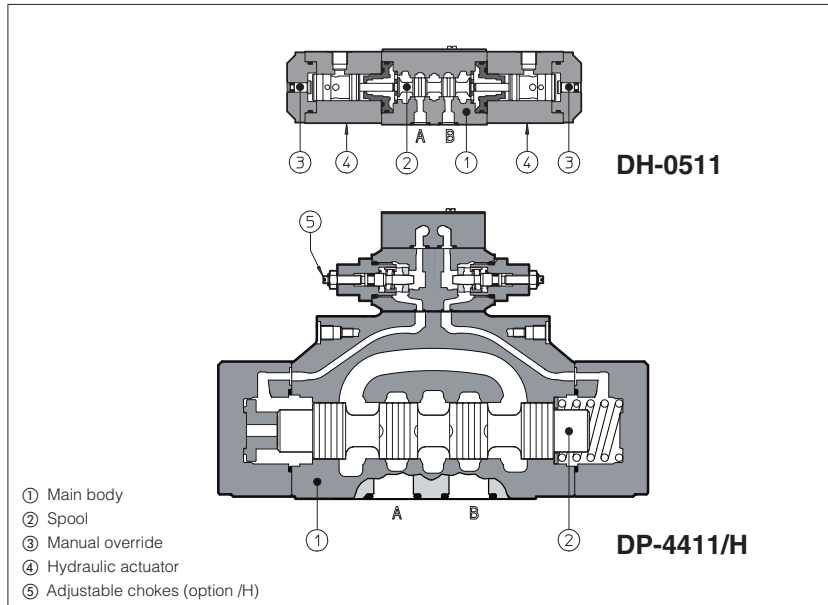


# Hydraulic operated directional valves

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



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.

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

**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

<b>DH-0</b>	<b>4</b>	<b>1</b>	<b>3</b>	/	<b>A</b>	<b>**</b>	/	<b>*</b>
Directional control valve, size: <b>DH-0</b> = 06 <b>DK-1</b> = 10 <b>DP-1</b> = 10 <b>DP-2</b> = 16 <b>DP-4</b> = 25 <b>DP-6</b> = 32								Seals material, see section ③: - = NBR <b>PE</b> = FKM <b>BT</b> = HNBR (only for DP)
Type of actuator: <b>4</b> = single actuator <b>5</b> = double actuator								Series number
Valve configuration, see section ⑤ <b>0</b> = free, without springs <b>1</b> = spring centered, without detent <b>3</b> = spring offset external position <b>5</b> = 2 external positions, with detent (only for DH and DK) <b>7</b> = center and external positions								Options: only for DH-04 and DK-14, see section ④: <b>/A</b> = actuator device mounted on side of port B only for DP: <b>/H</b> = adjustable chokes for controlling the main spool shifting time (meter-out to the pilot chambers of the main valve) <b>/H9</b> = adjustable chokes for controlling the main spool shifting time (meter-in to the pilot chambers of the main valve) <b>/R</b> = with check valve on port P (not available for DP-1*) <b>/S</b> = main spool stroke adjustment (not available for DP-1*)
								Spool type, see section ④

