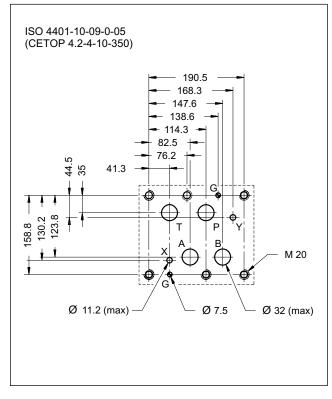


MOUNTING INTERFACE



PERFORMANCES (obtained with mineral oil of viscosity of 36 cSt at 50°C)

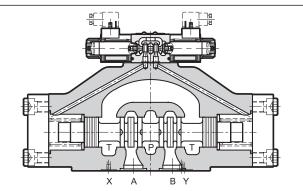
DSP10 PILOT OPERATED DISTRIBUTOR SOLENOID OR HYDRAULIC (DSC10) CONTROLLED

SUBPLATE MOUNTING

ISO 4401-10 (CETOP 10)

p max 350 barQ max 1100 l/min

OPERATING PRINCIPLE



- The DSP10 piloted valve is a 4-way hydropiloted distributor with a connection surface in accordance with the ISO 4401-10 (CETOP RP121H) standards, operated by a ISO 4401-03 (CETOP 03) solenoid directional valve.
- It is available with different spool types (see par. 2) and with some options for the opening control.
- It is available with both the solenoid and the hydraulic control from the X and Y ways.
- The piloting and the drainage can be made inside or outside the valve by inserting or removing the proper threaded plugs located in the main directional control valve (see paragraph 9).

Maximum operating pressure - ports P - A - B (standard version) - port T (external drainage)		350
- port i (external drainage)	bar	210
Maximum flow rate from port P to A - B - T	l/min	1100
Ambient temperature range	°C	-20 / +50
Fluid temperature range	°C	-20 / +80
Fluid viscosity range	cSt	10 ÷ 400
Fluid contamination degree	according to ISO	4406:1999 class 20/18/15
Recommended viscosity	cSt	25
Mass: DSP10	line in the second s	50
DSC10	kg	48

