAL OPERATED VALVES ISO 4401 SIZE 25 [mm]

DP-30

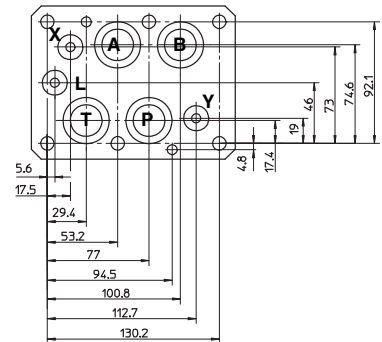


Mass: 15,2 Kg

ISO 4401: 2005

Mounting surface: 4401-08-08-0-05

Fastening bolts:
 6 socket head screws M12x50 class 12.9
 Tightening torque = 125 Nm
 Diameter of ports A, B, P, T : $\varnothing = 24$ mm
 Diameter of ports X, Y: $\varnothing = 7$ mm
 Seals: 4 OR 4112, 3 OR 3056

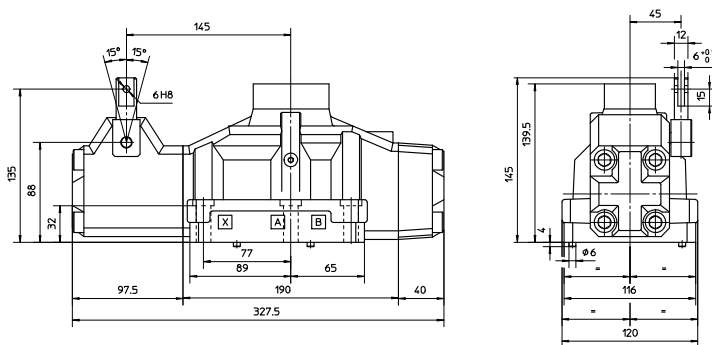


- P** = PRESSURE PORT
- A, B** = USE PORT
- T** = TANK PORT
- X** = EXTERNAL OIL PILOT PORT not used
- Y** = DRAIN PORT
- L** = DRAIN PORT FOR HYDRAULIC CENTERING DEVICE not used

For the max pressures on ports, see section 2

Note: ports X, L are not used.
 Port Y for drain must be connected directly to tank.
 No counter pressure are allowed on Y port.

DP-31



Mass: 15,5 Kg

Mounting subplates: see tab. E080