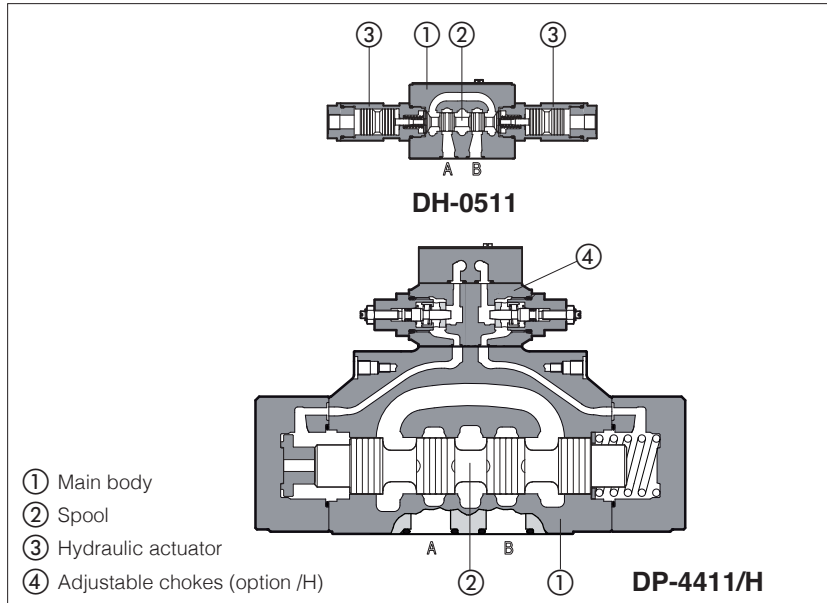


Hydraulic operated directional valves

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



Hydraulic operated directional valves, spool type, three or four way, two or three positions. Available with single or double hydraulic actuator.

Valve sizes and max flow:

- DH-0** = size 06 flow up to 80 l/min
- DK-1** = size 10, flow up to 160 l/min
- DP-1** = size 10, flow up to 160 l/min
- DP-2** = size 16, flow up to 300 l/min
- DP-4** = size 25, flow up to 700 l/min
- DP-6** = size 32, flow up to 1000 l/min

Max pressure:

- 350 bar** for DH-0, DP-1, DP-2, DP-4, DP-6
- 315 bar** for DK-1

1 MODEL CODE

DH-0	4	1	3	/	A	**	/	*
Directional control valve, size: DH-0 = 06 DK-1 = 10 DP-1 = 10 DP-2 = 16 DP-4 = 25 DP-6 = 32								Seals material, see section 4): - = NBR PE = FKM BT = HNBR
Type of actuator: 4 = single actuator 5 = double actuator								Series number
Valve configuration, see section 5) 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								Options: only for DH-04 and DK-14, see section 5): /A = actuator device mounted on side of port B only for DP (1): /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) /S = main spool stroke adjustment (not available for DP-1*)
								Spool type, see section 5)

(1) For more information about option , see technical table E085

2 HYDRAULIC CHARACTERISTICS

Valve model		DH-0	DK-1	DP-1	DP-2	DP-4	DP-6
Max recommended flow	[l/min]	80	160	160	300	700	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]	5			4		
Max recommended pressure on piloting line	[bar]	210	70	250			

