

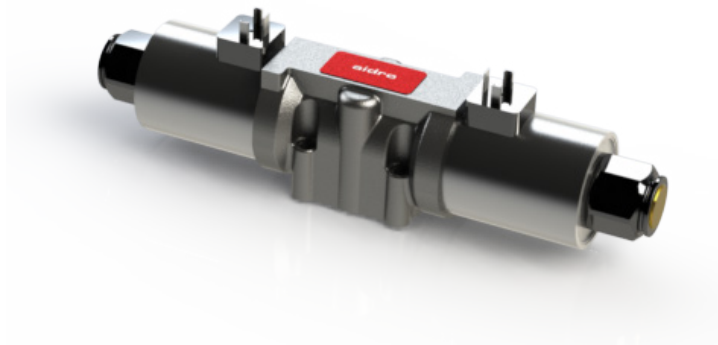
PROPORTIONAL 4-WAY CONTROL VALVES SOLENOID OPERATED

HD5-PS-*

63 l/min 32 MPa (320 bar)

1 DESCRIPTION

Valves HD5-PS are proportional directional control valve with subplate mounting interface acc. to ISO 4401, DIN 24340 (CETOP 05). The design of the body is an high quality five chamber casting. The valve is available with different spools able to control different flow ranges. In the standard version, the valve housing is phosphated for 240 h salt spray protection acc. to ISO 9227.



2 ORDERING CODE

(1)	(2)	(3)	(4)	(5)	(6)
HD5	-	PS	-		/ 10

(1) HD5 : 4-way directional valve CETOP 05 – Pressure 32 MPa (320 bar)

(2) PS : Proportional electric control

(3) Functional spool type (see 4)

-number is the main spool type

1: closed center (P, A, B, T blocked)

3: P blocked, A, B, T connected

-spool nominal flow

P: 63 l/min with $\Delta P = 1$ MPa (10 bar) (PA+BT or PB+AT)

R: 32 l/min with $\Delta P = 1$ MPa (10 bar) (PA+BT or PB+AT)

D: differential $Q_b = 2Q_a$: 63/32 l/min with $P = 1$ MPa (10 bar)

-solenoid and springs arrangements

C : 2 solenoid, spool is springs centred

ML : 1 solenoid ("a") spool is centred + 1 end position

MLb : 1 solenoid ("b") spool is centred + 1 end position

(4) Options and variants:

K : extended manual overrides (see 7)

AK : extended manual overrides with air bleeding valves (see 8)

ZC : zinc plated valves (see 9)

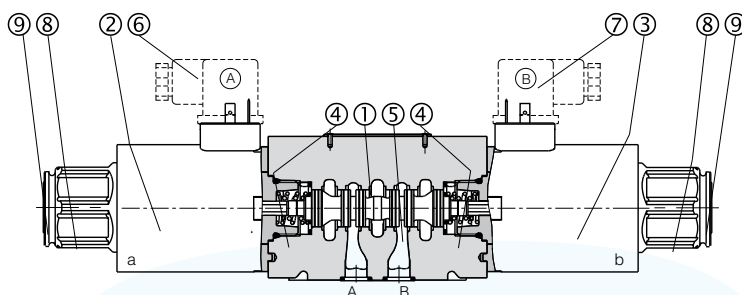
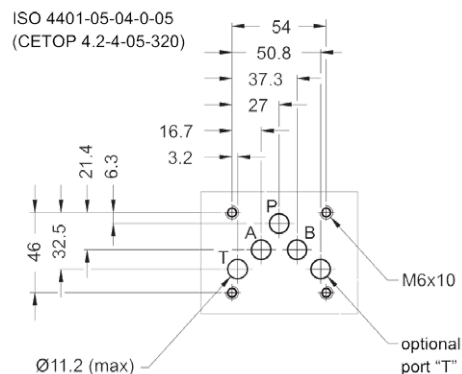
(5) Type of coils and supply voltages

R1 : $R = 3,78 \Omega$

R2 : $R = 4,7 \Omega$ standard for V12DC;

R4 : $R = 13,9 \Omega$ standard for V24DC;

(6) Design number (progressive) of the valve.

