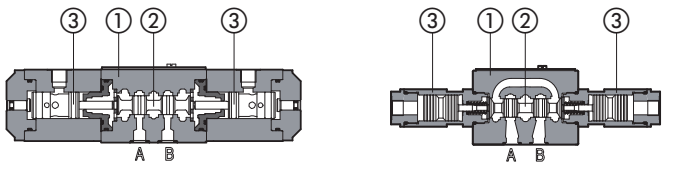
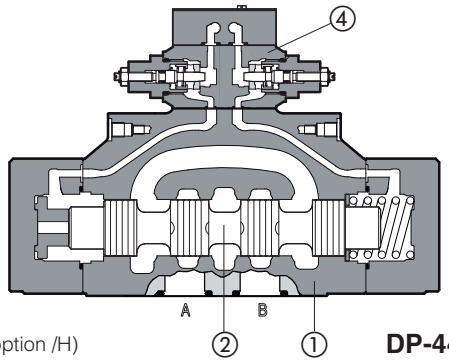
Hydraulic operated directional valves

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



DH-0511 (series 75)

DH-0511 (series 80)



DP-4411/H

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

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
series 80 flow up to 80 l/min
series 75 flow up to 50 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	**	/	*

DH-0
Directional control valve, size:
DH-0 = 06
DK-1 = 10
DP-1 = 10
DP-2 = 16
DP-4 = 25
DP-6 = 32

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

1
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

3
Spool type, see section 5

A
Options:
only for DH-04 and DK-14, see section 5:
/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 (not available for DP-1*)
/S = main spool stroke adjustment (not available for DP-1*)

******
Series number
Only for DH-0 to be specified in the order code:
80 new series
75 old series **(1)**

*****
Seals material, see section 4:
- = NBR
PE = FKM
BT = HNBR

(1) DH series 75 is a phase-out component not recommended for new applications

2 HYDRAULIC CHARACTERISTICS

Valve model		DH-0 series 80	DH-0 series 75 (1)	DK-1	DP-1	DP-2	DP-4	DP-6
Max recommended flow	[l/min]	80	50	160	160	300	700	1000
Max pressure on port P, A, B	[bar]	350	350	315	350			
Max pressure on port T (also X, Y for DP)	[bar]	see note **(2)**			250			
Minimum pilot pressure	[bar]	5			4			
Max recommended pressure on piloting line	[bar]	210	70	70	250			

(1) DH series 75 is a phase-out component not recommended for new applications
(2) The max pressure on port T has to be not over 50% of pilot pressure

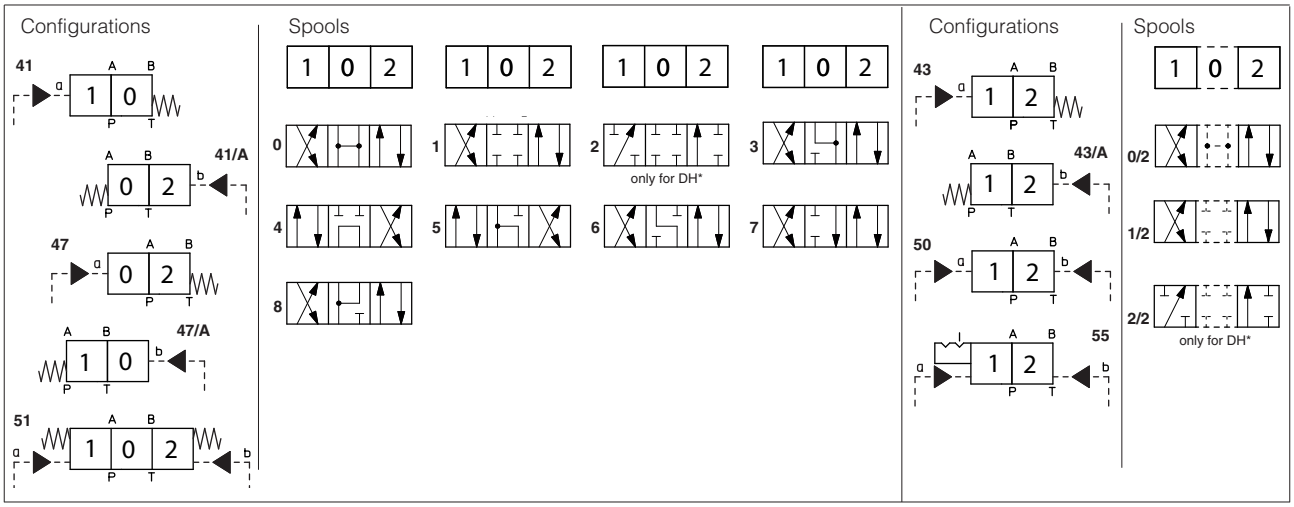
3 GENERAL CHARACTERISTICS

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	150 years, 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

