

MOUNTING SURFACE

ISO 4401-07-07-0-05 (CETOP 4.2-4-07-350) 101.6 88.1 76.6 65.9 -50 34.1-18.3 55.6 34. Ø4 57 69 В M10 Ø17.5 (max) M6 Ø6.3 (max)

PERFORMANCES

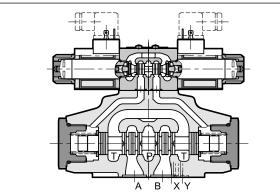
(obtained with mineral oil of viscosity of 36 cSt at 50°C)

DSP7 OPERATED DISTRIBUTOR

PILOT OPERATED DISTRIBUTOR SOLENOID OR HYDRAULIC (DSC7) CONTROLLED

SUBPLATE MOUNTING ISO 4401-07

p max 350 barQ max 300 l/min



- The DSP7 piloted valve is made up of a 4-way hydropiloted distributor with mounting surface according to ISO 4401-07 standards, operated by an ISO 4401-03 solenoid directional valve.
- It is available with different spool types (see par. 2), with some options for the opening control.
- It is available with both the solenoid and the hydraulic control from the X and Y ways.
- A version for high pressures (H) is available.
- It is available also with zinc-nickel surface treatments, that ensures a salt spray resistance up to 600 hours.

		DSP7	DSP7H	
Maximum operating pressure - ports P - A - B - port T (external drainage) - port T (internal drainage)	bar	350 250 210 (DC) / 160 (AC)	420 350 210 (DC) / 160 (AC)	
Maximum flow rate from port P to A - B - T	l/min	300		
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	9 class 20/18/15	
Recommended viscosity	cSt	25		
Mass: DSP7-S, RK DSP7-T*, SA*, SB* DSC7	kg	8,6 8,0 6,6		

Архангельск (8182)63-90-72 Астана (7172)727-132 Астарахань (8512)99-46-04 Барнаул (3852)73-04-60 Белгород (4722)40-23-64 Брянск (4832)59-03-52 Владивосток (423)249-28-31 Волгоград (844)278-03-48 Вологда (8172)26-41-59 Воронеж (473)204-51-73 Екатеринбург (343)384-55-89 Иваново (4932)77-34-06 Ижевск (3412)26-03-58 Иркутск (395)279-98-46 Казань (843)206-01-48 Калининград (4012)72-03-81 Калуга (4842)92-23-67 Кемерово (3832)65-04-62 Киров (8332)68-02-04 Краснодар (861)203-40-90 Красноярск (391)204-63-61 Курск (4712)77-13-04 Липецк (4742)52-20-81

Киргизия (996)312-96-26-47

Магнитогорск (3519)55-03-13 Москва (495)268-04-70 Мурманск (8152)59-64-93 Набережные Челны (8552)20-53-41 Нижний Новгород (831)429-08-12 Новокузнецк (3843)20-46-81 Новосибирск (383)227-86-73 Омск (3812)21-46-40 Орел (4862)44-53-42 Оренбург (3532)37-68-04 Пенза (8412)22-31-16

Россия (495)268-04-70

Пермь (342)205-81-47 Ростов-на-Дону (863)308-18-15 Рязань (4912)46-61-64 Самара (846)206-03-16 Санкт-Петербург (812)309-46-40 Саратов (845)249-38-78 Севастополь (3652)67-13-56 Смоленск (4812)29-41-54 Сочи (862)225-72-31 Ставрополь (8652)20-65-13 Сургут (3462)77-98-35 Тверь (4822)63-31-35 Томск (3822)98-41-53 Тула (4872)74-02-29 Тюмень (3452)66-21-18 Ульяновск (8422)24-23-59 Уфа (347)229-48-12 Хабаровск (4212)92-98-04 Челябинск (351)202-03-61 Череповец (8202)49-02-64 Ярославль (4852)69-52-93

