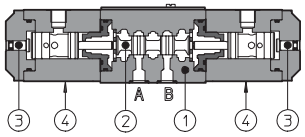
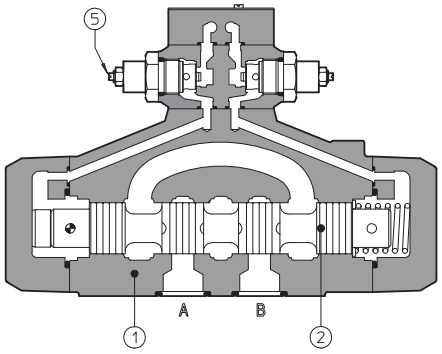
Hydraulic operated directional valves

ISO 4401 size 06, 10, 16, 25 and 32

DH-0511



DP-3411/H



① Main body
② Spool
③ Manual override
④ Hydraulic actuator
⑤ Adjustable chokes (option /H)

Hydraulic operated directional valves are spool type, three or four way, two or three position, designed to operate in oil hydraulic systems.
Available with single or double hydraulic actuator.

DH-0 = ISO 4401 size 06 interface: flow up to 50 l/min.
DK-1 = ISO 4401 size 10 interface: flow up to 160 l/min.
DP-1 = ISO 4401 size 10 interface: flow up to 160 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.
DP-6 = ISO 4401 size 32 interface: flow up to 1000 l/min.

Max pressure:
350 bar for DH-0, DP-1,DP-2, DP-3, DP-6
315 bar for DK-1

1 MODEL CODE

DH-0	4	1	3	/A	**	/*

DH-0 — Directional control valve, size:
DH-0 = 06
DK-1 = 10
DP-1 = 10
DP-2 = 16
DP-3 = 25
DP-6 = 32

4 — Type of actuator:
4 = single actuator
5 = double actuator

1 — Valve configuration, see section 4
0 = free, without springs
1 = spring centered, without detent
3 = spring offset external position
5 = 2 external positions, with detent (only for DH and DK)
7 = center and external positions

3 — Spool type, see section 5

/A — Options:
only for DH-04 and DK-14, see section 4:
/A = actuator device mounted on side of port B
only for DP:
/H = adjustable chokes for controlling the main spool shifting time (meter-out to the pilot chambers of the main valve)
/H9 = adjustable chokes for controlling the main spool shifting time (meter-in to the pilot chambers of the main valve)
/R = with check valve on port P
/S = main spool stroke adjustment (not available for DP-1*)