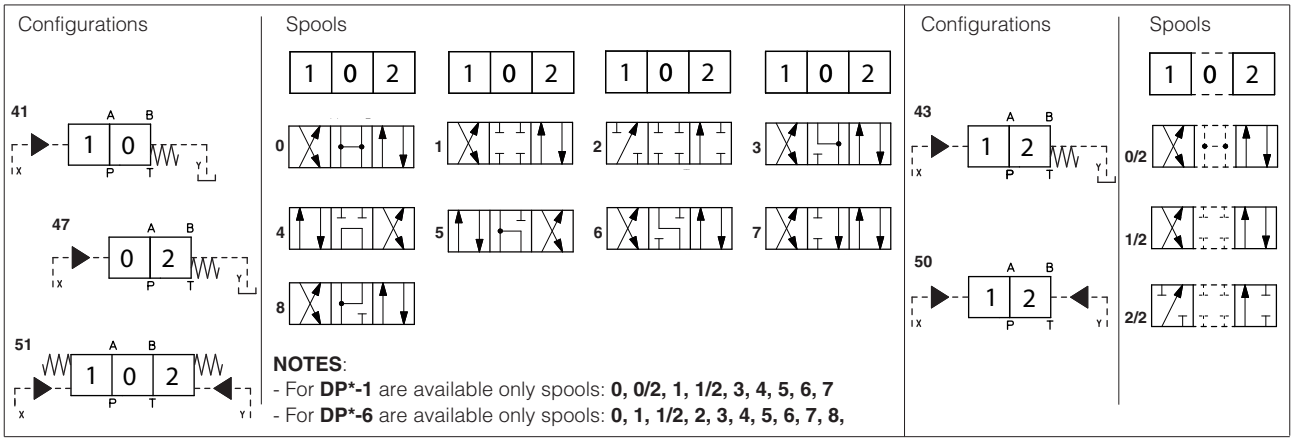
Seals, recommended fluid temperature	NBR seals (standard) = -20°C ÷ +80°C, with HFC hydraulic fluids = -20°C ÷ +50°C FKM seals (/PE option) = -20°C ÷ +80°C NBR low temp (standard) = -20°C ÷ +80°C, with HFC hydraulic fluids = -20°C ÷ +50°C		
Recommended viscosity	15÷100 mm²/s - max allowed range 2,8 ÷ 500 mm²/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, 4/8** (only for DH), and **5/1.** They are properly shaped to reduce water-hammer shocks during the switching.
- spools type **1, 1/2, 3, 8** are available as **1P, 1/2P, 3P, 8P** (only for DH-0) 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 series **80**	See table E015 relating the DHE valve from which DH-0* are derivated
DK-1	See table E025 relating the DKE valve from which DK-1* are derivated
DP-1	See table E085 relating the DPH*-1 valve from which DP-1* are derivated
DP-2	See table E085 relating the DPH*-2 valve from which DP-2* are derivated
DP-4	See table E085 relating the DPH*-4 valve from which DP-4* are derivated
DP-6	See table E085 relating the DPH*-6 valve from which DP-6* are derivated

8 INSTALLATION DIMENSIONS OF DH-0 [mm]

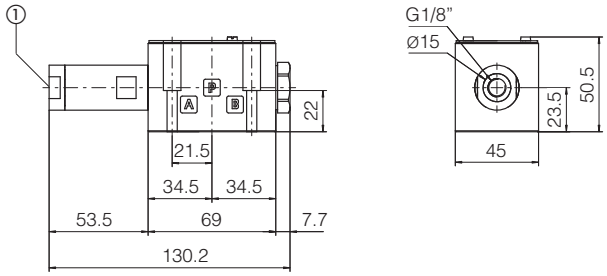
ISO 4401: 2005
Mounting surface: 4401-03-02-0-05 (see table P005)
Fastening bolts: 4 socket head screws M5x30 class 12.9
Tightening torque = 8 Nm
Diameter of ports A, B, P, T: Ø = 7,5 mm (max)
Seals: 4 OR 108

Mounting subplates: see tab. K280

DH-0* series 80

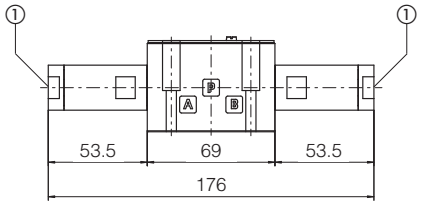
① Pilot pressure port G1/8”