## 2 HYDRAULIC CHARACTERISTICS

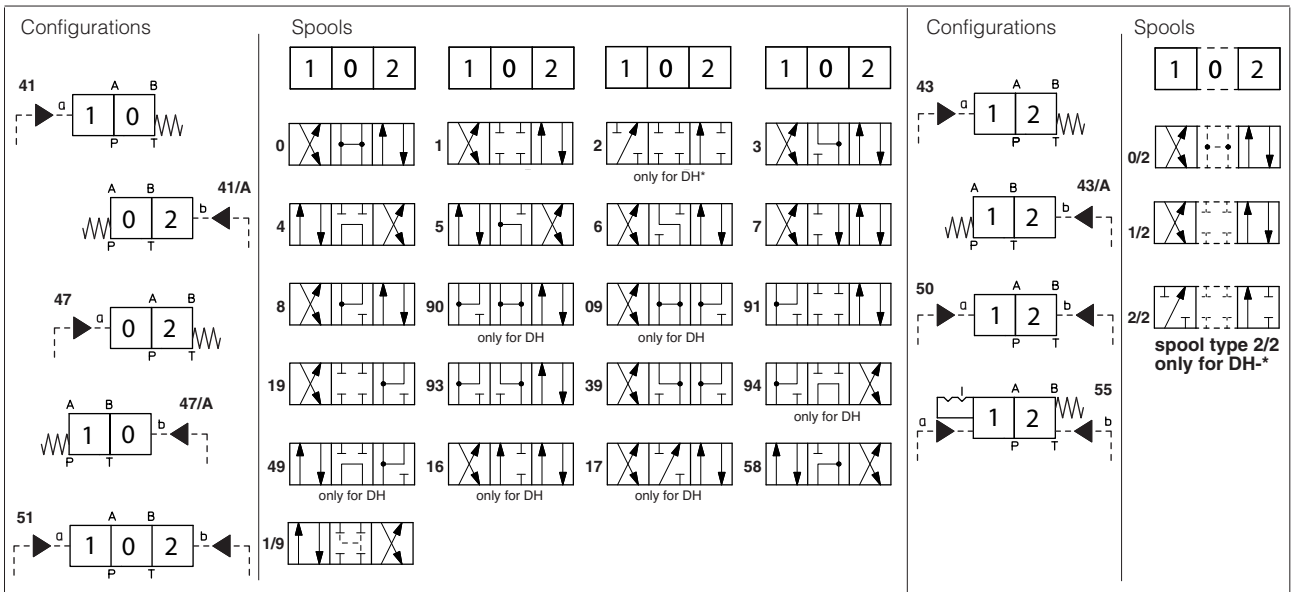
Valve model	DH-0	DK-1	DP-1	DP-2	DP-4	DP-6
Max recommended flow [l/min]	50	160	160	300	700	1000
Max pressure on port P, A, B [bar]	350	315	350			
Max pressure on port T (also X, Y for DP) [bar]	see note (1)			250		
Minimum pilot pressure [bar]	3 (min)	5 (suggested)	4			
Max recommended pressure on piloting line [bar]	70				250	

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

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

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 Ra 0,4 - flatness ratio 0,01/100 (ISO 1101)		
MTTFd values according to EN ISO 13849	150 years, for further details see technical table P007		
Ambient temperature range	standard execution = -30°C ÷ +70°C; /PE option = -20°C ÷ +70°C; /BT option = -40°C ÷ +70°C		
Seals, recommended fluid temperature	NBR seals (standard) = -20°C ÷ +60°C, with HFC hydraulic fluids = -20°C ÷ +50°C FKM seals (/PE option) = -20°C ÷ +80°C HNBR seals (/BT option) = -40°C ÷ +60°C, with HFC hydraulic fluids = -40°C ÷ +50°C		
Recommended viscosity	15 ÷ 100 mm <sup>2</sup> /s - max allowed range 2,8 ÷ 500 mm <sup>2</sup> /s		
Fluid contamination class	ISO 4406 class 21/19/16 NAS 1638 class 10, in line filters of 25 µm (β10 ≥75 recommended)		
<b>Hydraulic fluid</b>	<b>Suitable seals type</b>	<b>Classification</b>	<b>Ref. Standard</b>
Mineral oils	NBR, FKM, HNBR	HL, HLP, HLPD, HVLP, HVLPD	DIN 51524
Flame resistant without water	FKM	HFDU, HFDR	ISO 12922
Flame resistant with water	NBR, HNBR	HFC	

