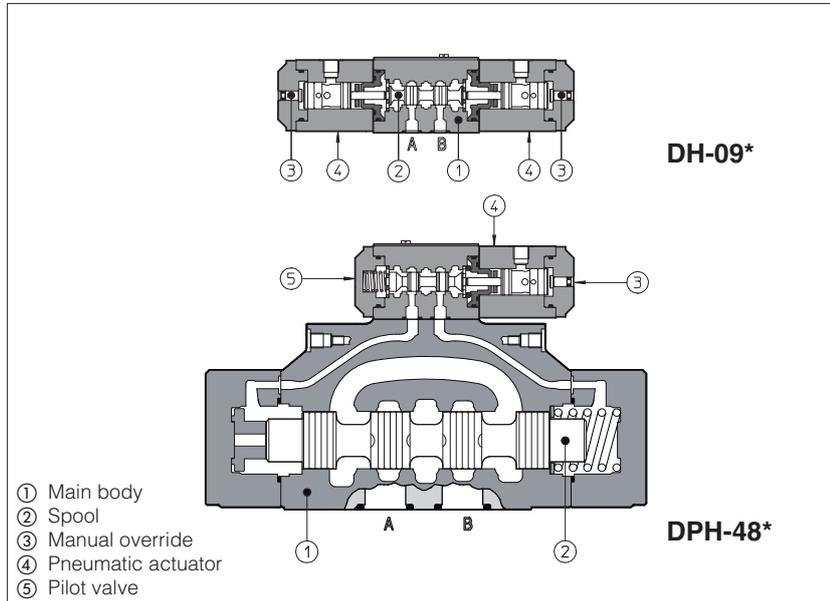


Pneumatic operated directional valves

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



Pneumatic operated directional valves are spool type ②, three or four way, two or three position, designed to operate in oil hydraulic systems.
Available with single or double pneumatic actuator ④ with manual override.

Valve sizes and max flow:

- DH-0** = size 06, flow up to 50 l/min
- DK-1** = size 10, flow up to 160 l/min
- DPH-2** = size 16, flow up to 300 l/min
- DPH-4** = size 25, flow up to 700 l/min
- DPH-6** = size 32, flow up to 1000 l/min

Max pressure:

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

1 MODEL CODE

DH-0	8	1	3	/ A	**	/	*
Directional control valve, size: DH-0 = 06 DK-1 = 10 DPH-2 = 16 DPH-4 = 25 DPH-6 = 32							Seals material, see section 3: - = NBR PE = FKM
Type of actuator: 8 = single actuator 9 = double actuator							Series number
Valve configuration, see sections 4 and 5 0 = free, without springs 1 = spring centered, without detent 3 = spring offset external position 5 = 2 external positions, with detent 7 = center and external positions							Options: only for valve with single actuator: /A = Actuator device mounted on side of port B (for DH and DK). Actuator device mounted on side of port A of main body (for DPH) only for DPH: /D = internal drain /E = external pressure /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 = pilot pressure generator on port P at 4 bar /S = main spool stroke adjustment
Spool type, see sections 4 and 5							

2 HYDRAULIC CHARACTERISTICS

Valve model	DH-0	DK-1	DPH-2	DPH-4	DPH-6
Max recommended flow [l/min]	50	160	300	700	1000
Max pressure on port P, A, B (also X for DP) [bar]	350	315		350	
Max pressure on port T [bar]	see note (1)			250	
Max pressure on port L and Y [bar]	-			null pressure	
Recommended oil pressure on piloting line [bar]	-			Min = 4 Max = 250 The device /R generates an additional pressure drop, in order to ensure the minimum pilot pressure, for correct operation of the valves with internal pilot and fitted with spools type 0, 0/1, 4, 4/8, 5 . The device /R has to be fitted when the pressure drop in the valve, verified on flow versus pressure diagrams, is lower than the minimum pilot pressure value.	
Recommended pneumatic pressure (2) [bar]	Min = 5 Max = 12	Min = 2 Max = 12		Min = 5 Max = 12	