****** — Series number

/* — Synthetic fluids:
WG = water-glycol
PE = phosphate ester

2 HYDRAULIC CHARACTERISTICS

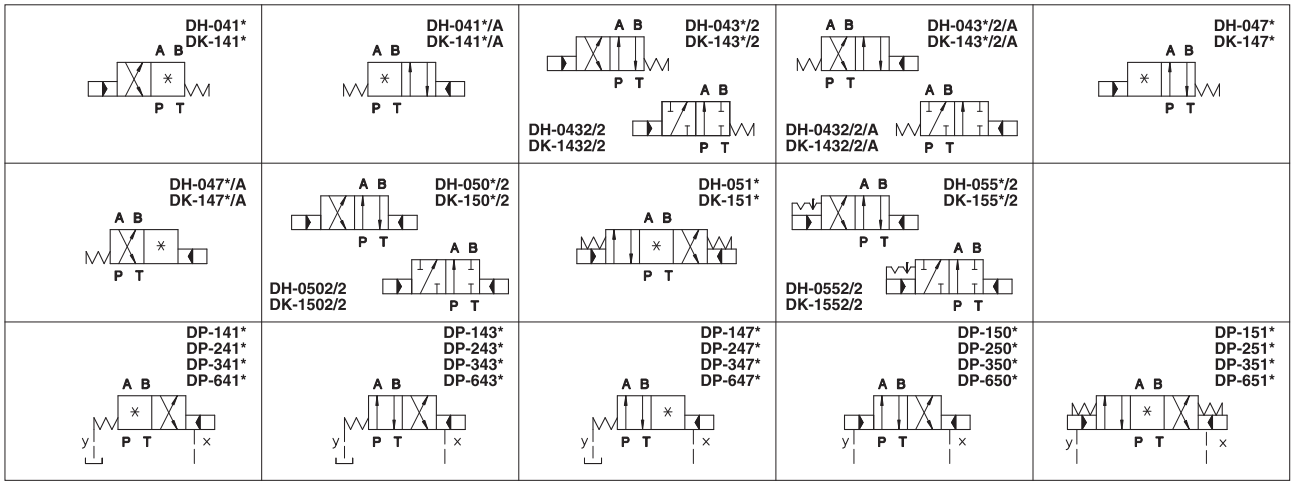
Valve model		DH-0	DK-1	DP-1	DP-2	DP-3	DP-6
Max recommended flow	[l/min]	50	160	160	300	650	1000
Max pressure on port P, A, B	[bar]	350	315	350			
Max pressure on port T (also X, Y for DP)	[bar]	see note (1)		250			
Minimum pilot pressure	[bar]	3 (min) 5 (suggested)		4			
Max recommended pressure on piloting line	[bar]	70		250			
Operation		Acting the actuator on port A, the hydraulic connections are P→B, A→T, except for spool type 4 and 5 where the connections are P→A, B→T.		The spool displacement is achieved by hydraulic pressure on one of the pilot chambers, while the other is unloaded. When pressurizing port X, the port Y has to be directly connected to the tank at null pressure and viceversa. By pressurizing port X, the hydraulic connections are P→B, A→T, except for spool type 4 and 5 where the connections are P→A, B→T. In the spring centered versions the spool is centered by the spring action when both the pilot chambers are unloaded.			

1) **The max pressure on port T has to be not over 50% of pilot pressure.**

3 MAIN CHARACTERISTICS OF HYDRAULIC OPERATED DIRECTIONAL VALVES

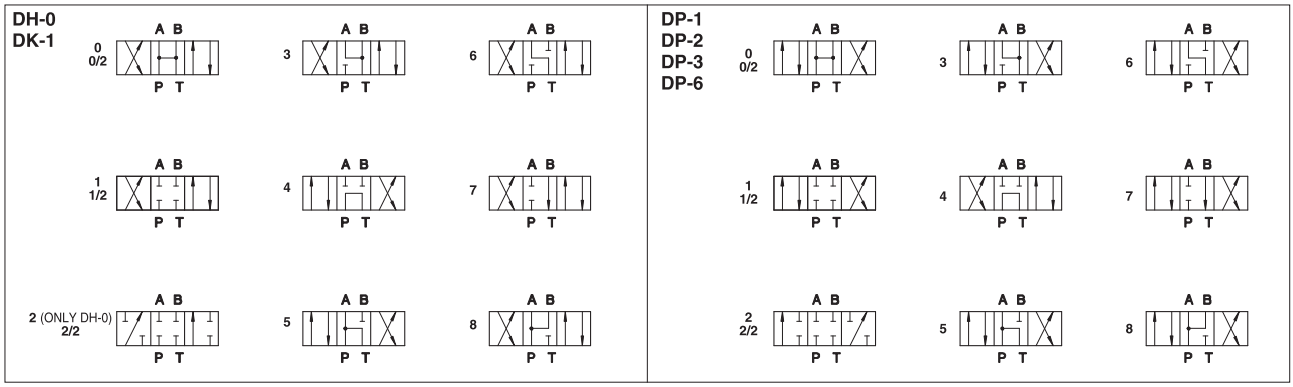
Assembly position / location	Any position except for valves type DH-050, DK-150, DP-*50 (without springs) that must be installed with their longitudinal axis horizontal.
Subplate surface finishing	Roughness index $\sqrt{}^{0,4}$, flatness ratio 0,01/100 (ISO 1101)
Ambient temperature	-20°C to + 70°C
Fluid	Hydraulic oil as per DIN 51524...535, for other fluids see section 1
Recommended viscosity	15 ÷ 100 mm²/s at 40°C (ISO VG 15 ÷ 100)
Fluid contamination class	ISO 19/16, achieved with in line filters at 25 µm value and $ß_{25} \geq 75$ (recommended)
Fluid temperature	-20°C +60°C (standard and /WG seals) -20°C +80°C (/PE seals)