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

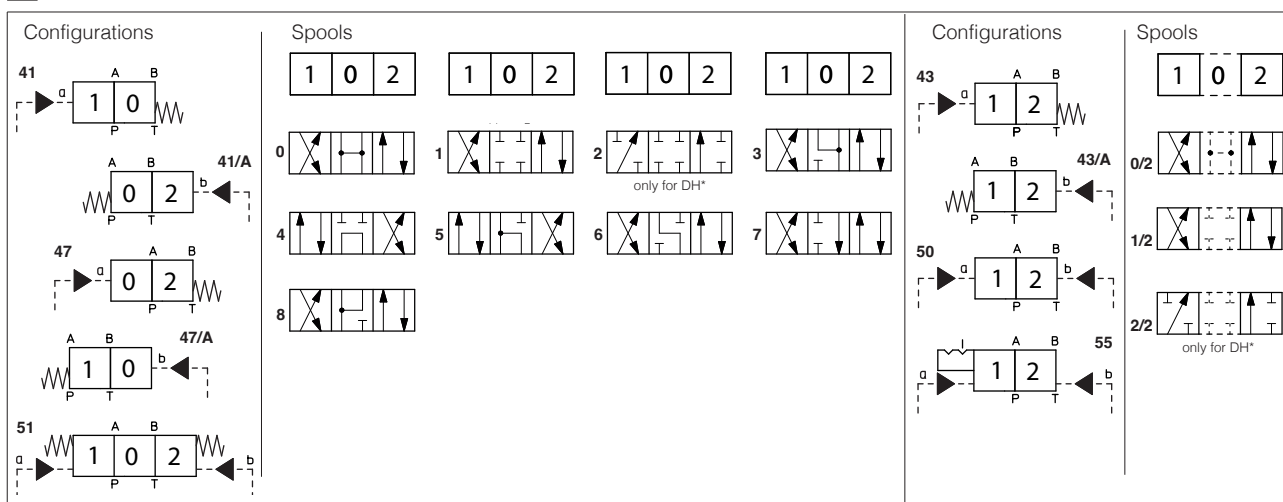
3 GENERAL CHARACTERISTICS

Assembly position	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 to ISO 4401	Acceptable roughness index, Ra ≤0,8 recommended Ra 0,4 - flatness ratio 0,01/100
MTTFd valves according to EN ISO 13849	75 years for DP* , 150 years, for DH and DK, see technical table P007
Ambient temperature range	Standard = -30°C ÷ +70°C /PE option = -20°C ÷ +70°C /BT option = -40°C ÷ +70°C
Storage temperature range	Standard = -30°C ÷ +80°C /PE option = -20°C ÷ +80°C /BT option = -40°C ÷ +80°C
Surface protection	Body: zinc coating with black passivation
Corrosion resistance	Salt spray test (EN ISO 9227) > 200 h
Compliance	RoHS Directive 2011/65/EU as last update by 2015/863/EU REACH Regulation (EC) n°1907/2006

4 SEALS AND HYDRAULIC FLUID - for other fluids not included in below table, consult our technical office

Seals, recommended fluid temperature	NBR seals (standard) = -20°C ÷ +80°C, with HFC hydraulic fluids = -20°C ÷ +50°C FKM seals (/PE option) = -20°C ÷ +80°C NBR low temp (standard) = -20°C ÷ +80°C, with HFC hydraulic fluids = -20°C ÷ +50°C		
Recommended viscosity	15 ÷ 100 mm ² /s - max allowed range 2,8 ÷ 500 mm ² /s		
Max fluid contamination level	ISO4406 class 20/18/15 NAS1638 class 9, see also filter section at www.atos.com or KTF catalog		
Hydraulic fluid	Suitable seals type	Classification	Ref. Standard
Mineral oils	NBR, FKM, NBR low temp	HL, HLP, HLPD, HVLP, HVLPD	DIN 51524
Flame resistant without water	FKM	HFDU, HFDR	ISO 12922
Flame resistant with water	NBR, NBR low temp	HFC	