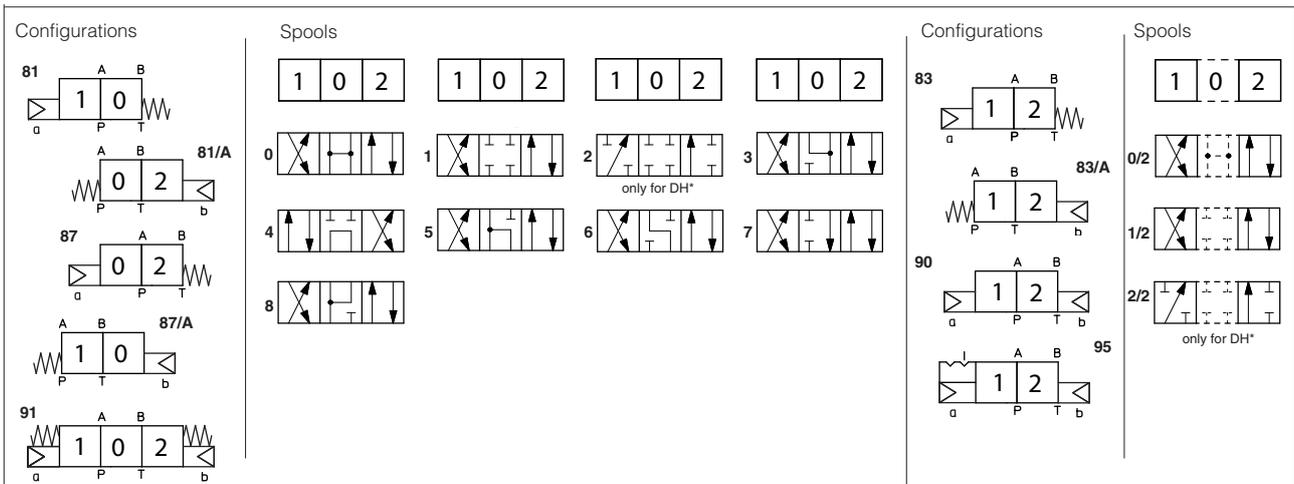
(1) The max pressure on port T has to be not over 200% of pilot pressure

(2) Filtered and lubricated air

3 MAIN CHARACTERISTICS, SEALS AND FLUIDS - for other fluids not included in below table, consult our technical office

Assembly position / location	Any position for all valves except for type *-90 (without springs) that must be installed with horizontal axis if operated by impulses.		
Subplate surface finishing	Roughness index Ra 0,4 - flatness ratio 0,01/100 (ISO 1101)		
Compliance	RoHS Directive 2011/65/EU as last update by 2015/65/EU REACH Regulation (EC) n°1907/2006		
Ambient temperature	Standard execution = -30°C ÷ +70°C; /PE option = -20°C ÷ +70°C;		
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		
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	HL, HLP, HLPD, HVLP, HVLPD	DIN 51524
Flame resistant without water	FKM	HFDU, HFDR	ISO 12922
Flame resistant with water	NBR	HFC	

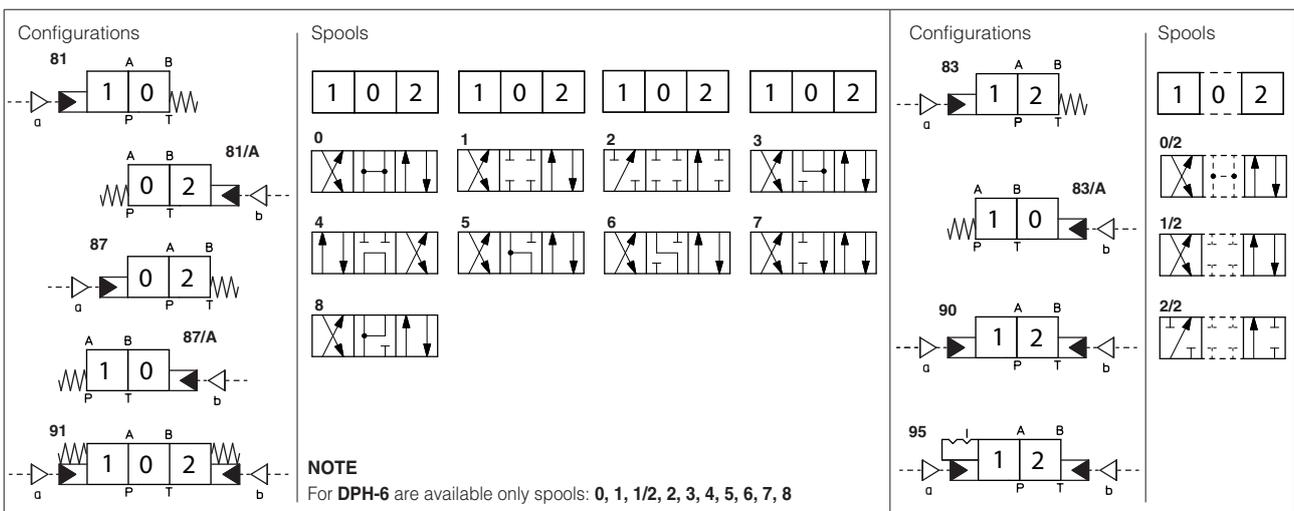
4 CONFIGURATIONS and SPOOLS of valves type DH-*, DK-*



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-0) 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.

5 CONFIGURATIONS and SPOOLS of valves type DPH-*



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.