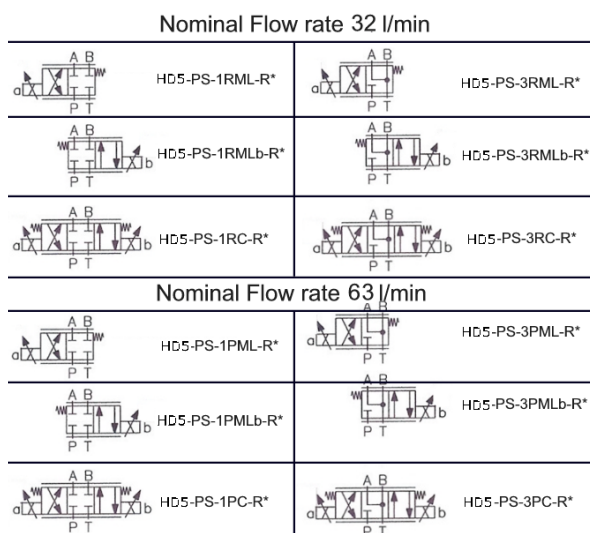


The spool 1 shifts in to the valves body 5 subject to the action of springs 4 and proportional solenoid 2 and 3. Spool 1, depending from its shape and its position in the valves body, opens and/or closes passages between P, A, B, T ports, thus controlling the direction and the rate of the hydraulic flow. Solenoid 2 and 3 is energized by electric current flowing-in through cables; in case of electric cut-offs, the spool can be manually shifted by acting on the emergency pins, located at the end of the solenoids and accessible through the retaining nuts.

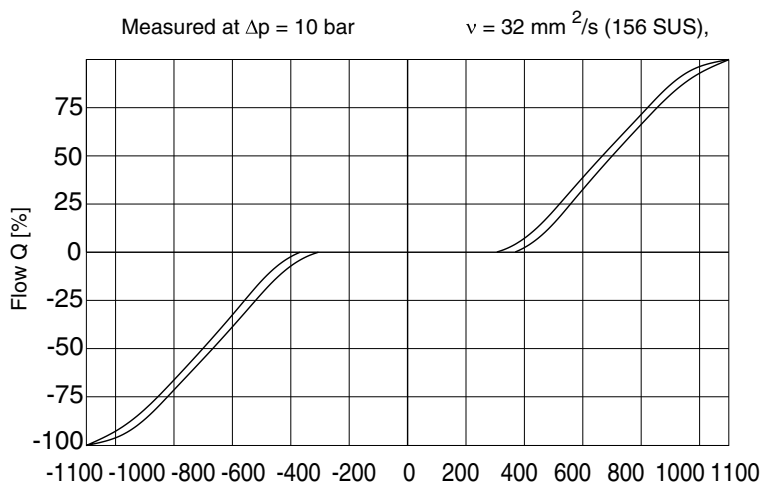
3 TECHNICAL DATA

Nominal flow rates	32, 63 l/min	Electric Characteristics: Valves type HD5-PS-* are operated by proportional solenoids that are rated for an average max power of 13,5 W. The values of nominal max. current are: for coils type R1 (3,78 Ω): I max = 2,4 A R2 (4,7 Ω): I max = 1,9 A R4 (13,9 Ω): I max = 1,1 A Currents to hydraulic proportional valves are normally supplied by an electronic driver based on PWM mode of operation, capable of full control of min and max values of current for drivers type UED-*
Maximum nominal pressure (P,A,B)	32 MPa (320 bar)	
Maximum pressure at T port	21 MPa (210 bar)	
Maximum rec. Pressure drops	10 MPa (100 bar) (see 6)	
Protection DIN 40050	IP 67	
Duty cycle	100%	
Service life	≥ 10 ⁷ cycles	
Installation and Dimensions	(see 10)	
Mass	Approx 4,3 / 5,8 kg.	

4 SPOOL IDENTIFICATION AND NOMINAL FLOW RATE



5 TYPICAL DIAGRAMS



6 FLOW RATES AND PRESSURE DIFFERENTIAL

For a given ΔP on a given valve the flow rates are proportional to the driving current; for a given driving current on a given valve, the flow rates increase with the increasing of the ΔP up to certain limits. Typical limit curves are:

