

DIRECTIONAL CONTROL VALVES SOLENOID OPERATED POPPET TYPE

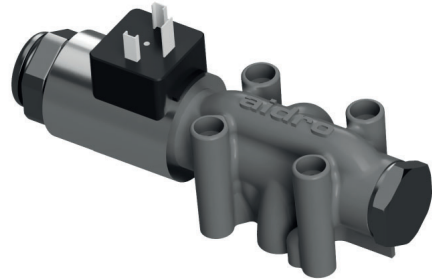
HD3-EST

40 l/min - 35 MPa (350 bar)

1 DESCRIPTION

Valves HD3-EST are directional control valve with subplate mounting interface acc. to ISO 4401, DIN 24340 (CETOP 03).

The design of the body is optimized for a better flow path and pressure drops. Thanks to additive manufacturing it is possible to produce an ultralight valve with high performances. The valve is available with interchangeable metallic DC solenoids, also for AC power supply using a built-in rectifier bridge inside the coil. The valve housing could be produced in AlSi10Mg aluminum alloy or in AISI316L stainless steel.



2 ORDERING CODE

(1)	(2)	(3)	(4)	(5)	(6)	(7)
HD3	-	EST	-	-	-	/ 20

(1) HD3: directional control valve CETOP 03

(2) EST: Electrically controlled poppet type for zero leakage applications

(3) Spool type (see 6):

-letter is the solenoid or spring arrangement:

C : Normally closed

O : Normally open

(4) Code reserved for option and variants:

ALU : Aluminum alloy body

316L: stainless steel 316L body

K : water proof caps on emergency pin, see 10

(5) Electric voltage and solenoid coils: see 4 11

0000: no coils

012C: coils for V12DC

024C: coils for V24DC

115A: coils for V110/50- V 115/60AC

230A: coils for V220/50- V 230/60AC

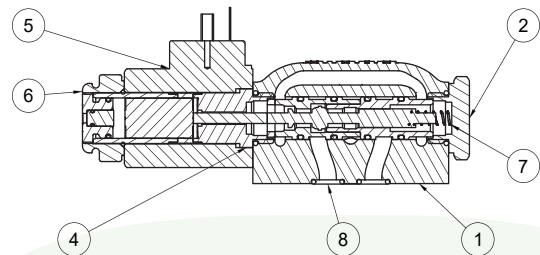
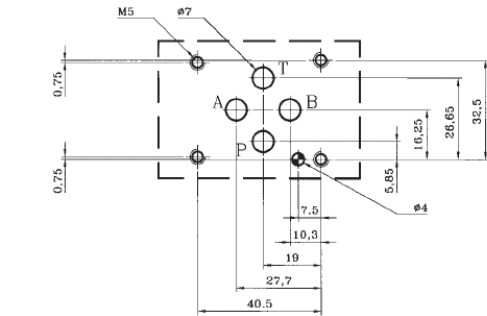
(6) Coil connection (see 11):

no designation: DIN 43650-A ISO 4400

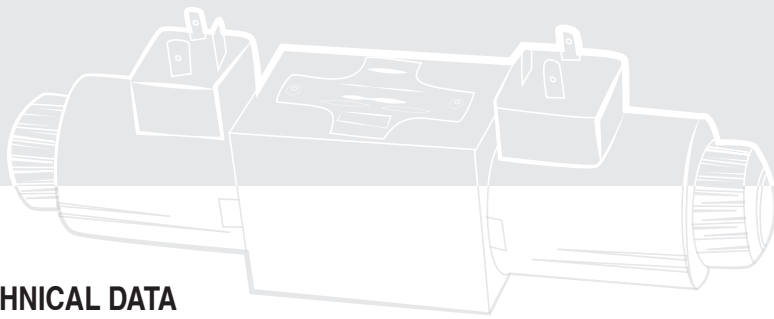
AMPX: Amp Junior Timer- axial configuration

D: Deutsch

(7) Design number (progressive) of the valves



The internal poppet spool shifts into the valve body 1 subject to the action of springs and solenoid 5. Spool, depending from its shape and its position in the valve body, opens and/or closes passages between P, A, B and T ports, thus controlling the direction of the hydraulic flow.