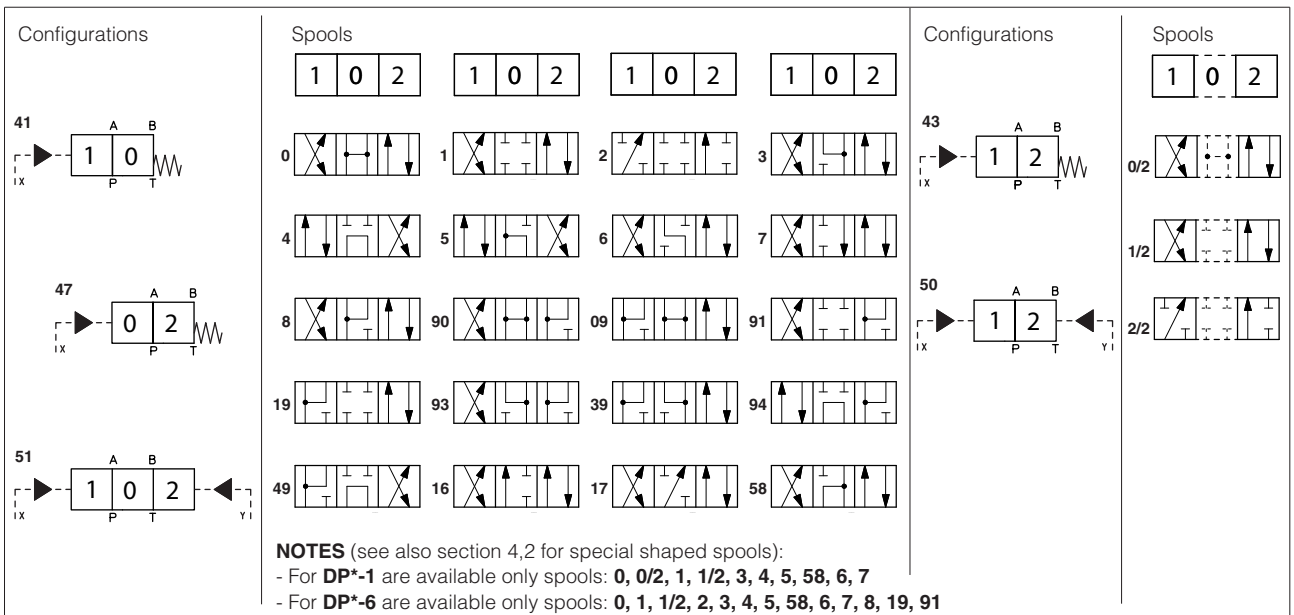
**4 CONFIGURATIONS and SPOOLS valves type DH-\*, DK-\***



**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**, **5** and **58** are also available as **1/1**, **4/8**, **5/1** and **58/1**. 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 valves type DP-\***



**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**, **5**, **58**, **6** and **7** are also available as **1/1**, **4/8**, **5/1**, **58/1**, **6/1** and **7/1** are properly shaped to reduce water-hammer shocks during the switching.

**6 Q/Δp DIAGRAMS**

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

**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

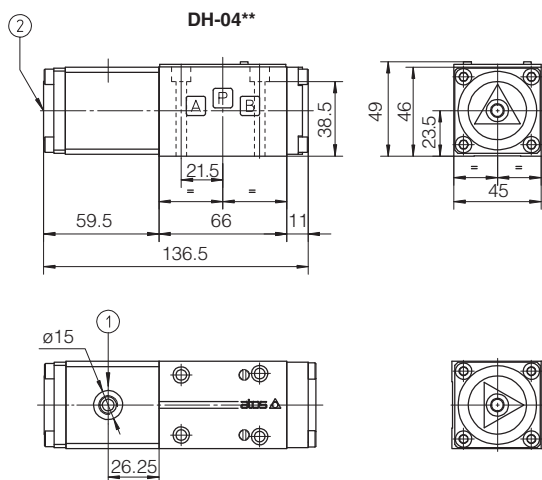
Diameter of ports A, B, P, T: Ø = 7,5 mm (max)