4-70 **Казахстан** (772)734-952-31

1 - IDENTIFICATION CODE FOR DSP7 SOLENOID VALVES

D S	Р	7		-		1	20		-			/		/		1			
Directional valve, Solenoid controlle Pilot operated Size: ISO 4401-07 Option: (omit for standard H = high pressure pmax = 4 Spool type (see p S* TA SA* TB SB* RK Series: (the overal	I version vers	on r aph 2) mour	nting	dimer	nsions									(se	the tub	l overn r overn e (sta nanua ed (se	surface (see North in the surface in the surface in the surface parametrical surface parametrical surface in the surface in th	= Zinc-nice treatm NOTE 2) if not required tegrated I) ride, bool agraph 1	ent uired in
Seals: N = NBR seals fo V = FPM seals fo	r mine	20 to) 29) 											EN (st K7 co	I 175301-8 I andard) I = plug DI I = plug	303 (e EUTS pe DE	CH D	43650) T04-2P fo CH DT06-	·2S
Piloting (see para I = internal (not a RK02 - S*2 C = internal pilotin Z = internal pilotin valve (see pa E = external	ivailab S*4. If ng with ng with	le for interr back 30 b	nal pi press	lot is r sure v	equire	ed, ch	noose p	oilot ty	pe C)				Di Di Di Di	rect cu 12 = 1 24 = 2 48 = 4 110 = 220 =	2 V 4 V 8 V 110 V			ŕ	1)
Drainage (see pa I = Internal E = External	ıragrap	oh 9):	_										A: A: A: A:	24 = 2 48 = 4 110 = 230 = 00 = v	e current 4 V - 50 H 8 V - 50 H 110 V - 50 230 V - 50 alve witho	lz Hz / Hz / ut coil	240 V	'- 60 Hz)
Control options (s C = Main spoo D = Main spoo P08 = Subplate p S2 = Distributor	l strok l switc blaced	e con hing s unde	trol speed r sole	d cont	valve					n po	rt P		_		110 V - 60 220 V - 60				

NOTE 1: Coils locking ring and related OR are supplied together with valves.

NOTE 2: The standard valve is supplied with surface treatment of phosphating black.

The zinc-nickel finishing on the valve body (both main and pilot) makes the valve suitable to ensure a salt spray resistance up to **240** hours (test operated according to UNI EN ISO 9227 standards and test evaluation operated according to UNI EN ISO 10289 standards).

For a salt spray resistance up to 600 hours refer to paragraph 1.1.

41 420/117 ED 2/12

D

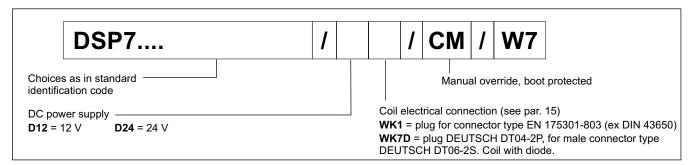
DSP7

1.1 - High corrosion resistance version

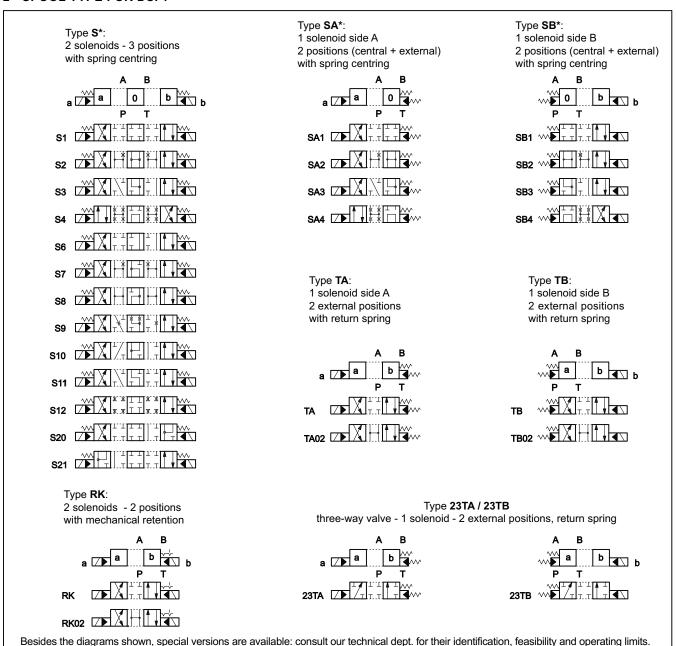
This version, available for the basic valve (without option of par. 13) features the zinc-nickel coating on all exposed metal parts of the valve, making it resistant to exposure to the salt spray for **600 hours** (test performed according to UNI EN ISO 9227 and assessment test performed according to UNI EN ISO 10289).