DH-04**



Mass: 1,2 Kg

DH-05**

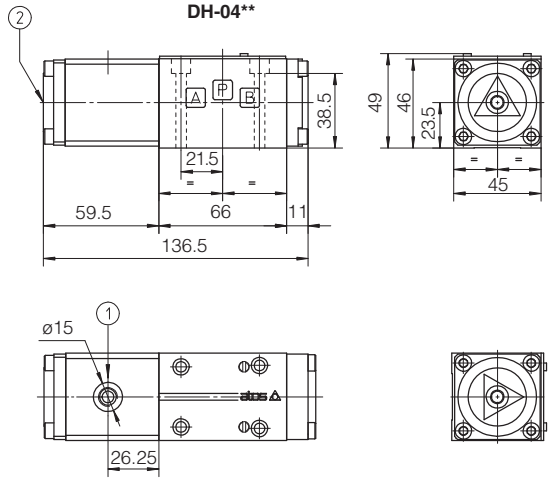


Mass: 1,5 Kg

DH-0* series 75 (phase out)

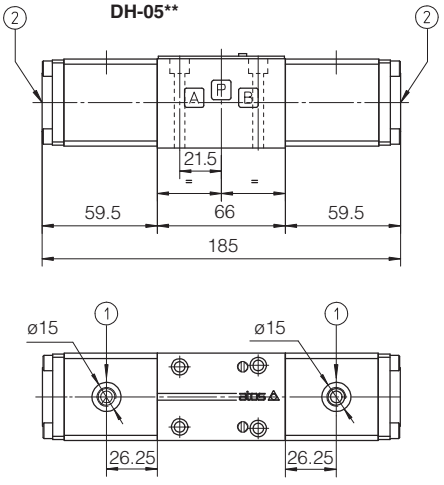
① Pilot pressure port G1/8”
② Manual override

DH-04**



Mass: 1,2 Kg

DH-05**



Mass: 1,6 Kg

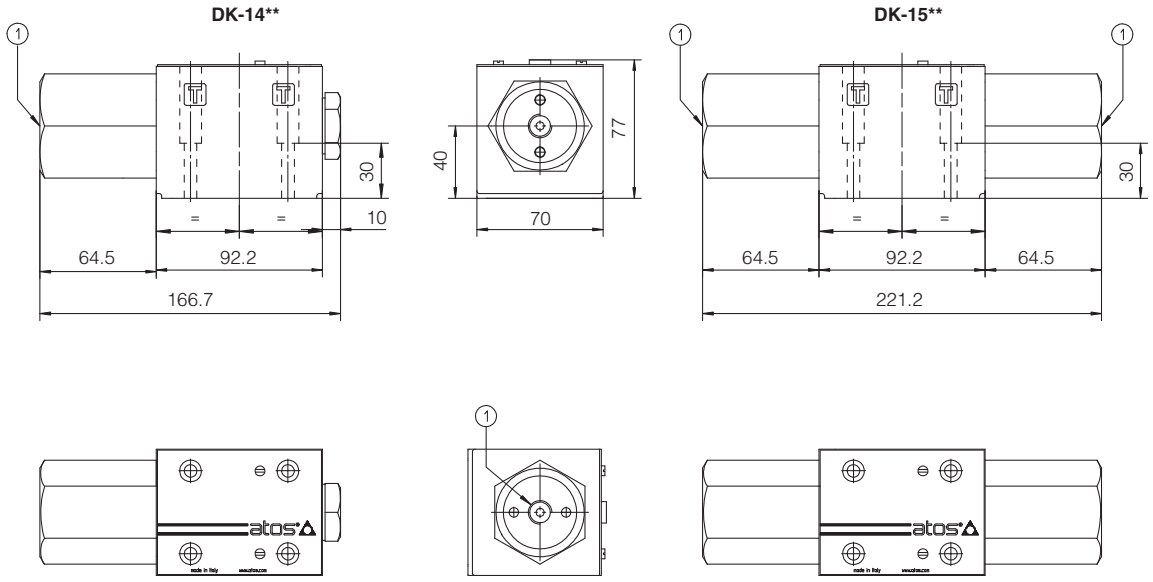
9 INSTALLATION DIMENSIONS OF DK-1 [mm]

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"



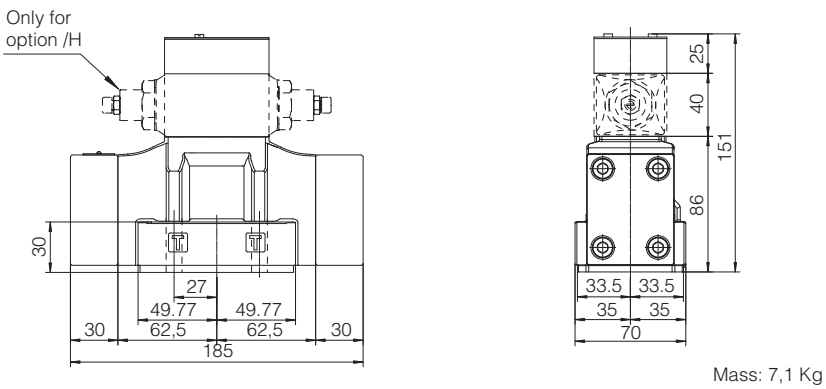
Mass: 3,4 Kg

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 : Ø = 11
Diameter of ports X,Y: Ø = 5 mm
Seals: 5 OR 2050, 2 OR 108