1 - IDENTIFICATION CODE FOR SOLENOID DISTRIBUTOR DSP10

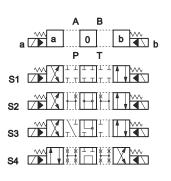
itractional valve Manual override, mit for override, integrated in the tube (standard) So 4401-10 (CETOP 10) size CM = manual override, boot protected Spool type (see paragraph 2) Coil electrical connection plug for connector type DIN 43650 (standard) Series: (the overall and mounting dimensions emain unchanged from 20 to 29) DC power supply Seals: meanin unchanged from 20 to 29) D12 = 12 V D24 = 24 V D24 = 24 V D48 = 48 V D110 = 110 V D20 = 220 V Piloting (see paragraph 9): seaternal sinternal (not available for spools S2 - S4 - TA02 - TB02 - RK02 SY2 - S'4) D24 = 24 V D48 = 48 V D110 = 110 V D220 = 220 V Do = valve without coils (see NO AC power supply A44 = 48 V - 50 Hz A410 = 110 V - 50 Hz / 120 V - 60 A230 = 230 V - 50 Hz / 240 V - 60 A230 = 230 V - 50 Hz / 240 V - 60 A230 = 230 V - 50 Hz / 240 V - 60 A230 = 230 V - 60 Hz Controls: Do = main spool switching speed control (see paragraph 13.1) (For electrical characteristics see paragraph 13.1) P10 = 110 V - 60 Hz F220 = 220 V - 60 Hz F110 = 110 V - 60 Hz F220 = 220 V - 60 Hz	Solenoid operated Manual override mit for override integrated in the tube (standard CM = manual override, boot protected Solenoid operated Call electrical connectio plug for connector type DIN 43650 (standard CM = manual override, boot protected Solenoid operated Coll electrical connectio plug for connector type DIN 43650 (standard) Series: Coll electrical connectio plug for connector type DIN 43650 (standard) V = FPM seals for mineral oil (standard) D2 = 22 V V = FPM seals for special fluids D24 = 24 V Piloting (see paragraph 9): D20 = 220 V = internal (not available for spools S2 - S4 - TA02 - TB02 - RK02 S22 - S*4) D20 = 220 V = external Conver supply A24 = 24 V - 50 Hz A48 = 48 V - 50 Hz A48 = 48 V - 50 Hz A48 = 48 V - 50 Hz Controls: D110 - 110 V - 50 Hz	[]-										1	I		r	1	
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directional valve Manual override: mit for override integrated in the tube (standard) SO 4401-10 (CETOP 10) size Coll electrical connection: protected Spool type (see paragraph 2) Coll electrical connection: puls for connector SA* TB SB* RK* Series: (the overall and mounting dimensions emain unchanged from 20 to 29) D1 Seals:	directional valve Manual override: mit for override mit for ov																
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SO 4401-10 (CETOP 10) size	SO 4401-10 (CETOP 10) size														in	itegrated in	the
Spool type (see paragraph 2)	Spool type (see paragraph 2)	SO 4401-10 (CETC	DP 10) si	ize_											С	M = manua	al
S* TA SA* TB SA* TB SB* RK* Series: (the overall and mounting dimensions	S* TA SA* TB SA* TB SB* RK* Series: (the overall and mounting dimensions															,	
SA* TB SB* RK* Series: (the overall and mounting dimensions	SA* TB SB* RK* Series: (the overall and mounting dimensions		agraph 2	2) ——										 Coil	electr	ical conne	tion:
Series: (the overall and mounting dimensions	Series: (the overall and mounting dimensions	SA* TB															ndar
emain unchanged from 20 to 29) DC power supply Seals:	remain unchanged from 20 to 29) DC power supply Seals:															,	
Seals: D12 = 12 V N = NBR seals for mineral oil (standard) D24 = 24 V Z = FPM seals for special fluids D10 = 110 V Piloting (see paragraph 9): D10 = 110 V = internal (not available for spools S2 - S4 - TA02 - TB02 - RK02 S*2 - S*4) E = external AC power supply Z = internal piloting with 30 bar fixes adjustment pressure reducing valve A24 = 24 V - 50 Hz Atta = 48 V - 50 Hz A48 = 48 V - 50 Hz A = 110 V - 50 Hz / 120 V - 60 Hz A110 = 110 V - 50 Hz / 120 V - 60 Hz Prainage (see paragraph 9): A230 = 230 V - 50 Hz / 240 V - 60 Hz = Internal F110 = 110 V - 60 Hz E = External F110 = 110 V - 60 Hz Controls: F110 = 110 V - 60 Hz P = Main spool switching speed control (see paragraph13.1) (For electrical characteristics see par. P15 = Subplate placed under solenoid valve with restrictor of Ø1.5 on port P (For electrical characteristics see par.	Seals: D12 = 12 V N = NBR seals for mineral oil (standard) D24 = 24 V V = FPM seals for special fluids D10 = 110 V Piloting (see paragraph 9): D10 = 110 V = internal (not available for spools S2 - S4 - TA02 - TB02 - RK02 S*2 - S*4) E = external AC power supply Z = internal piloting with 30 bar fixes adjustment pressure reducing valve A24 = 24 V - 50 Hz Drainage (see paragraph 9): A48 = 48 V - 50 Hz = Internal A110 = 110 V - 50 Hz / 120 V - 60 Hz E = External A110 = 110 V - 50 Hz / 240 V - 60 Hz Controls: F110 = 110 V - 60 Hz P = Main spool switching speed control (see paragraph13.1) (For electrical characteristics see par. P15 = Subplate placed under solenoid valve with restrictor of Ø1.5 on port P (For electrical characteristics see par.	Series: (the overall remain unchanged	and mou from 20 f	inting dii to 29)	mensions]										
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Piloting (see paragraph 9):	Piloting (see paragraph 9):	V = FPM seals for s	pecial flu	uids								D4	8 =	48 V			
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S 2 - S 4) E = external Z = internal piloting with 30 bar fixes adjustment pressure reducing valve Drainage (see paragraph 9): = Internal E = External Controls: D = Main spool switching speed control (see paragraph 13.1) P15 = Subplate placed under solenoid valve with restrictor of Ø1.5 on port P	S 2 - S 4) E = external Z = internal piloting with 30 bar fixes adjustment pressure reducing valve Drainage (see paragraph 9): = Internal E = External Controls: D = Main spool switching speed control (see paragraph 13.1) P15 = Subplate placed under solenoid valve with restrictor of Ø1.5 on port P	I = internal (not ava						- RK0)2								
Drainage (see paragraph 9): Image: fill of the state of the sta	Drainage (see paragraph 9): Image: fill of the state of the sta	E = external	with 30 I	har fiyas	adjustme	ont proc		ducin	a valve			A2	4 =	= 24 V -	50 H		
= Internal = External Controls: D = Main spool switching speed control (see paragraph 13.1) P15 = Subplate placed under solenoid valve with restrictor of Ø1.5 on port P	= Internal E = External Controls: D = Main spool switching speed control (see paragraph 13.1) P15 = Subplate placed under solenoid valve with restrictor of Ø1.5 on port P				-				-			A1	10 =	= 110 V -	50 H	lz / 120 V -	
Controls: D = Main spool switching speed control (see paragraph13.1) P15 = Subplate placed under solenoid valve with restrictor of Ø1.5 on port P F110 = 110 V - 60 Hz F220 = 220 V - 60 Hz (For electrical characteristics see par.	Controls: D = Main spool switching speed control (see paragraph13.1) P15 = Subplate placed under solenoid valve with restrictor of Ø1.5 on port P F110 = 110 V - 60 Hz F220 = 220 V - 60 Hz (For electrical characteristics see par.	I = Internal	graph 9)								1						
Controls:	Controls: D = Main spool switching speed control (see paragraph13.1) P15 = Subplate placed under solenoid valve with restrictor of Ø1.5 on port P	E = External															
P15 = Subplate placed under solenoid valve with restrictor of Ø1.5 on port P	P15 = Subplate placed under solenoid valve with restrictor of Ø1.5 on port P	Controls:						2.43									
see paragraph 13.2)	see paragraph 13.2)	P15 = Subplate place	ced unde						5 on po	тP		(FC	or elec	ctrical cr	aract	eristics see	par.
		(see paragraph 13.2	2)														