4 VALVE CONFIGURATION



Where the symbol doesn't show the hydraulic connection (*), it depends by the central configuration of the spool, see table 5.

5 SPOOLS - for intermediate passages, see tab. E001



NOTES

- 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 (not available for DP-6). They are properly shaped to reduce water-hammer shocks during the switching;
- Spool type 1, 3, 8 and 1/2 for DH-0 and DK-1 are available as 1P, 3P, 8P (only for DH-0), and 1/2P to limit valve leakage.
- On request, other type of spools are available.

6 Q/Δp DIAGRAMS

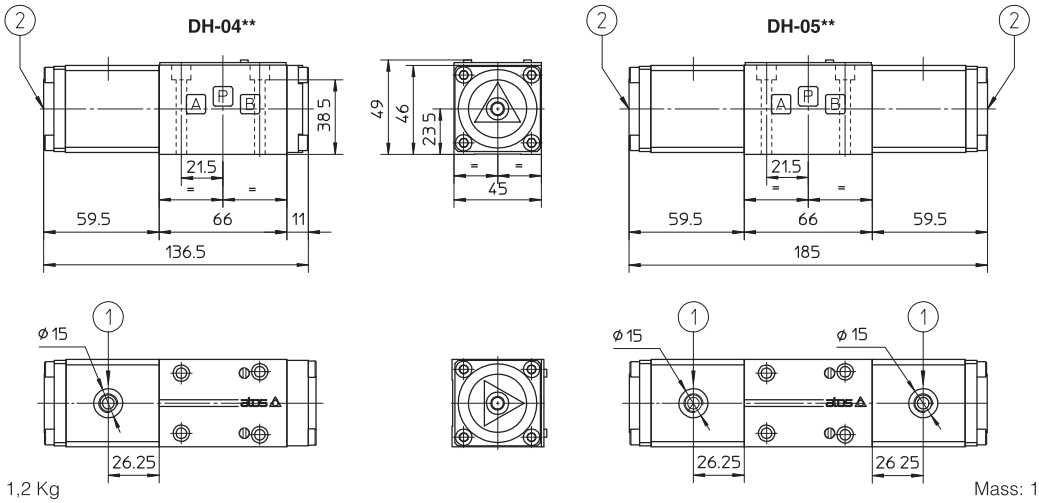
DH-0	See note and diagrams on table E010 relating the DHO valve from which DH-0* are derivated
DK-1	See note and diagrams on table E025 relating the DKE, DKER valve from which DK-1* are derivated
DP-1	See note and diagrams on table E080 relating the DPH*-1 valve from which DP-1* are derivated
DP-2	See note and diagrams on table E080 relating the DPH*-2 valve from which DP-2* are derivated
DP-3	See note and diagrams on table E080 relating the DPH*-3 valve from which DP-3* are derivated
DP-6	See note and diagrams on table E080 relating the DPH*-6 valve from which DP-6* are derivated

7 DIMENSIONS OF HYDRAULIC OPERATED VALVES ISO 4401 size 06 and 10 [mm]

ISO 4401: 2005
Mounting surface: 4401-03-02-0-05 (see table P005)
Fastening bolts: 4 socket head screws M5x50 class 12.9
Tightening torque = 8 Nm
Diameter of ports A, B, P, T: Ø = 7,5 mm (max)
Seals: 4 OR 108