Mounting subplates: see tab. K280



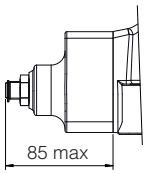
Mass: 7,1 Kg

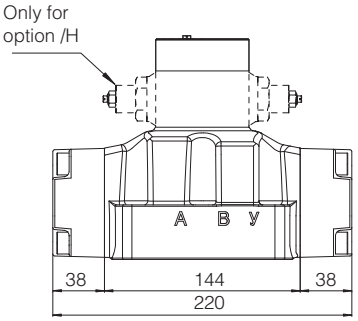
DP-2

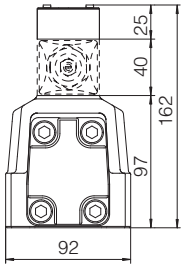
ISO 4401: 2005
Mounting surface: 4401-07-07-0-05
Fastening bolts:
4 socket head screws M10x50 class 12.9
Tightening torque = 70 Nm
2 socket head screws M6x45 class 12.9
Tightening torque = 15 Nm
Diameter of ports A, B, P, T: Ø = 20
Diameter of ports X,Y: Ø = 7 mm
Seals: 4 OR 130, 2 OR 2043

Mounting subplates: see tab. K280

Stroke adjustment device for option /S







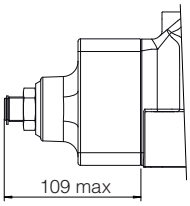
Mass: 10 Kg

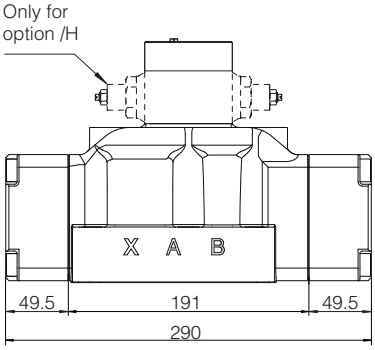
DP-4

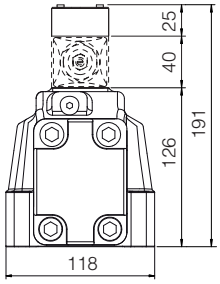
ISO 4401: 2005
Mounting surface: 4401-08-08-0-05
Fastening bolts:
6 socket head screws M12x60 class 12.9
Tightening torque = 125 Nm
Diameter of ports A, B, P, T : Ø = 24
Diameter of ports X,Y: Ø = 7 mm
Seals: 4 OR 4112, 2 OR 3056

Mounting subplates: see tab. K280

Stroke adjustment device for option /S







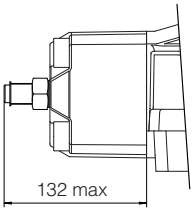
Mass: 16,5 Kg

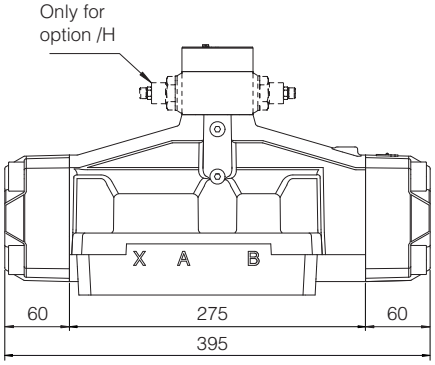
DP-6

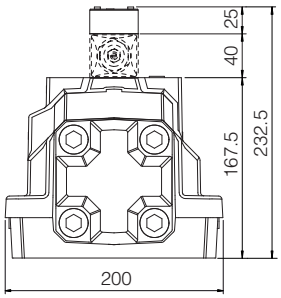
ISO 4401: 2005
Mounting surface: 4401-10-09-0-05
Fastening bolts:
6 socket head screws M20x80 class 12.9
Tightening torque = 600 Nm
Diameter of ports A, B, P, T : Ø = 34 mm
Diameter of ports X,Y: Ø = 7 mm
Seals: 4 OR 144, 2 OR 3056

Mounting subplates: see tab. K280

Stroke adjustment device for option /S







Mass: 38 Kg