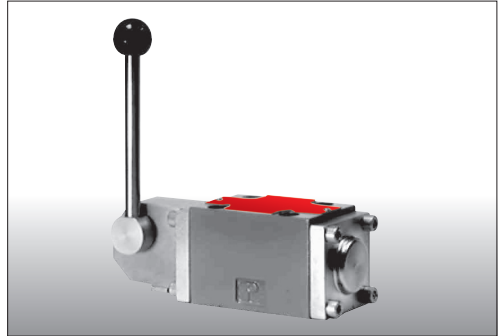
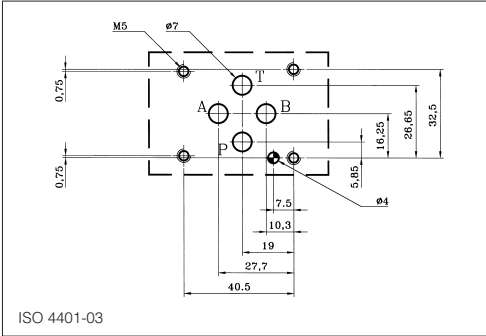
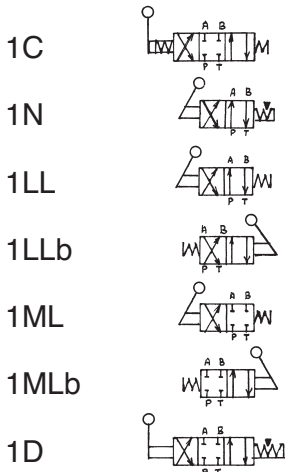


Directional Control Valves Lever Operated - CETOP 03 Type HD3-LO-*



2 FUNCTIONAL SYMBOLS

Spring/Stroke combination for spool type "1"



1 HOW TO READ THE MODEL CODE FOR VALVES HD3 - *

HD3 - LO - (1) - (C) - (b) - (*) / 10
 ① ② ③ ④ ⑤ ⑥ ⑦

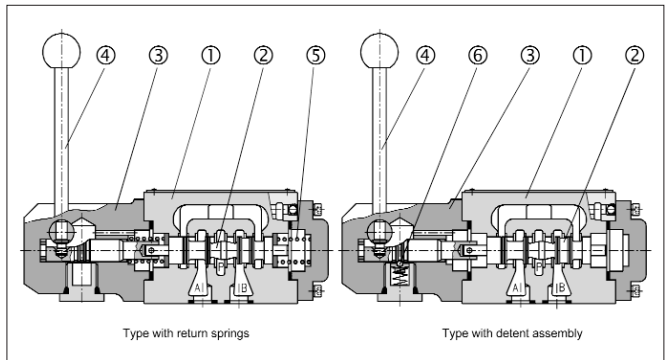
- ① HD3 : 4-way directional control valve Cetop 03 - Pressure 32 MPa (320 bar)
- ② LO : standard, lever operated
- ③ (1) : spool type (see 4)
- ④ (C) : lever and spring(s) arrangement, see also functional symbols 2
 C : spool is spring centered (3 position)
 D : spool is detented (3 position)
 N : spool is detented (2 position, end to end)
 LL : spool is spring offset (2 position, end to end)
 ML : spool is spring offset (2 position, middle to end)
- ⑤ (b) : lever mechanism on B port side
- ⑥ (*) : code reserved for special variants
- ⑦ 10 : design number (progressive) of the valves

3 DESCRIPTION

The hand operated directional valves are used mainly to control start, stop and direction of fluid. They consist of housing ① with control spool ② and the actuating section ③. The actuating section consists either of the hand lever ④ and of one or two return springs ⑤, or of the hand lever ④ and the detent assembly ⑥. The detent assembly holds the spool in its last shifted position.

These directional valves are being manufactured as two-position and three-position valves (see table with functional symbols).

The valve housing ① is phosphate coated, where as the components of the actuating section ③ are zinc coated.



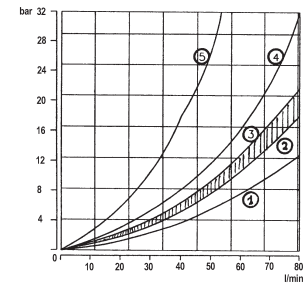
4 SPOOL IDENTIFICATION AND INTERMEDIATE POSITION TRANSITORIES					
Designation	Symbol	Interposition	Designation	Symbol	Interposition
1C			1D		
4C			4D		
0C			0D		
8C			8D		
3C			3D		
7C			7D		
1LL			1N		
2LL			2N		
0LL			0N		

5 TECHNICAL DATA

Maximum nominal flow maximum 1 dm³/s (60 l/min)
 rec. flow rate maximum nominal pressure (P,A,B) 80 l/min see **9**
 maximum pressure at T port pressure drops see **6**
 dimensions see **7**
 mass approx 1,6 kg

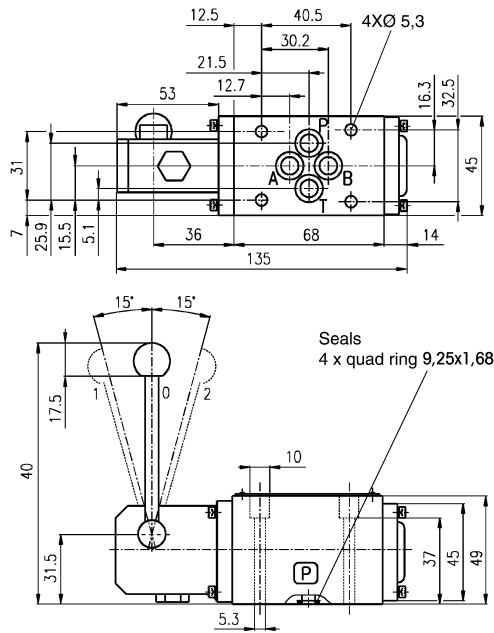
6 PRESSURE DROPS

Ap-Q characteristics



- ① P→A, P→B spool 0,8
- ② → ③ spool 0,1,2,3,4,7
- ③ A→T, B→T spool 4
- ⑤ P→T spool 4

7 INSTALLATION DIMENSIONS



Dimensions in millimetres

8 FUNCTIONAL SYMBOLS

The hydraulic connections that are obtained in the "central" (neutral) position is the characteristic mark of the spool shape and from it derives its identification number:

- 0 = P,A,B,T connected
- 1 = P,A,B,T closed
- 3 = P closed, A,B,T connected

for other types see **4**
 All standard valves have the lever mechanism on the side of port "A".
 All 2 position, spring offset, standard valves are operated by pulling the lever.
 All 3 position standard valves have a +/- 15° angle stroke of the lever.
 Average effort required on the lever to operate the valve: less than 50N.
 Other spool/spring/detent/lever position combinations are possible and they are indicated by a xxx 3 digits code.

9 HYDRAULIC LIMITS OF USE

Valves HD3-LO-1C, 1LL and all detent type valve can operate at 320 bar and 80 l/min. Other spring centered and spring offset valves have limits reduced to max 60 l/min.