DUPLOMATIC
HYDRAULICS

DSH*
LEVER OPERATED DIRECTIONAL CONTROL VALVE

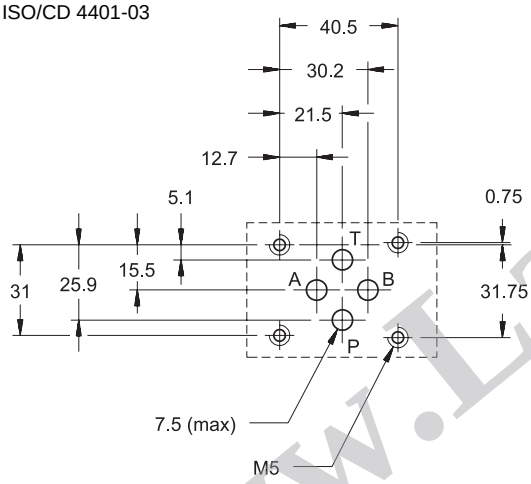
DSH3 CETOP 03 (IN PREPARATION)
DSH5 CETOP R05

p max (see technical specifications table)

Q nom (see technical specifications table)

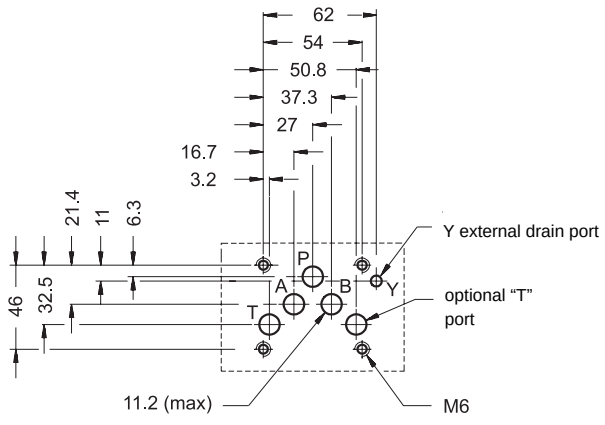
MOUNTING INTERFACE DSH3

CETOP 4.2-4-03-350
ISO/CD 4401-03

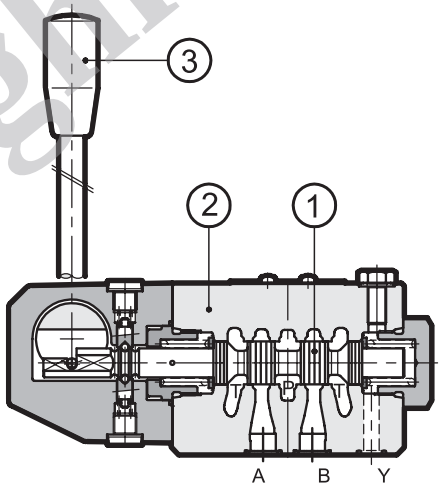


MOUNTING INTERFACE DSH5

CETOP 4.2-4-R05-320
ISO/CD 4401-05

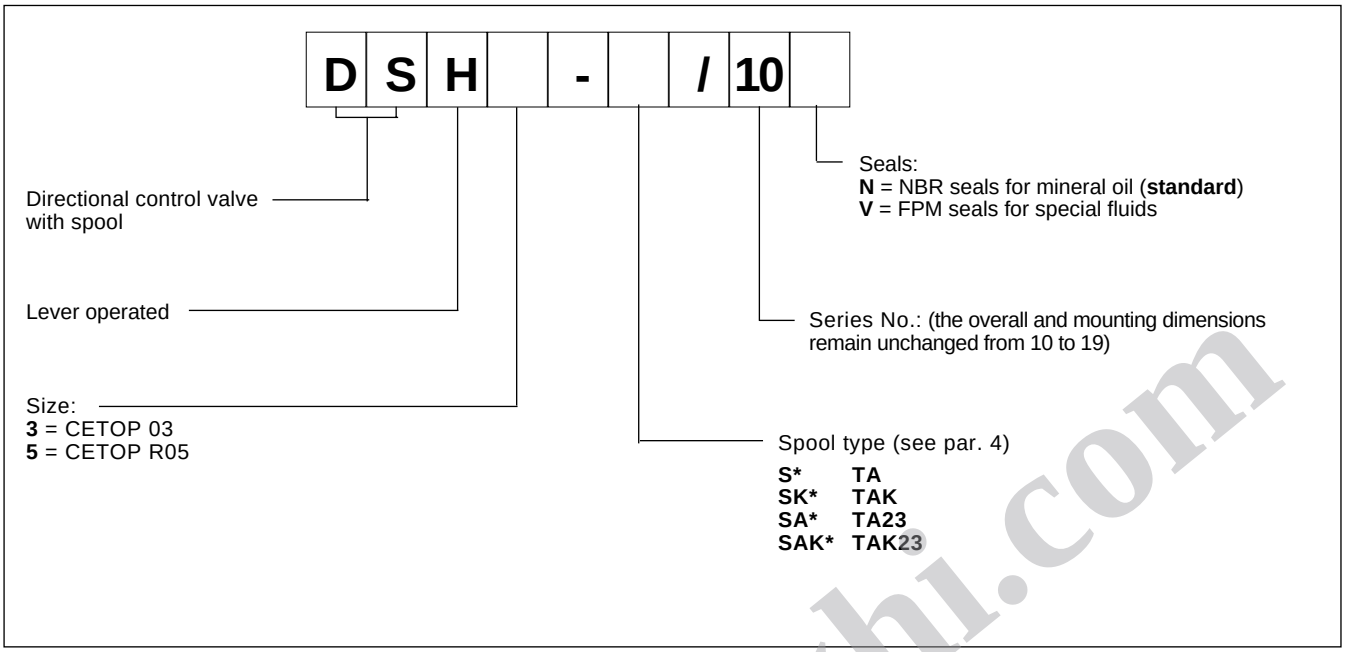


OPERATING PRINCIPLE



- DSH* are lever operated directional control valves, available with 3 or 4 ways and with several interchangeable spools ①.
- The valve body ② is made with high strength iron castings provided with wide internal passages in order to minimize the flow pressure drop.
- It is available with 2 or 3 positions with return spring or mechanical retention.
- The lever ③ can be positioned at 90° or 180° with respect to the standard position, depending on the installation needs.
- The Y external drain is available for the CETOP R05 size and it must be connected when there is backpressure on the T port.

