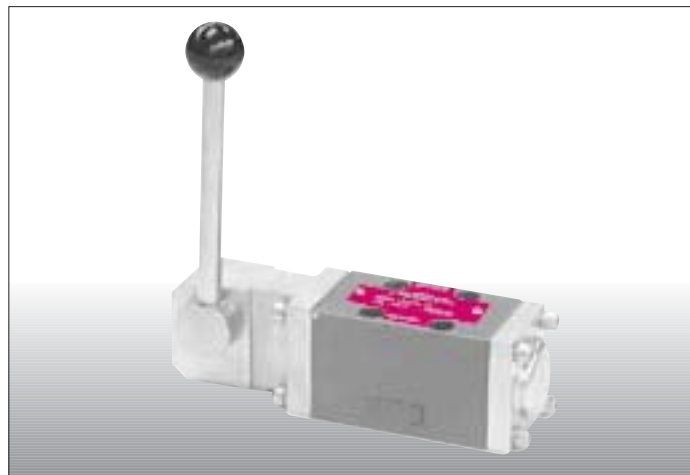
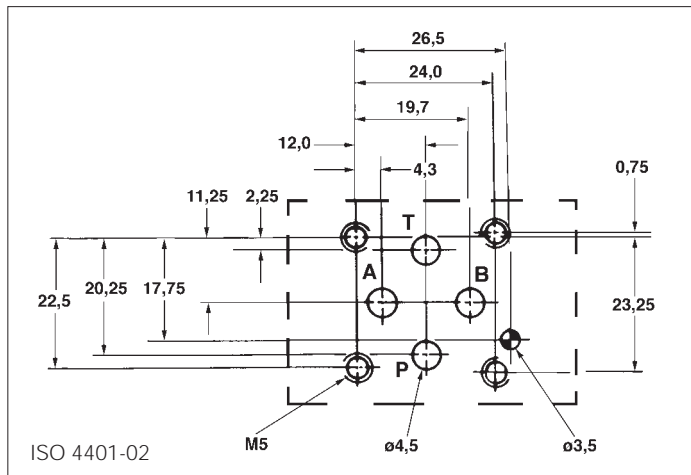
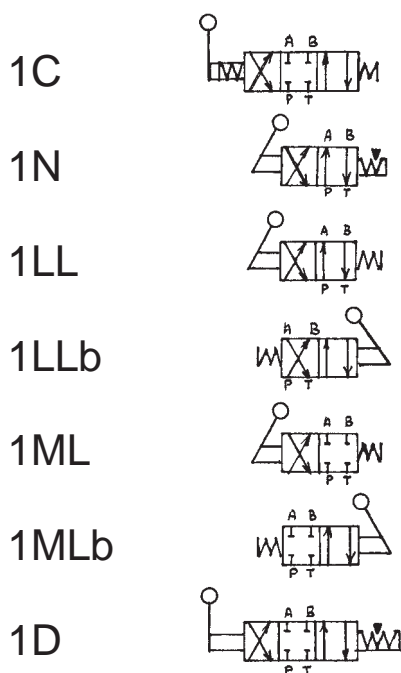


DIRECTIONAL CONTROL VALVES LEVER OPERATED - CETOP 02 TYPE HD2-LO-*



2 FUNCTIONAL SYMBOLS

Spring/Stroke combination for spool type "1"



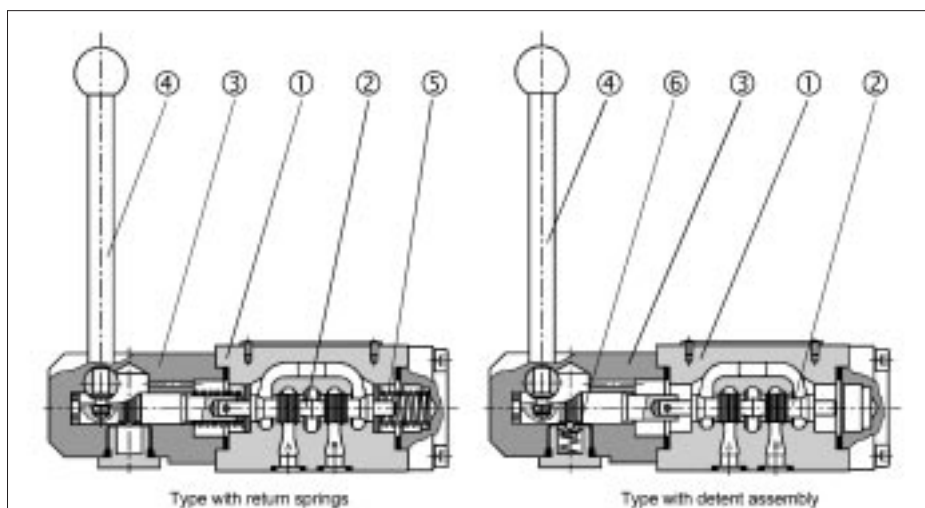
1 HOW TO READ THE MODEL CODE FOR VALVES HD2 - *