① Pilot pressure port G1/8"
② Manual override

Mounting subplates: see tab. E010



Mass: 1,2 Kg

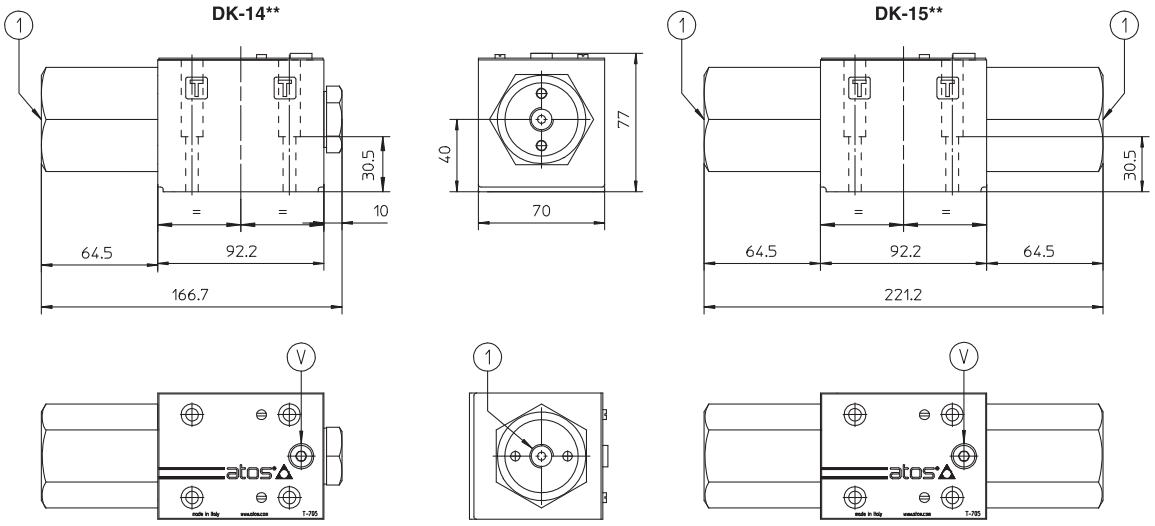
Mass: 1,6 Kg

ISO 4401: 2005
Mounting surface: 4401-05-05-0-05 (see table P005)
(without X port)
Fastening bolts: 4 socket head screws M6x40 class 12.9
Tightening torque = 15 Nm
Diameter of ports A, B, P, T: Ø = 11,2 mm (max)
Diameter of port Y: Ø = 5 mm
Seals: 5 OR 2050, 1 OR 108

① Pilot pressure port G1/4"
Ⓥ Air bleed

Mounting subplates: see tab. E025 (only version /Y)

Note: Line Y must be always present and no counter pressure are allowed on this line.

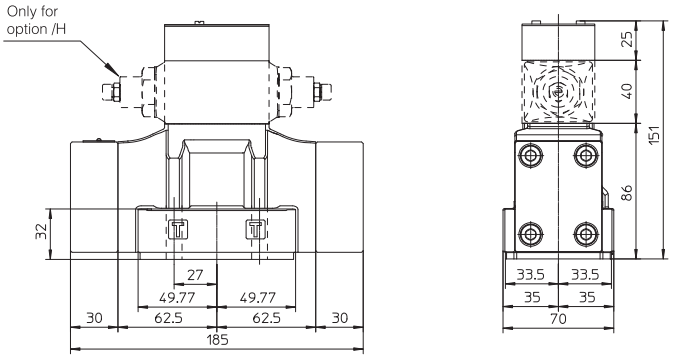


Mass: 3,4 Kg

Mass: 4,2 Kg

DP-1

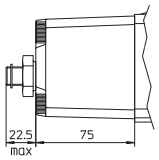
ISO 4401: 2005
Mounting surface: 4401-05-05-0-05 (see table P005)
Fastening bolts:
4 socket head screws M6x40 class 12.9
Tightening torque = 15 Nm
Diameter of ports A, B, P, T : Ø = 11
Diameter of ports X,Y: Ø = 5 mm
Seals: 5 OR 2050, 3 OR 108