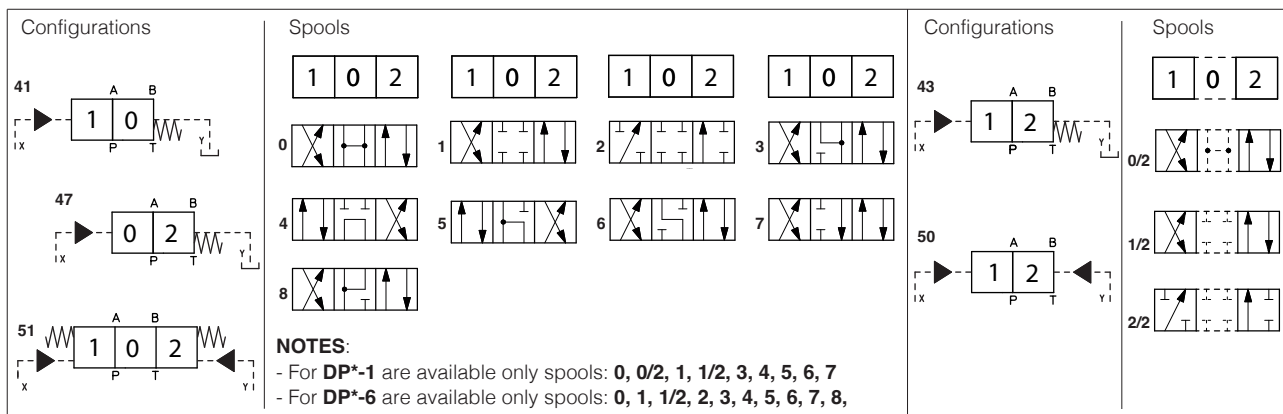
5 CONFIGURATIONS and SPOOLS valves type DH-*, DK-*



NOTES

- spools type **0** and **3** are also available as **0/1** and **3/1** with restricted oil passages in central position, from user ports to tank.
- spools type **1**, **4** and **5** are also available as **1/1** (for DH and DK), **4/8** and **5/1** (only for DH). They are properly shaped to reduce water-hammer shocks during the switching.
- only for DH: spools type **1**, **1/2**, **3**, **8** are available as **1P**, **1/2P**, **3P**, **8P** to limit valve internal leakages.

6 CONFIGURATIONS and SPOOLS valves type DP-*



NOTES:

- For **DP*-1** are available only spools: **0**, **0/2**, **1**, **1/2**, **3**, **4**, **5**, **6**, **7**
- For **DP*-6** are available only spools: **0**, **1**, **1/2**, **2**, **3**, **4**, **5**, **6**, **7**, **8**,

Special shaped spools

- spools type **0** and **3** are also available as **0/1** and **3/1** with restricted oil passages in central position, from user ports to tank.
- spools type **1**, **4** and **5** are also available as **1/1**, **4/8** and **5/1** are properly shaped to reduce water-hammer shocks during the switching.

7 Q/Δp DIAGRAMS

DH-0	See table E015 relating the DHE valve from which DH-0* are derived
DK-1	See table E025 relating the DKE valve from which DK-1* are derived
DP-1	See table E085 relating the DPH*-1 valve from which DP-1* are derived
DP-2	See table E085 relating the DPH*-2 valve from which DP-2* are derived
DP-4	See table E085 relating the DPH*-4 valve from which DP-4* are derived
DP-6	See table E085 relating the DPH*-6 valve from which DP-6* are derived

8 INSTALLATION DIMENSIONS OF DH-0 [mm]

ISO 4401: 2005
Mounting surface: 4401-03-02-0-05 (see table P005)
 Fastening bolts: 4 socket head screws M5x30 class 12.9
 Tightening torque = 8 Nm
 Diameter of ports A, B, P, T: Ø = 7,5 mm (max)
 Seals: 4 OR 108

Mounting subplates: see tab. K280

DH-0* ① Pilot pressure port G1/8"

DH-04**

Mass: 1,2 Kg

DH-05**

Mass: 1,5 Kg

9 INSTALLATION DIMENSIONS OF DK-1 [mm]

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

Mounting subplates: see tab. K280 (only version Y)

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

① Pilot pressure port G1/4"