The coil are DC only and specific for this version, featuring a zinc-nickel surface treatment. The coil for DEUTSCH connector has a diode inside. Electrical features at paragraph 10.2. The boot manual override (CM) is installed as standard in order to protect the solenoid tube.

Follow the identification code below to order it

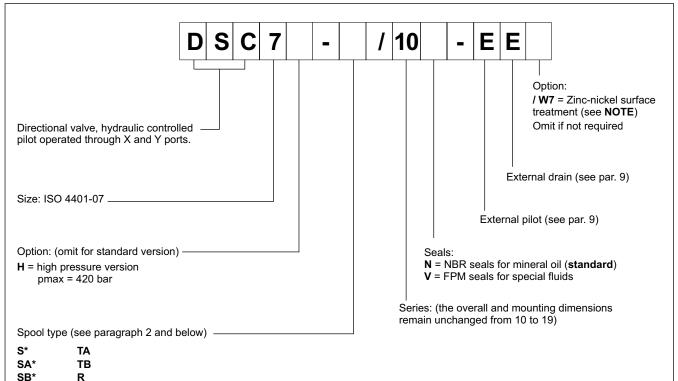


2 - SPOOL TYPE FOR DSP7



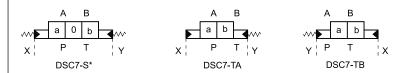
41 420/117 ED 3/12

3 - IDENTIFICATION CODE AND SPOOL TYPE FOR DSC7 - HYDRAULIC OPERATED VALVE



Spool type

The distributor is delivered with short-circuit subplate. The X and Y ports are used for the hydraulic control of the valve.



NOTE: The standard valve is supplied with surface treatment of phosphating black.

The zinc-nickel finishing makes the valve suitable to ensure a salt spray resistance up to **600** hours. (test operated according to UNI EN ISO 9227 standards and test evaluation operated according to UNI EN ISO 10289 standards).

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 N). 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.

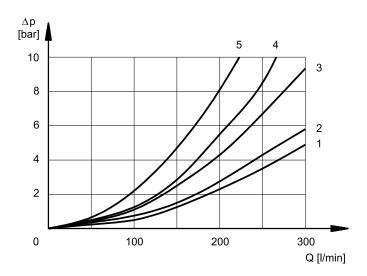
The fluid must be preserved in its physical and chemical characteristics.

41 420/117 ED 4/12

D

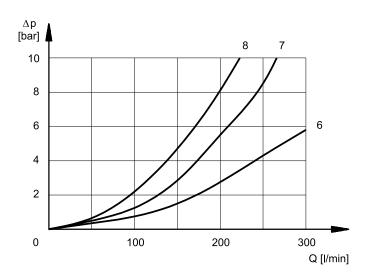
5 - PRESSURE DROPS ΔP -Q

(values obtained with viscosity 36 cSt at 50 $^{\circ}\text{C})$



PRESSURE DROPS WITH VALVE ENERGIZED

	FLOW DIRECTION					
SPOOL TYPE	P-A	P-B	A-T	В-Т		
	CUF	RVES ON G	RAPH			
S1, SA1, SB1	1	1	3	4		
S2, SA2, SB2	1	1	4	4		
S3, SA3, SB3	1	1	4	4		
S4, SA4, SB4	2	2	4	5		
S6	1	1	3	4		
S7	1	1	4	4		
S8	1	1	3	4		
S9	1	1	3	4		
S10	1	1	3	4		
S11	1	1	3	4		
S12	1	1	3	4		
S20	1	1	3	4		
S21	1	1	4	4		
TA, TB	1	1	3	4		
TA02, TB 02	1	1	4	4		
RK	1	1	3	4		



PRESSURE DROPS WITH VALVE IN DE-ENERGIZED POSITION

	FLOW DIRECTION					
SPOOL TYPE	P-A	P-B	A-T	В-Т	P-T	
		CURV	ES ON G	RAPH		
S2, SA2, SB2					6	
S3, SA3, SB3			7	7		
S4, SA4, SB4					7	
S6				7		
S7					8	
S8					8	
S10			7	7		
S11			7			

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	45	30	45	30	
DC solenoid	75	60	60	45	

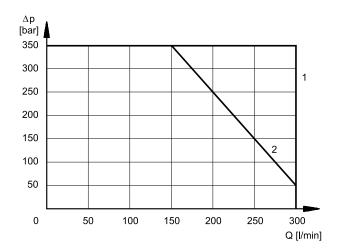
41 420/117 ED 5/12

7 - OPERATING LIMITS

The curves define the flow rate operating fields according to the valve pressure for the different spool types.