NOTE: The locking rings of the coils and the relevant O-Rings are supplied together with valves

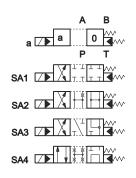
2- SPOOL TYPE

N.B.:Symbols refers to the DSP10 solenoid valve. For the DSC10 hydraulic control version, please verify the connection scheme (see par. 3).

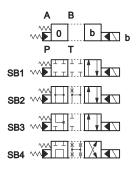
Type **S***: 2 solenoids - 3 positions with spring centering



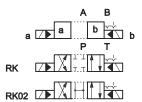
Type **SA***: 1 solenoid side A 2 positions (central + external) with spring centering



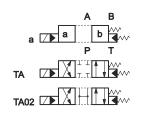
Type **SB***: 1 solenoid side B 2 positions (central + external) with spring centering



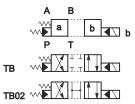
Type **RK**: 2 solenoids - 2 positions with mechanical retention



Type **TA**: 1 solenoid side A 2 external positions with return spring

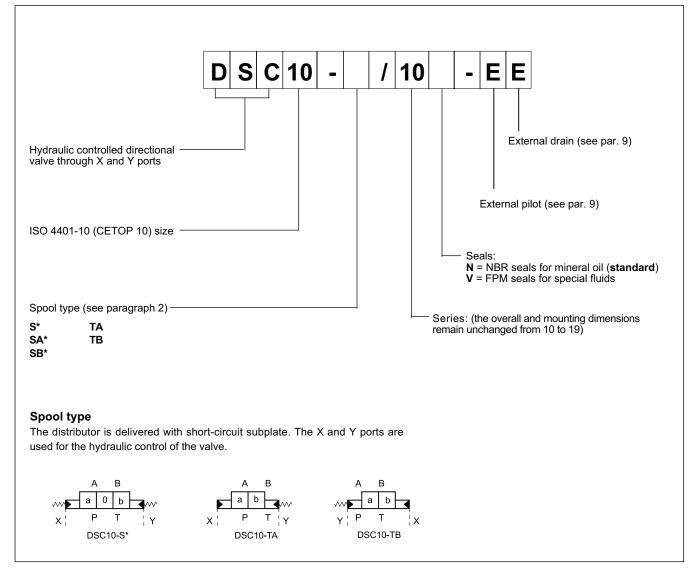


Type **TB**: 1 solenoid side B 2 external positions with return spring



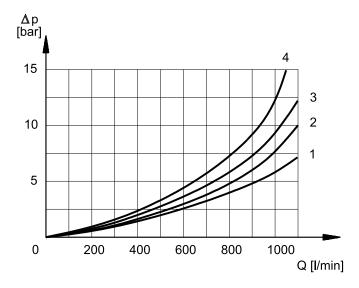
If other spool types are necessary please consult our Technical Department

3 - IDENTIFICATION CODE FOR HYDRAULIC DISTRIBUTOR DSC10



4 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals (code V). For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department. Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics. The fluid must be preserved in its physical and chemical characteristics.