3 TECHNICAL DATA

Nominal flow	32 l/min
Maximum rec. flow rate	40 l/min
Maximum nominal pressure (P, A, B)	35 MPa (350 bar) - 25 MPa for Aluminum body
Maximum pressure at T port	21 MPa (210 bar)
Pressure drops	see 5
Protection to DIN 40050	IP 65
Duty cycle	100%
Installation and dimensions	see 9
Mass	1,1 Steel/ 0,8 Alu (kg)

4 ELECTRIC CHARACTERISTICS

Valve type HD3-EST-* are operated by solenoid that are energized :

- directly from a D.C. voltage supply:
V 12 DC = 012C
V 24 DC = 024C

- by the use of coils that incorporate a full wave bridge rectifier, from A.C. voltage supply :
V 110/50 - V 115/60 = 115A
V 220/50 - V 230/60 = 230A

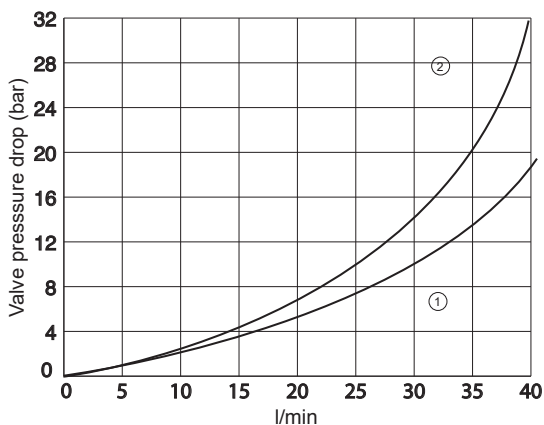
All connectors must conform to ISO 4400 (DIN 43650) and electric circuitry must be able to carry the following rated current values :

- V 12 DC = 2,4 A V 115/50 = 0,26 A
- V 24 DC = 1,2 A V 230/50 = 0,14 A

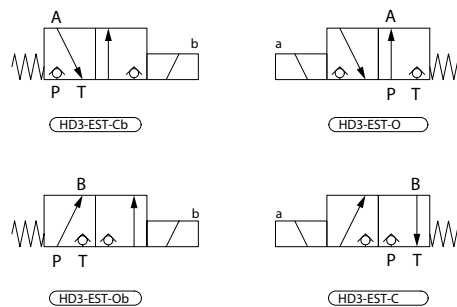
Coils with 2 electric pins, conforming with AMP connectors, are only available for DC supply (example of code: B02-012C AMP). Permissible supply voltage variation : $\pm 10\%$

5 TYPICAL DIAGRAMS

Typical Δp -Q curves for valves HD3-EST-* in standard configuration, with mineral oil at $v=32 \text{ mm}^2/\text{s}$ and at $T=40^\circ\text{C}$.

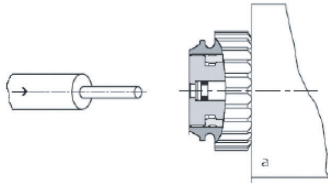


6 SPOOL IDENTIFICATION



7 MANUAL OVERRIDE

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.

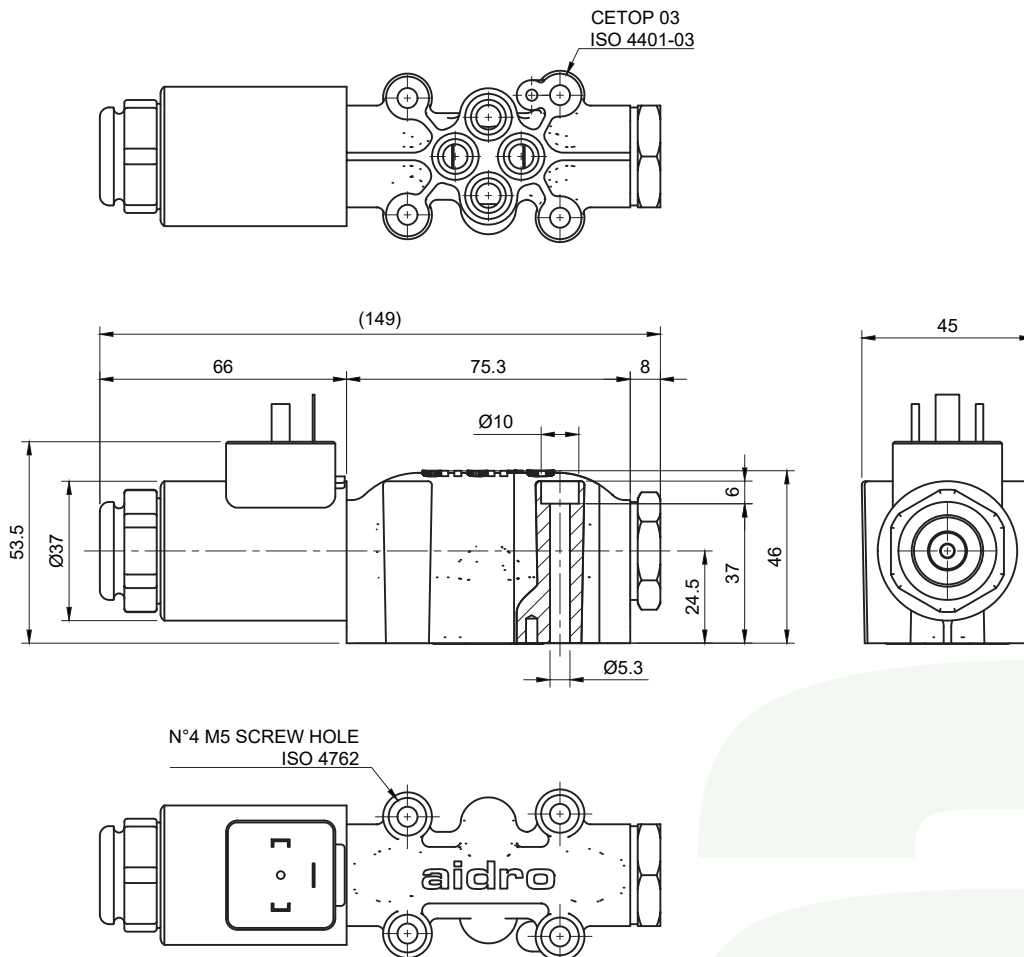


8 HYDRAULIC FLUID

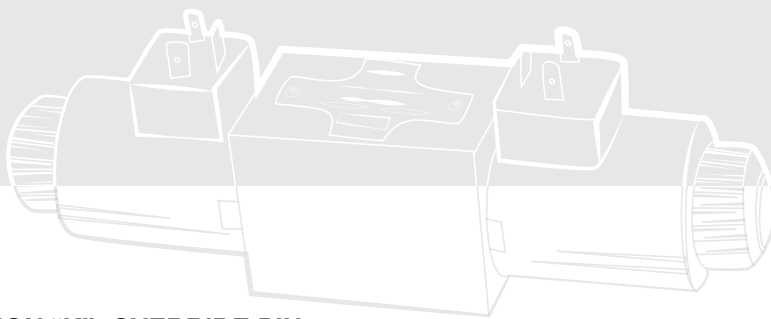
Seals and materials used on standard valves HD3-EST are fully compatible with hydraulics fluids of mineral base, upgraded with antifoaming and anti oxidizing agents.

The hydraulic fluid must be kept clean and filtered to ISO 4406 class 19/17/14, or better, and used in a recommended viscosity range from 10 cSt to 60 cSt.

9 INSTALLATION DIMENSIONS



All valves HD3-EST* conform with ISO and CETOP specifications for mounting surface dimensions (see 10) and for valves height. When assembled to its mounting plate valve HD3-* must be fastened with 4 bolts M5x45 (or M5x** according to the number of modules) tightened at 8 Nm torque. Leakage between valve and mounting surface is prevented by the positive compression on their seats of 4 seals of O Ring type 9,25x1,78.



10 VERSION "K": OVERRIDE PIN

Solenoid valves according to "K" version have extended emergency actuator pins protruding from the solenoid shape, that permit a quick and easy "hand operation" of the valves, without the need of any tool. The actuator pin and the end of the solenoid are protected by a flexible rubber cap that makes easy operation and protects from moisture and water splashes.

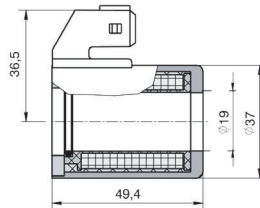


standard manual override

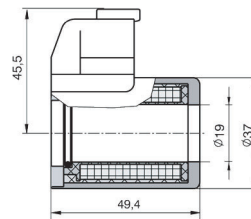


Version "K" Override pin

11 SPECIAL COIL CONNECTIONS



AMPX = Amp Junior Timer
axial configuration



D = Deutsch

12 QUENCHING DIODE

On request, coils can be supplied with an integrated bidirectional quenching diode (transil type BZW06-19B) able to provide high overvoltage protection. Their instantaneous response to transient overvoltages makes them particularly suited to protect voltage sensitive devices.