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 values have been obtained with mineral oil, viscosity 36 cSt at 50 °C, and filtration ISO 4406:1999 class 18/16/13.



SPOOL	CUI	RVE
SPOOL	P→A	Р→В
S1,SA1,SB1	1	1
S2, SA2, SB2	1	1
S3, SA3, SB3	1	1
S4, SA4, SB4	2	2
S6	1	1
S7	2	2
S8	2	2
S9	1	1
S10	1	1
S11	1	1
S12	1	1
S20	1	1
S21	1	1
S21	1	1

SPOOL	CURVE		
SPOOL	P→A	Р→В	
TA, TB	1	1	
TA02, TB02	1	1	
23TA, 23TB	1	1	
RK	1	1	

8 - PERFORMANCE CHARACTERISTICS

PRESSURES [bar]	DSP7	DSP7H	DSC7	DSC7H
Max pressure in P, A, B ports	350	420	350	420
Max pressure in T line with external drainage	250	350	250	350
Max pressure in T line with internal drainage	210 (DC) 160 (AC)	210 (DC) 160 (AC)	-	-
Max pressure in Y line with external drainage	210 (DC) 160 (AC)	210 (DC) 160 (AC)	-	-
Min piloting pressure NOTE 1	5 ÷ 12			
Max piloting pressure NOTE 2	210	350	210	420

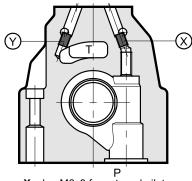
NOTE 1 minimum piloting pressure can be the lower range value at low flows rates, but with higher flow rates the higher value is needed.

NOTE 2 If the valve operates at higher pressures it is necessary to use the version with external pilot and reduced pressure. Otherwise, the valve can be ordered with internal pilot and pressure reducing valve with 30 bar fixed adjustment (pilot type **Z**, see identification code)

41 420/117 ED 6/12

9 - PILOTING AND DRAINAGE

The DSP7 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.



X: plug	M6x8	for	external	pilot
Y: plua	M6x8	for	external	drain

	TYPE OF VALVE	Plug as	sembly
	THE OF WALVE	Х	Y
IE	INTERNAL PILOT AND EXTERNAL DRAIN	NO	YES
II	INTERNAL PILOT AND INTERNAL DRAIN	NO	NO
EE	EXTERNAL PILOT AND EXTERNAL DRAIN	YES	YES
EI	EXTERNAL PILOT AND INTERNAL DRAIN	YES	NO

9.1 - Backpressure valve incorporated on line P

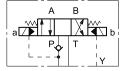
Valves DSP7 are available upon request with backpressure valve incorporated on line P. This is necessary to obtain the piloting pressure when the control valve, in rest position, has the line P connected to the T port (spools S2, S4, S7, S8, S*2, S*4, TA02, TB02, RK02). The cracking pressure is of 5 bar with a minimum flow rate of 15 l/min.

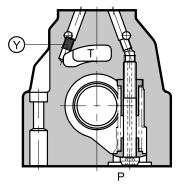
Add C to the identification code for this request (see paragraph 1).

In the C version the piloting is always internal.

The backpressure valve can be also delivered separately and it can be easily mounted on line P of the main control valve. Specify the code **0266577** to order the backpressure valve separately.

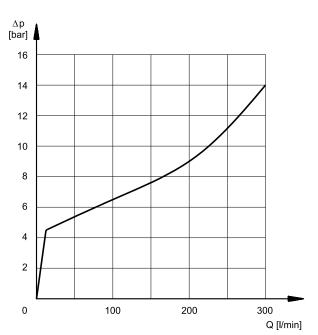






pilot always internal **Y**: plug M6x8 for external drain

NOTE: the backpressure valve can't be used as check valve because it doesn't assure the seal.