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

PRESSURE DROPS WITH VALVE ENERGIZED

	FL	FLOW DIRECTION					
SPOOL TYPE	P-A	P-B	A-T	B-T			
	CUF	RVES ON G	RAPH				
S1, SA1, SB1	1	1	1	1			
S2, SA2, SB2	2	2	2	2			
S3, SA3, SB3	1	1	4	4			
S4, SA4, SB4	2	2	2	2			
TA, TB	1	1	1	1			
TA02, TB 02	1	1	1	1			
RK	1	1	1	1			

PRESSURE DROPS WITH VALVE IN DE-ENERGIZED POSITION

		FLOW DIRECTION							
SPOOL TYPE	P-A	P-B	A-T	B-T	P-T				
		CURV	ES ON G	RAPH					
S2, SA2, SB2					3				
S3, SA3, SB3			4	4					
S4, SA4, SB4					4				

6 - SWITCHING TIMES

The values indicated refer to a solenoid valve working with piloting pressure of 100 bar, with mineral oil at a temperature of 50° C, at viscosity of 36 cSt and with PA and BT connections. The energizing and de-energizing times are obtained at the pressure variation which occurs on the lines.

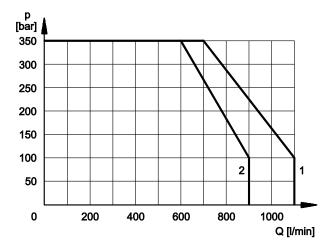
TIMES (± 10%)	ENER	GIZED	DE-ENERGIZED		
[ms]	2 Pos.	3 Pos.	2 Pos.	3 Pos.	
AC solenoid	90	60	90	60	
DC solenoid	130	100	90	60	

7 - 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 solenoids at rated temperature and supplied with voltage equal to 90% of the nominal voltage.

The value have been obtained with mineral oil, viscosity 36 cSt, temperature 50 °C and filtration according to ISO 4406.1999 class 18/16/13.



SPOOL TYPE	CU	RVE
	P-A	P-B
S1,SA1,SB1	1	1
S2, SA2, SB2	2	2
S3, SA3, SB3	1	1
S4, SA4, SB4	2	2
TA, TB	1	1
TA02, TB02	1	1
TA23, TB23	1	1
RK	1	1

8 - PERFORMANCE CHARACTERISTICS

PRESSURES [bar]		
	MIN	MAX
Piloting pressure	12 (NOTE a)	280 (NOTE b)
Pressure on line T with internal drainage	-	140
Pressure on line T with external drainage	-	210

NOTES:

a) The minimum piloting pressure can be of 6 bar at low flows rates, but with higher flow rates a pressure of 12 bar is needed.

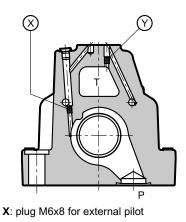
b) If the valve operates with higher pressures it is necessary to use the version with external pilot and reduced pressure. Otherwise, the valve with internal pilot and pressure reducing valve with 30 bar fixed adjustment can be ordered, inserting the letter **Z** in the code identification at piloting entry.

9 - PILOTING AND DRAINAGE

The DSP10 valves are available with piloting and drainage, both internal and external.

The version with external drainage allows for a higher back pressure on the outlet.

	VALVE TYPE	Plug as	ssembly
	VALVETTPE	Х	Y
IE	INTERNAL PILOT AND EXTERNAL DRAINAGE	NO	YES
II	INTERNAL PILOT AND INTERNAL DRAINAGE	NO	NO
EE	EXTERNAL PILOT AND EXTERNAL DRAINAGE	YES	YES
EI	EXTERNAL PILOT AND INTERNAL DRAINAGE	YES	NO



Y: plug M6x8 for external drain

10 - ELECTRICAL FEATURES

10.1 Solenoids

These are essentially made up of two parts: tube and coil. The tube is threaded into the valve body and includes the armature that moves immersed in oil, without wear. The inner part, in contact with the oil in the return line, ensures heat dissipation.