1 - IDENTIFICATION CODE



2 - PERFORMANCE RATINGS (working with mineral oil of viscosity of 36 cSt at 50°C)		DSH3	DSH5
Maximum working pressure: - P A B ports - T port with Y external drain - T port without Y external drain	bar		 320 320 20
Nominal flow	l/min		120
Ambient temperature range	°C	-20 ÷ +50	
Fluid temperature range	°C	-20 ÷ +80	
Fluid viscosity range	cSt	10 ÷ 400	
Recommended viscosity	cSt	25	
Fluid contamination degree		according to NAS 1638 class 10	
Mass	kg		4,2

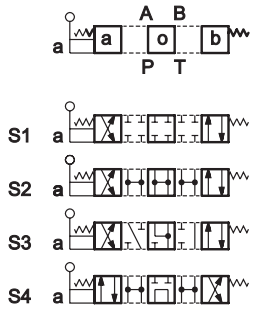
3 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HPL type, according to ISO 6743/3.
For fluids HFD-R type (phosphate esters) use FPM seals (code V).
For the use of other fluid types as HFA, HFB, HFC, please consult our technical department.

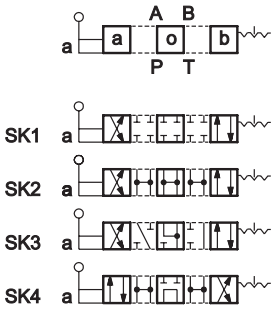
Using fluids at temperatures higher than 70 °C causes a faster degradation of the fluid and of the seals characteristics.
The fluid must be preserved in its physical and chemical characteristics.