The curve refers to the pressure drop (body part only) with backpressure valve energized to which the pressure drop of the reference spool must be added. (see paragraph 5)

41 420/117 ED 7/12

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: 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 data sheet 49 000).

Protection from atmospheric agents IEC EN 60529

Connection	IP 65	IP 67	IP 69 K
K1 EN 175301-803	x (*)		
K7 DEUTSCH DT04 male	х	х	x (*)

^(*) The protection degree is guaranteed only with the connector correctly connected and installed

SUPPLY VOLTAGE FLUCTUATION	± 10% Vnom
MAX SWITCH ON FREQUENCY	10.000 ins/hour
DUTY CYCLE	100%
ELECTROMAGNETIC COMPATIBILITY (EMC) (NOTE)	In compliance with 2014/30/EU
LOW VOLTAGE	In compliance with 2014/35/EU
CLASS OF PROTECTION Coil insulation (VDE 0580) Impregnation: (DC valve) (AC valve)	class H class F class H

10.2 - DC coils

In direct current energizing, current consumption stays at fairly constant values, essentially determined by Ohm's law: V = R x I.

The WK1 and WK7D are coils specific for the high corrosion resistance version of the valve.

The WK7D coil includes a suppressor diode of pulses for protection from voltage peaks during switching. During the switching the diode significantly reduces the energy released by the winding, by limiting the voltage to 31.4V in the D12 coil and to 58.9 V in the D24 coil.

Using connectors type "D" (see cat. 49 000) with embedded bridge rectifier it is possible to feed DC coils (starting from 48V voltage) with alternating current (50 or 60 Hz), considering a reduction of the operating limits by approximately 5 ÷ 10%.

The table shows current and power consumption values for DC coils.

(values ±10%)

	Nominal voltage [V]	Resistance at 20°C [Ω]	Current consumption [A]	Power consumption [W]	K1	Coil WK1	code K7	WK7D
D12	12	4,4	2,72	32,7	1903080	1903050	1902940	1903400
D24	24	18,6	1,29	31	1903081	1903051	1902941	1903401
D48	48	78,6	0,61	29,5	1903083			
D110	110	436	0,26	28,2	1903464			
D220	220	1758	0,13	28,2	1903465			

10.3 - AC coils

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

Coils for alternating current (values ± 5%)

Constonation attenuating Current (values ± 3/6)								
Suffix	Nominal Voltage [V]	Freq. [Hz]	Resistance at 20°C [Ohm] (±1%)	Current consumption at inrush [A] (±5%)	Current consumption at holding [A] (±5%)	Power consumption at inrush (±5%) [VA]	Power consumption at holding (±5%) [VA]	Coil Code
A24	24	50	1,46	8	2	192	48	1902830
A48	48	30	5,84	4,4	1,1	204	51	1902831
A110	110V-50Hz		32	1,84	0,46	192	48	1902832
Allo	120V-60Hz	50/60		1,56	0,39	188	47	
A230	230V-50Hz	30V-50Hz	140	0,76	0,19	176	44	1902833
A230	240V-60Hz			0,6	0,15	144	36	
F110	110	60	26	1,6	0,4	176	44	1902834
F220	220		106	0,8	0,2	180	45	1902835

41 420/117 ED **8/12**



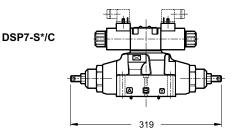
11 - OPTIONS

11.1 - Control of the main spool stroke: C

With the help of special side plugs, it is possible to introduce stroke controls in the heads of the piloted valve so as to vary the maximum spool clearance opening.

This solution allows control of the flow rate from the pump to the actuator and from the actuator to the outlet, obtaining a double adjustable control on the actuator.

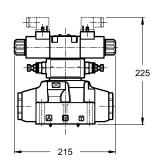
Add the letter C to the identification code to request this device (see paragraph 1).



11.2 - 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 changeover smoothness can be varied.

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



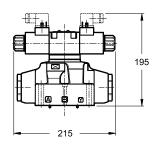
DSP7-S*/D

DSP7-S*/P08

11.3 - Subplate with throttle on line P

It is possible to introduce a subplate with a restrictor of \emptyset 0,8 on line P between the pilot solenoid valve and the main distributor.

Add P08 to the identification code to request this option (see paragraph 1).