The coil is fastened to the tube by a threaded ring, and can be rotated 360° , to suit the available space.

NOTE 1: In order to further reduce the emissions, use of type H connectors is recommended. These prevent voltage peaks on opening of the coil supply electrical circuit (see CAT. 49 000).

NOTE 2: The IP65 protection degree is guaranteed only with the connector correctly connected and installed.

VOLTAGE SUPPLY FLUCTUATION	± 10% Vnom
MAX SWITCH ON FREQUENCY	6.000 ins/hr
DUTY CYCLE	100%
ELECTROMAGNETIC COMPATIBILITY (EMC) (NOTE 1)	In compliance with 2004/108/CE
LOW VOLTAGE	In compliance with 2006/95/CE
CLASS OF PROTECTION: Atmospheric agents (CEI EN 60529) Coil insulation (VDE 0580) Impregnation: DC valve	IP 65 (NOTE 2) class H class F
AC valve	class H

10.2 Current and absorbed power for DC solenoid valve

The table shows current and power consumption values relevant to the different coil types for DC.

The rectified current supply takes place by fitting the valve (with the exception of D12 coil) with an alternating current source (50 or 60 Hz), rectified by means of a bridge built-in to the "D" type connectors (see cat.49 000), by considering a reduction of the operating limits by $5 \div 10\%$ approx.

Coils for direct current (values ± 5%)

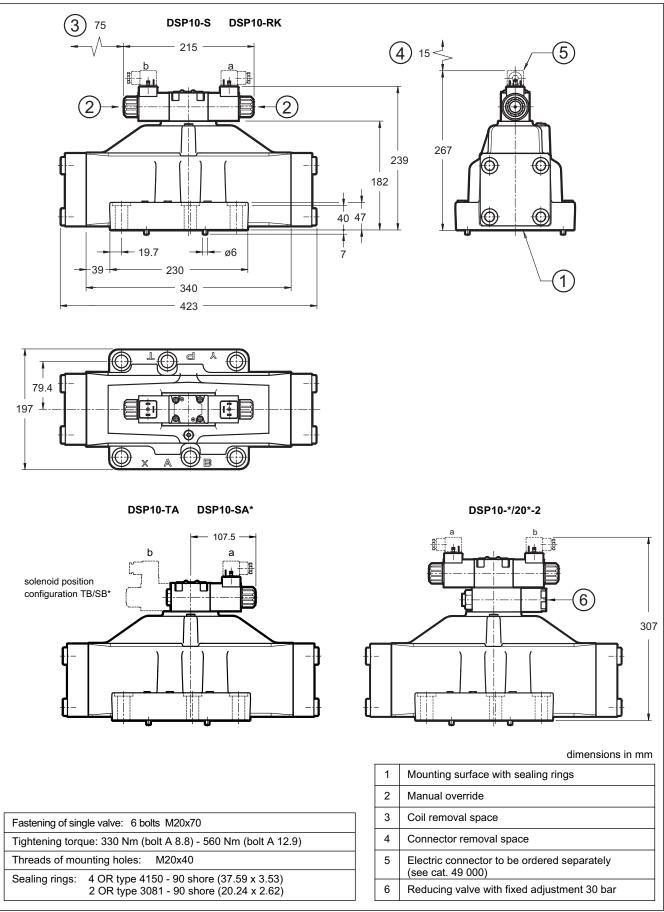
Suffix	Nominal voltage [V]	Resistance at 20°C [Ω]	Current consumpt. [A]	Power consumpt. [W]	Coil code
D12	12	4,4	2,72	32,6	1902860
D24	24	18,6	1,29	31	1902861
D48	48	78,6	0,61	29,3	1902863
D110	110	423	0,26	28,6	1902864
D220	220	1692	0,13	28,6	1902865