6 Q/Δp DIAGRAMS

DH-0	See note and diagrams on table E010 relating the DH* valve from which DH-0* are derived
DK-1	See note and diagrams on table E025 relating the DKE valve from which DK-1* are derived
DPH-2	See note and diagrams on table E085 relating the DPH*-2 valve from which DP-2* are derived
DPH-4	See note and diagrams on table E085 relating the DPH*-4 valve from which DP-4* are derived
DPH-6	See note and diagrams on table E085 relating the DPH*-6 valve from which DP-6* are derived

7 INSTALLATION DIMENSIONS of VALVES type DH and DK [mm]

ISO 4401: 2005

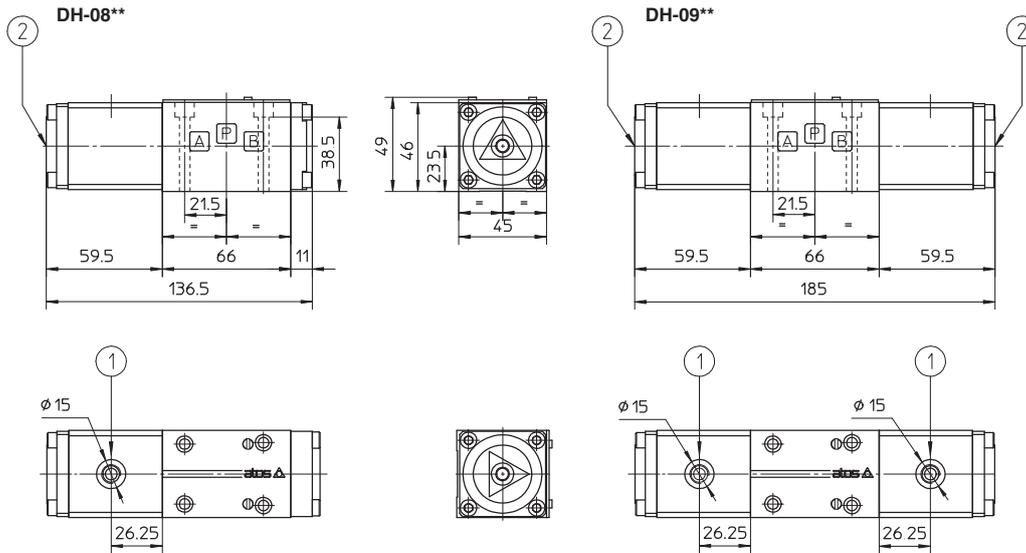
Mounting surface: 4401-03-02-0-05

Fastening bolts: 4 socket head screws M5x50 class 12.9

Tightening torque = 8 Nm

Diameter of ports A, B, P, T: $\varnothing = 7,5$ mm (max)

Seals: 4 OR 108



Mass: 1,2 Kg

Mass: 1,6 Kg

- ① Pilot pressure port G1/8"
- ② Manual override

Mounting subplates: see tab. E010

ISO 4401: 2005

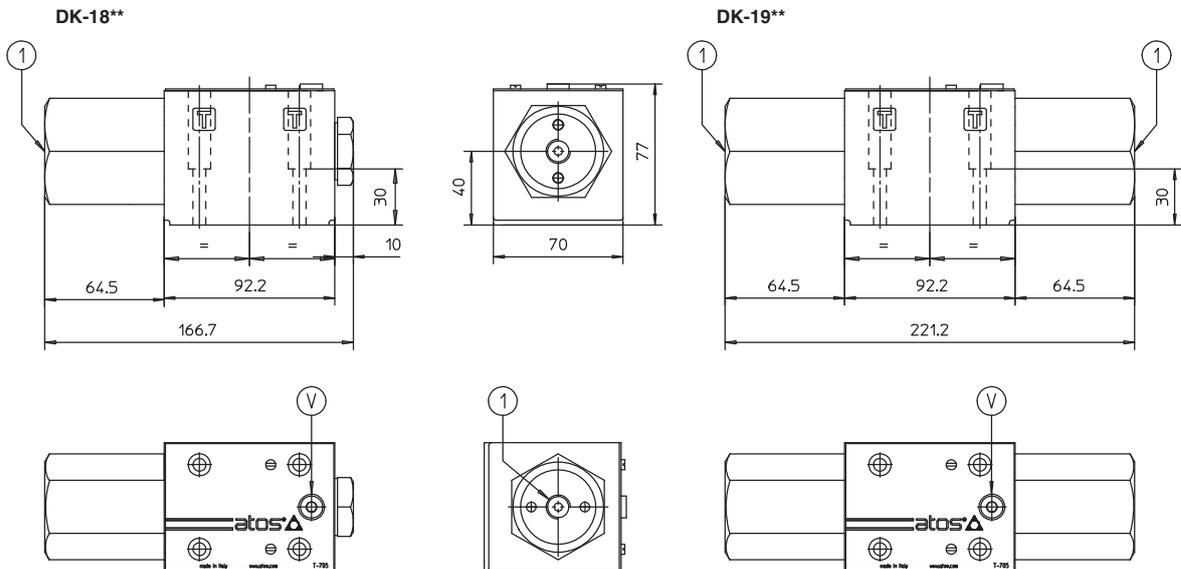
Mounting surface: 4401-05-04-0-05

Fastening bolts: 4 socket head screws M6x40 class 12.9

Tightening torque = 15 Nm

Diameter of ports A, B, P, T: $\varnothing = 11,2$ mm (max)