4 - SPOOL TYPE

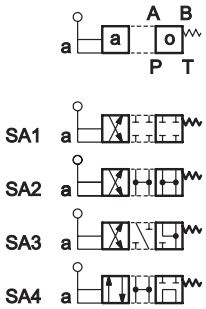
Type **S***:
3 positions
with spring centering



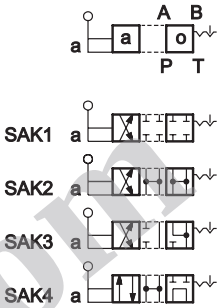
Type **SK***:
3 positions
with mechanical retention



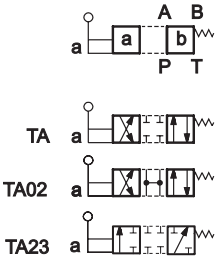
Type **SA***:
2 positions
(central + external)
with spring centering



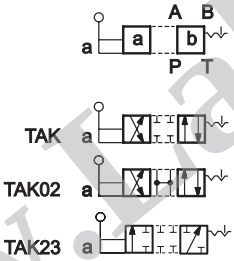
Type **SAK***:
2 positions
(central + external)
with mechanical retention



Type **TA**:
2 external positions
with return spring



Type **TAK**:
2 external positions
with mechanical retention



Besides the diagrams shown, which are the most frequently used, other special versions are available:
consult our technical department for their identification and operating limits.

5 - PRESSURE DROPS Δp-Q (values obtained with viscosity 36 cSt at 50 °C)

5.1 - Pressure drops Δp-Q DSH3

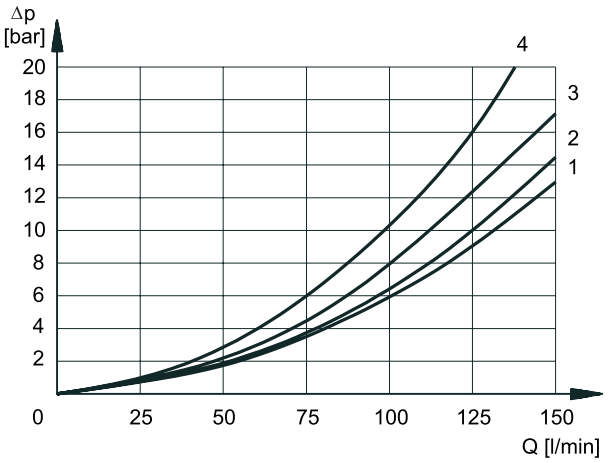
PRESSURE DROPS WITH VALVE IN ENERGIZED POSITION

SPOOL TYPE	FLOW DIRECTION			
	P-A	P-B	A-T	B-T
	CURVES ON GRAPH			
S1, SA1, SB1				
S2, SA2, SB2				
S3, SA3, SB3				
S4, SA4, SB4				
S5				
S6, S11				
S7, S8				
S9				
S10				
S17, S19				
S18				
S20, S21				
S22, S23				
TA, TB				
TA02, TB 02				
TA23, TB23				
RK				

PRESSURE DROPS WITH VALVE IN DE-ENERGIZED POSITION

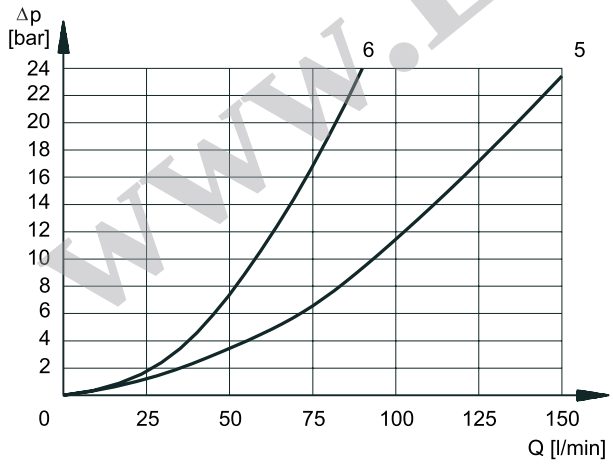
SPOOL TYPE	FLOW DIRECTION				
	P-A	P-B	A-T	B-T	P-T
	CURVES ON GRAPH				
S2, SA2, SB2					
S3, SA3, SB3					
S4, SA4, SB4					
S5					
S6					
S7					
S8					
S9					
S10					
S11					
S17					
S18					
S19					
S22					
S23					

5.2 - Pressure drops Δp-Q DSH5



PRESSURE DROPS WITH VALVE IN ENERGIZED POSITION

SPOOL TYPE	FLOW DIRECTION			
	P-A	P-B	A-T	B-T
	CURVES ON GRAPH			
S1, SA1, SB1	2	2	1	1
S2, SA2, SB2	3	3	1	1
S3, SA3, SB3	3	3	2	2
S4, SA4, SB4	1	1	2	2
S5	2	1	1	1
S6, S11	3	3	2	2
S7, S8	1	1	2	2
S9	3	3	2	2
S10	1	1	1	1
S17, S19	2	2	1	1
S18	1	2	1	1
S20, S21				
S22, S23				
TA, TB	3	3	2	2
TA02, TB 02	3	3	2	2
TA23, TB23	4	4		
RK	3	3	2	2