Seals: 4 OR 108

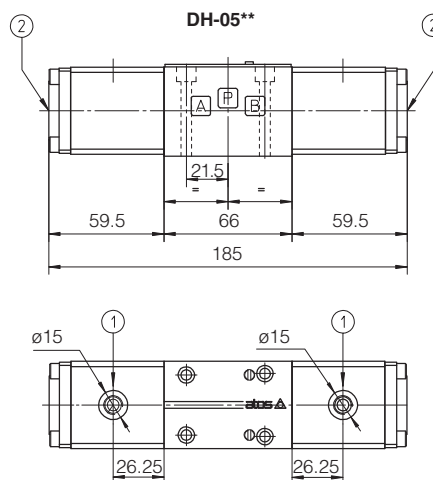
① Pilot pressure port G1/8"

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

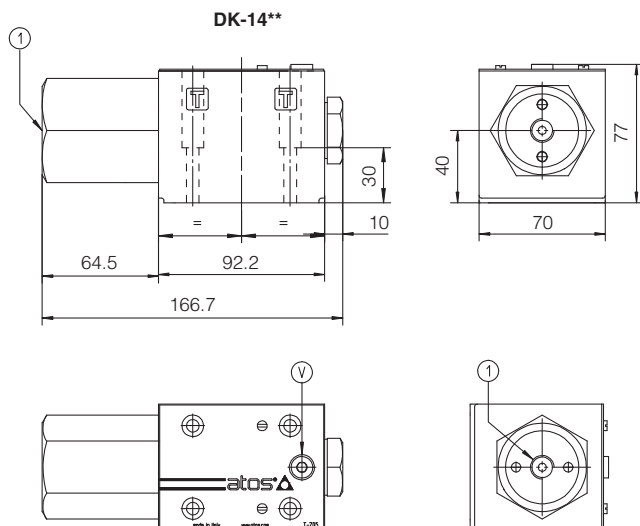
Seals: 5 OR 2050, 1 OR 108

① Pilot pressure port G1/4"

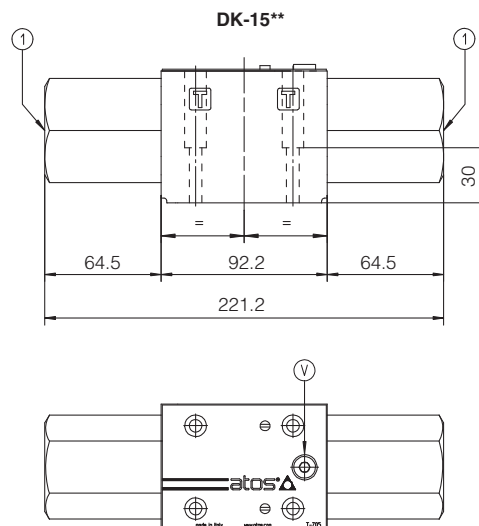
Ⓢ Air bleed

**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

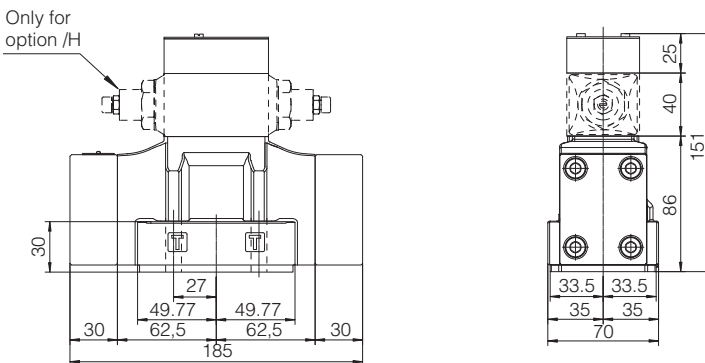


Mass: 4,2 Kg

**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 :  $\varnothing = 11$   
 Diameter of ports X,Y:  $\varnothing = 5$  mm  
 Seals: 5 OR 2050, 2 OR 108