DK-14**

Mass: 3,4 Kg

DK-15**

Mass: 4,2 Kg

10 INSTALLATION DIMENSIONS OF DP-* [mm]

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

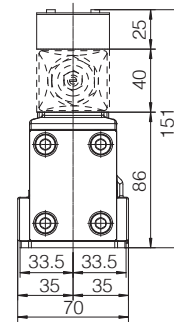
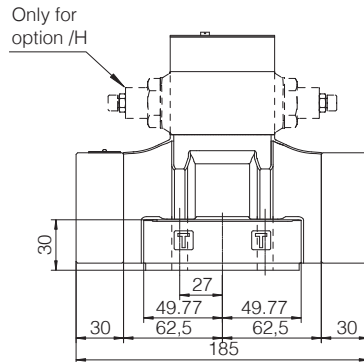
Tightening torque = 15 Nm

Diameter of ports A, B, P, T : $\varnothing = 11$

Diameter of ports X,Y: $\varnothing = 5$ mm

Seals: 5 OR 2050, 2 OR 108

Mounting subplates: see tab. K280



Mass: 7,1 Kg

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 M6x45 class 12.9

Tightening torque = 15 Nm

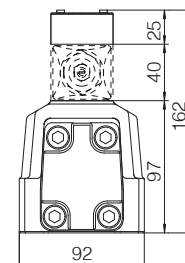
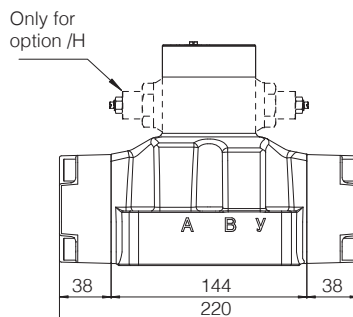
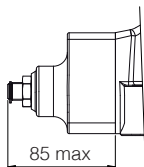
Diameter of ports A, B, P, T: $\varnothing = 20$

Diameter of ports X,Y: $\varnothing = 7$ mm

Seals: 4 OR 130, 2 OR 2043

Mounting subplates: see tab. K280

Stroke adjustment device for option /S



Mass: 10 Kg

DP-4

ISO 4401: 2005

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

Fastening bolts:

6 socket head screws M12x60 class 12.9

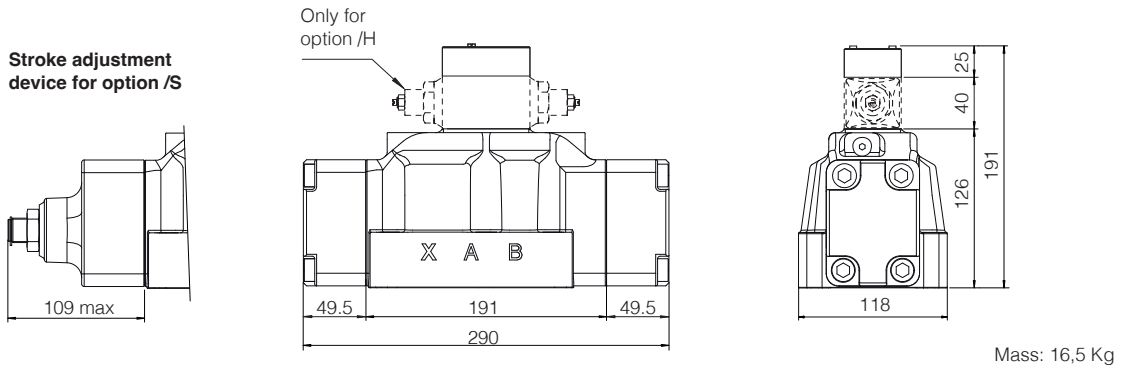
Tightening torque = 125 Nm

Diameter of ports A, B, P, T : $\varnothing = 24$

Diameter of ports X, Y: $\varnothing = 7$ mm

Seals: 4 OR 4112, 2 OR 3056

Mounting subplates: see tab. K280



DP-6

ISO 4401: 2005

Mounting surface: 4401-10-09-0-05

Fastening bolts:

6 socket head screws M20x80 class 12.9

Tightening torque = 600 Nm

Diameter of ports A, B, P, T : $\varnothing = 34$ mm

Diameter of ports X, Y: $\varnothing = 7$ mm

Seals: 4 OR 144, 2 OR 3056

Mounting subplates: see tab. K280