PRESSURE DROPS WITH VALVE IN DE-ENERGIZED POSITION

SPOOL TYPE	FLOW DIRECTION				
	P-A	P-B	A-T	B-T	P-T
	CURVES ON GRAPH				
S2, SA2, SB2					5
S3, SA3, SB3			6	6	
S4, SA4, SB4					5
S5		3			
S6				6	
S7					
S8					
S9					
S10					
S11			6		
S17					
S18	3				
S19					
S22					
S23					

6 - OPERATING LIMITS

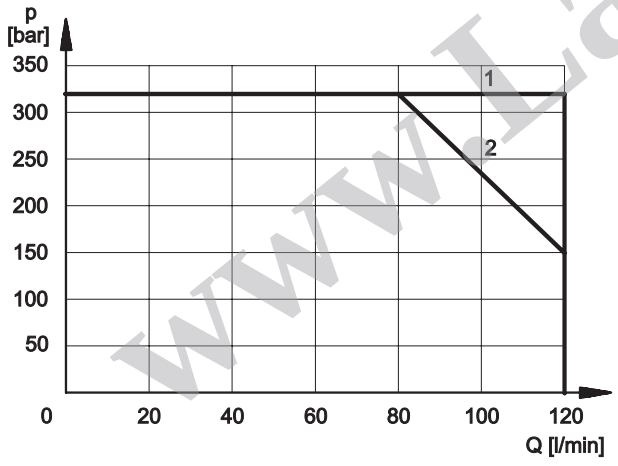
The curves define the flow rate operating fields according to the valve pressure of the different versions.
The values have been obtained according to ISO 6403 norm, with mineral oil viscosity 36 cSt at 50 °C and filtration NAS 1638 class 7.

6.1 - Operating limits DSH3

SPOOL TYPE	CURVE	
	P-A	P-B
S1,SA1,SB1		
S2, SA2, SB2		
S3, SA3, SB3		
S4, SA4, SB4		
S5		
S6		
S7		
S8		
S9		
S10		
S11		

SPOOL TYPE	CURVE	
	P-A	P-B
S17		
S18		
S19		
S20		
S21		
S22		
S23		
TA, TB		
TA02, TB02		
TA23, TB23		
RK		

6.2 - Operating limits DSH5



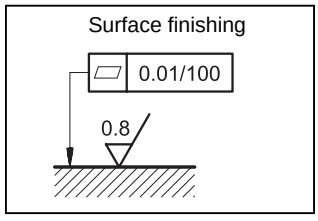
SPOOL TYPE	CURVE	
	P-A	P-B
S1,SA1,SB1	1	1
S2, SA2, SB2	1	1
S3, SA3, SB3	1	1
S4, SA4, SB4	2	2
S5	1	1
S6	1	1
S7	2	2
S8	2	2
S9	1	1
S10	1	1
S11	1	1

SPOOL TYPE	CURVE	
	P-A	P-B
S17	1	1
S18	1	1
S19	1	1
S20		
S21		
S22		
S23		
TA, TB	1	1
TA02, TB02	1	1
TA23, TB23	1	1
RK	1	1

NOTE: The values indicated in the graphs are relevant to the standard valve. The operating limits can be considerably reduced if a 4-way valve is used with port A or B plugged.

7 - INSTALLATION

Configurations with centering and return springs can be mounted in any position; valves with mechanical detent must be mounted with the longitudinal axis horizontal. Valve fixing is by means of screws or tie rods, with the valve mounted on a lapped surface, with values of planarity and smoothness that are equal to or better than those indicated in the drawing. If the minimum values of planarity and/or smoothness are not met, fluid leakage between valve and mounting surface can easily occur.