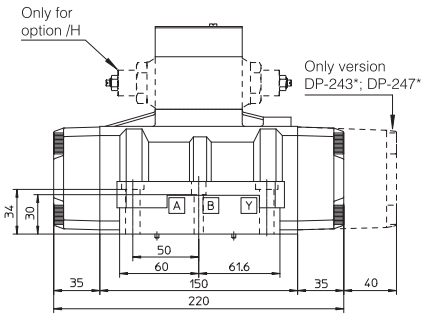


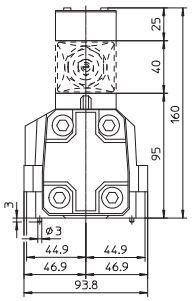
DP-2

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 : Ø = 20
Diameter of ports X,Y: Ø = 7 mm
Diameter of port L: Ø = 5 mm
Seals: 4 OR 130, 3 OR 109/70

Stroke adjustment device for option /S







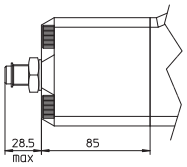
Mounting subplates: see tab. E080

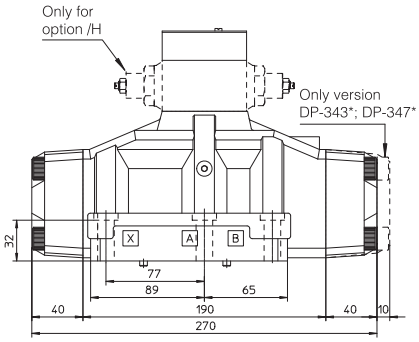
Mass: 10 Kg

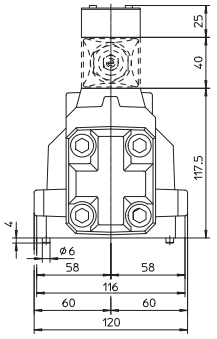
DP-3

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 : Ø = 24
Diameter of ports X,Y: Ø = 7 mm
Diameter of port L: Ø = 5 mm
Seals: 4 OR 4112, 3 OR 3056

Stroke adjustment device for option /S





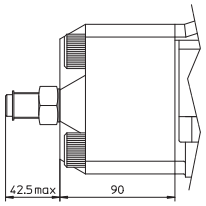


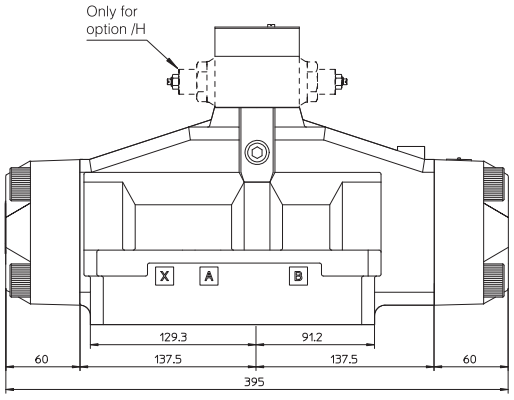
Mass: 15,2 Kg

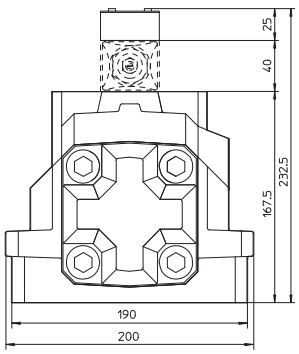
DP-6

ISO 4401: 2005
Mounting surface: 4401-10-09-0-05
(port L optional)
Fastening bolts:
6 socket head screws M20x90 class 12.9
Tightening torque = 600 Nm
Diameter of ports A, B, P, T : Ø = 34 mm
Diameter of ports X,Y: Ø = 7 mm
Diameter of port L: Ø = 5 mm
Seals: 4 OR 144, 3 OR 3056

Stroke adjustment device for option /S







Mounting subplates: see tab. K280

Mass: 38 Kg