Seals: 5 OR 2050



Mass: 3,4 Kg

Mass: 4,2 Kg

- ① Pilot pressure port G1/4"
- Ⓥ Air bleed

Mounting subplates: see tab. E025

8 INSTALLATION DIMENSIONS of VALVES type DP [mm]

DPH-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

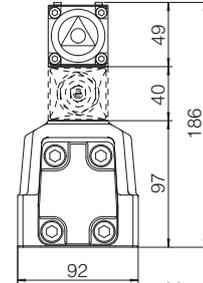
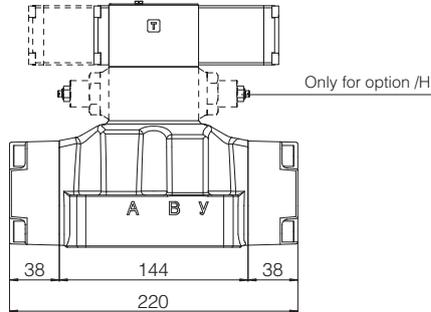
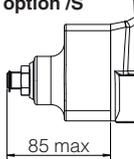
Tightening torque = 15 Nm

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

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

Seals: 4 OR 130, 2 OR 2043

Stroke adjustment device for option /S



Mass: 11,5 Kg

DPH-4

ISO 4401: 2005

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

Fastening bolts:

6 socket head screws M12x60 class 12.9

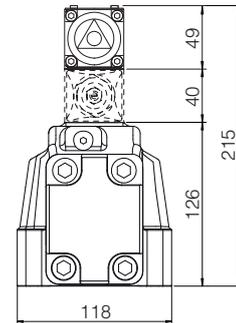
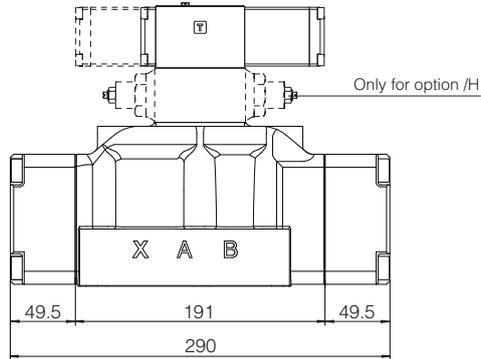
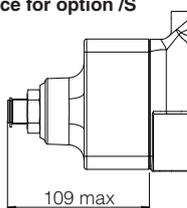
Tightening torque = 125 Nm

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

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

Seals: 4 OR 4112, 2 OR 3056

Stroke adjustment device for option /S



Mass: 18 Kg

DPH-6

ISO 4401: 2005

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

Fastening bolts:

6 socket head screws M20x80 class 12.9

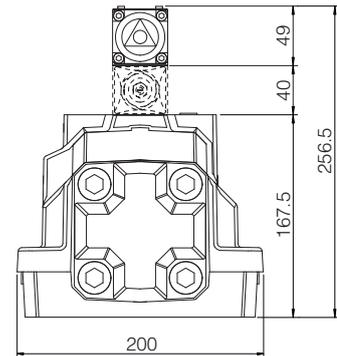
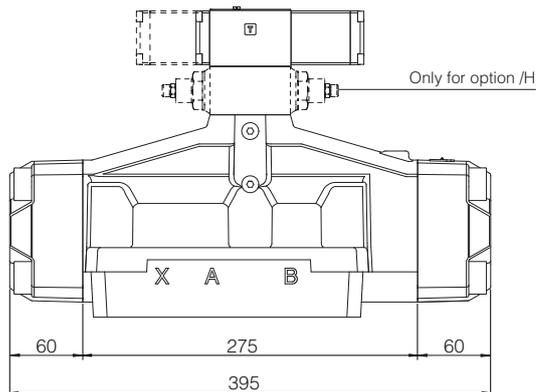
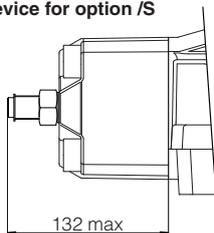
Tightening torque = 600 Nm

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

Stroke adjustment device for option /S



Mass: 39,5 Kg