8 - OVERALL AND MOUNTING DIMENSIONS DSH3

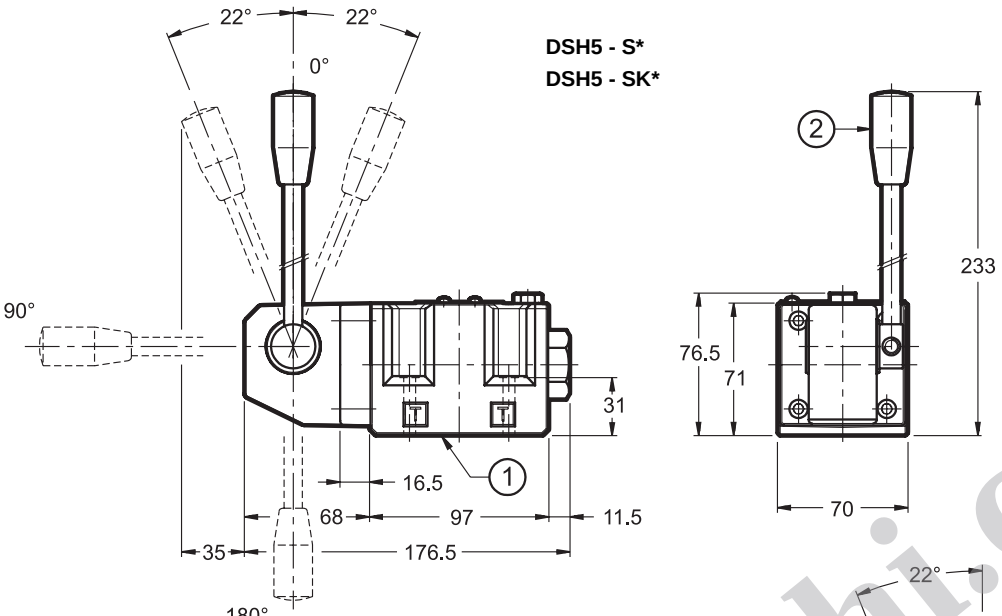
dimensions in mm

9 - SUBPLATES (See catalogue 51 000)	**DSH3**	**DSH5**
Type with rear ports	PMMD-AI3G	PMD4-AI4G
Type with side ports	PMMD-AL3G	PMD4-AL4G
P, T, A, B ports threading	3/8” BSP	1/2” BSP

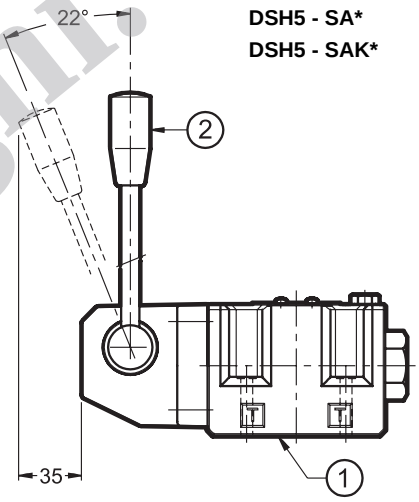
10 - OVERALL AND MOUNTING DIMENSIONS DSH5

dimensions in mm

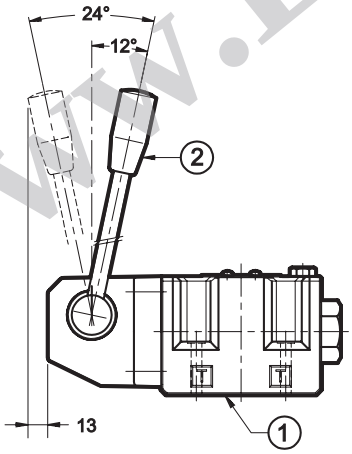
DSH5 - S*
DSH5 - SK*



DSH5 - SA*
DSH5 - SAK*



DSH5 - TA **DSH5 - TA23**
DSH5 - TAK **DSH5 - TAK23**



1	Mounting surface with sealing rings
2	Hand lever (see note)

Fastening of single valve:	4 screws TCEI M6x40 (recommended class 12.9)
Tightening torque:	8 Nm
Threads of mounting holes:	M6x10
Sealing rings:	5 OR type 2050 - 90 shore 1 OR type 2037 - 90 shore

NOTE: the valve is supplied with the hand lever oriented in a perpendicular position with respect to the mounting surface (as indicated in the above drawing). For installation needs the hand lever can be oriented by the user directly at 90° or 180° to the standard position, simply by unscrewing the lever and rescrewing it in the desired position.

DUPLOMATIC HYDRAULICS

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