- HD2 - LO - (1) - (C) - (b) - (*) / 10**
 ① ② ③ ④ ⑤ ⑥ ⑦
- ① HD2 : 4-way directional control valve Cetop 02 - 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 end 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

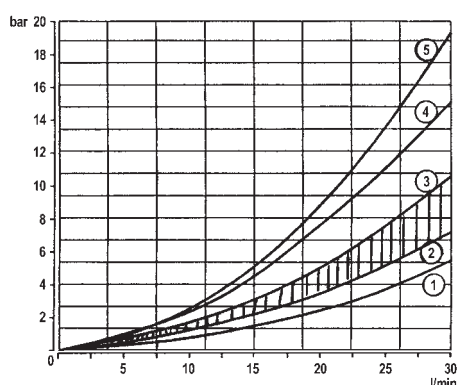
Designation	Symbol	Interposition	Designation	Symbol	Interposition
1C			1D		
4C			4D		
0C			0D		
8C			8D		
3C			3D		
7C			7D		
54C			54D		
55C			55D		
33C			33D		
31C			31D		
1LL			1N		
2LL			2N		
0LL			0N		

5 TECHNICAL DATA

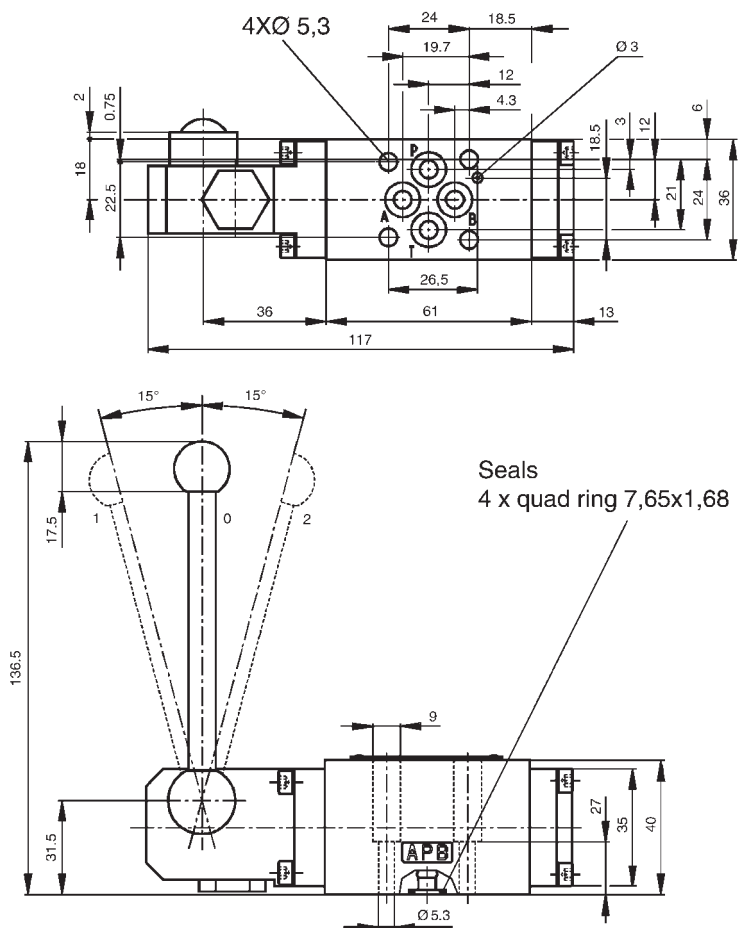
Maximum nominal flow	0,5 dm ³ /s (30 l/min)
rec. flow rate	30 l/min see 9
maximum nominal pressure (P,A,B)	32 Mpa (320 bar)
maximum pressure at T port	10 Mpa (100 bar)
pressure drops	see 6
dimensions	see 7
installation	see 9
mass	approx 1 kg

6 PRESSURE DROPS

Δp-Q characteristics



7 INSTALLATION DIMENSIONS



Dimensions in millimetres

- ① P A, P B spool 0,8
- ② ③ spool 0,1,2,3,7,54,55,33,31 and P T spool 4
- ④ A T, B T spool 4
P T spool 54,55
- ⑤ P A, P B spool 4

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

All valves can operate at 320 bar and 30 l/min, excepted types C54 and C55 whose limits are 10 l/min at 320 bar and 30 l/min at 100 bar.