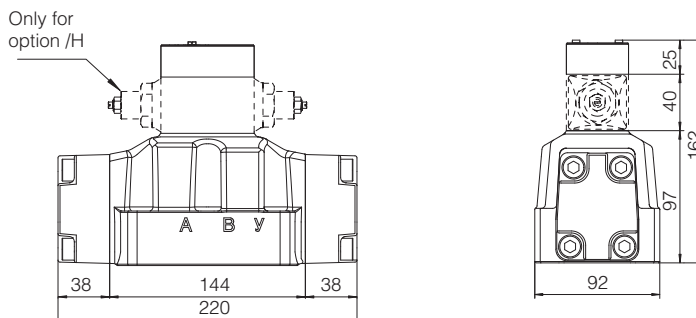
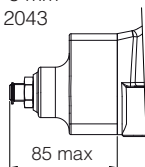
Mass: 7,1 Kg

**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  
 Diameter of port L:  $\varnothing = 5$  mm  
 Seals: 4 OR 130, 2 OR 2043

**Stroke adjustment device for option /S**



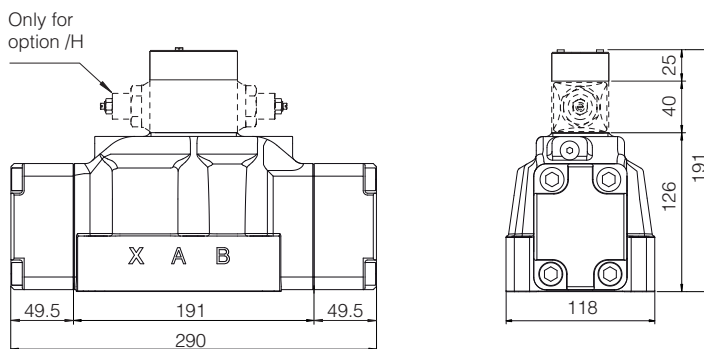
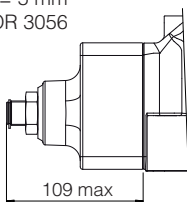
Mass: 10 Kg

**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  
 Diameter of port L:  $\varnothing = 5$  mm  
 Seals: 4 OR 4112, 2 OR 3056

**Stroke adjustment device for option /S**



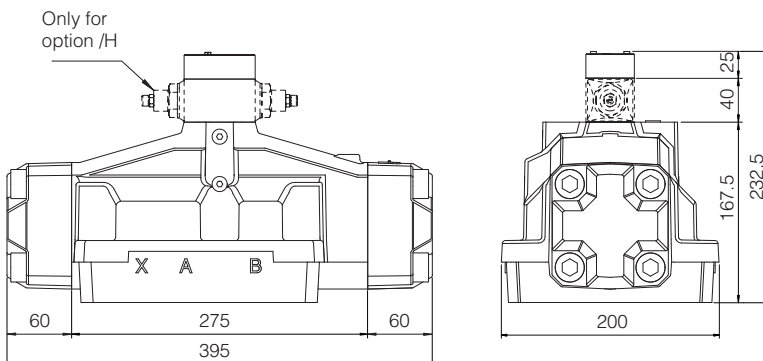
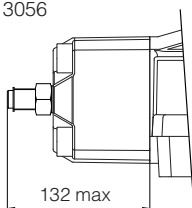
Mass: 16,5 Kg

**DP-6**

**ISO 4401: 2005**  
**Mounting surface: 4401-10-09-0-05**  
**(port L optional)**

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  
 Diameter of port L:  $\varnothing = 5$  mm  
 Seals: 4 OR 144, 2 OR 3056

**Stroke adjustment device for option /S**



Mass: 38 Kg

**Mounting subplates: see tab. K280**