10.3 Current and absorbed power for AC solenoid valve

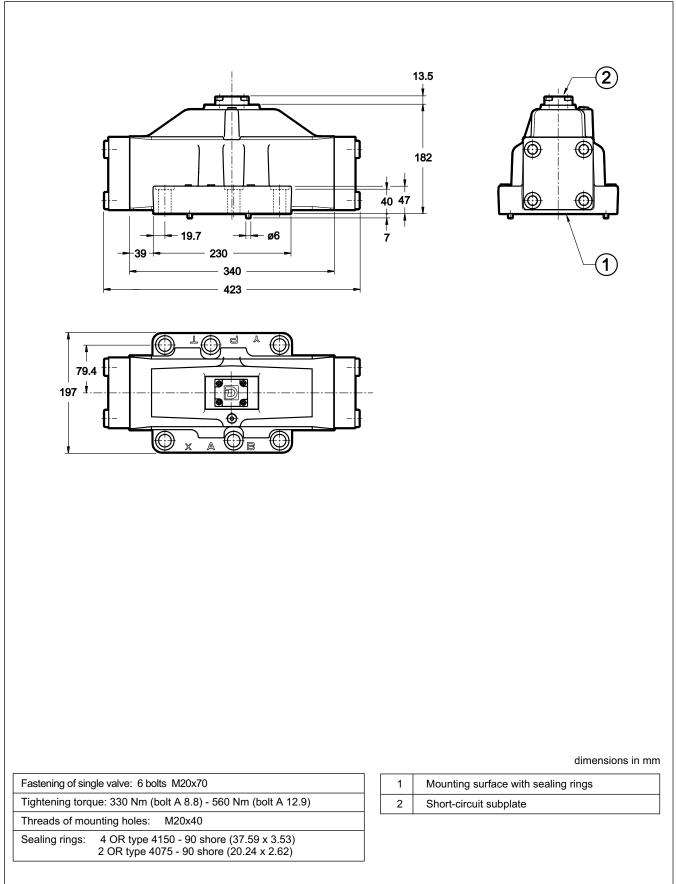
The table shows current and power consumption values at inrush and at holding, relevant to the different coil types for AC current.

Suffix	Nominal voltage [V]	Frequency [Hz]	Resistance at 20°C [ohm]	Current consumption at inrush [A]	Current consumption at holding [A]	Power consumption at inrush [VA]	Power consumption at holding [VA]	Coil code
A24	24	50	1,46	8	2	192	48	1902830
A48	48	50	5,84	4,4	1,1	204	51	1902831
A110	110V-50Hz			1,84	0,46	192	48	4000000
A110	120V-60Hz		32	1,56	0,39	188	47	1902832
A 220	230V-50Hz	50/60	140	0,76	0,19	176	44	4000000
A230	240V-60Hz		140	0,6	0,15	144	36	1902833
F110	110	60	26	1,6	0,4	176	44	1902834
F220	220	00	106	0,8	0,2	180	45	1902835

Coils for alternating current (values ± 5%)



11 - OVERALL AND MOUNTING DIMENSIONS FOR SOLENOID DISTRIBUTOR DSP10



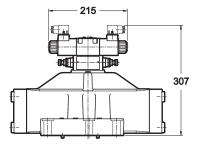
12 - OVERALL AND MOUNTING DIMENSIONS FOR HYDRAULIC DISTRIBUTOR DSC10

13 - OPTIONS

13.1 Control of the main spool shifting speed: D

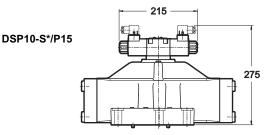
By placing a MERS type double flow control valve between the pilot solenoid valve and the main distributor, the piloted flow rate can be controlled and therefore the **DSP10-S*/D** changeover smoothness can be varied.

Add the letter **D** to the identification code to request this device (see paragraph 1).



13.2 Subplate with throttle on line P

It is possible to introduce a subplate with a restrictor of Ø1,5 on line P between the pilot solenoid valve and the main distributor. D Add **P15** to the identification code to request this option (see paragraph 1).



14 - MANUAL OVERRIDE, BOOT PROTECTED: CM

Whenever the solenoid valve installation may involve exposure to atmospheric agents or use in tropical climates, the manual override, boot protection is recommended.

Add the suffix **CM** to request this device (see paragraph 1). For overall dimensions see cat. 41 150.

15 - ELECTRIC CONNECTORS

The solenoid operated valves are delivered without the connectors. They must be ordered separately. For the identification of the connector type to be ordered, please see catalogue 49 000.

16 - INSTALLATION

Configurations with centering and recall springs can be mounted in any position; type RK valves - without springs and with mechanical detent - must be mounted with the longitudinal axis horizontal.

Valve fastening takes place by means of screws or tie rods, laying the valve 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 or smoothness are not met, fluid leakages between valve and mounting surface can easily occur.

Surface quality
0.01/100
0.8
<u> </u>



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