11.4 - Solenoid operated distributor with pilot valve in configuration S2

It is possible to deliver the solenoid operated distributor with pilot valve in configuration S2 (all the ports at outlet). With this option the piloting is necessarily external.

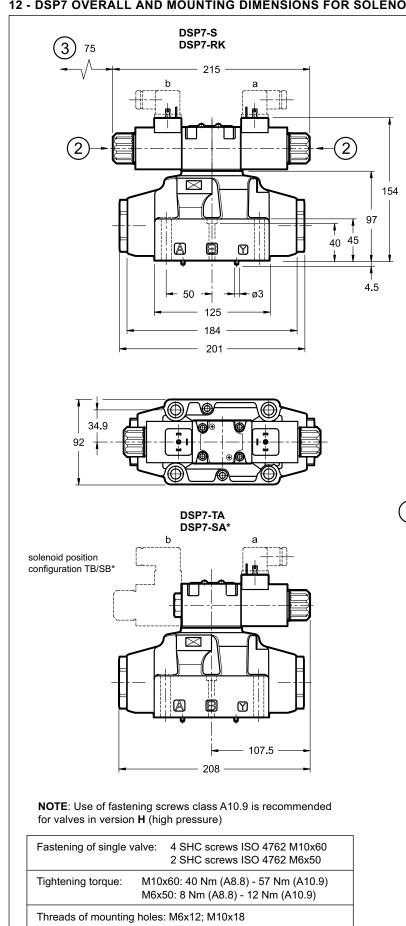
Add **S2** to the identification code to request this option (see paragraph 1).

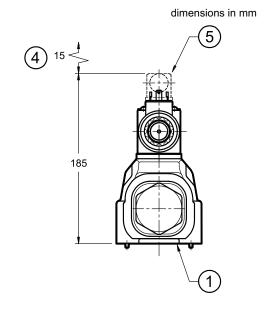
This configuration is used with external piloting in order to allow the unloading of the piloting line when the solenoid operated valve is in rest position.

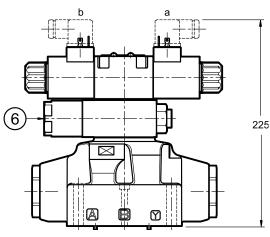
41 420/117 ED 9/12



12 - DSP7 OVERALL AND MOUNTING DIMENSIONS FOR SOLENOID DISTRIBUTOR







DSP7-*/20*-Z*

4 OR type 130 (22.22X2.62) - 90 Shore 2 OR type 2043 (10.82x1.78) - 90 Shore 2 Manual override

Mounting surface with sealing rings

3 Coil removal space

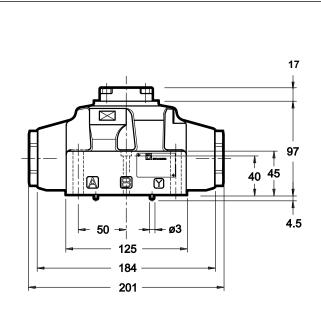
4 Connector removal space

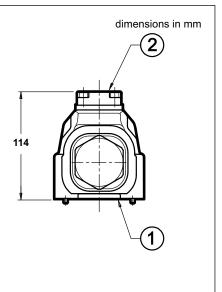
5 Electric connector to be ordered separately (see cat. 49 000)

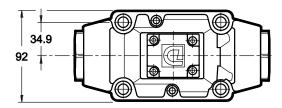
6 Reducing valve with fixed adjustment 30 bar

41 420/117 ED 10/12

13 - DSC7 OVERALL AND MOUNTING DIMENSIONS FOR HYDRAULIC DISTRIBUTOR DSC7







NOTE: Use of fastening screws class A10.9 is recommended for valves in version **H** (high pressure)

Fastening of single valve: 4 SHC screws ISO 4762 M10x60

2 SHC screws ISO 4762 M6x50

Tightening torque: M10x60: 40 Nm (A8.8) - 57 Nm (A10.9)

M6x50: 8 Nm (A8.8) - 12 Nm (A10.9)

Threads of mounting holes: M6x12; M10x18

1	Mounting surface with sealing rings:				
	4 OR type 130 (22.22X2.62) - 90 Shore				
	2 OR type 2043 (10.82x1.78) - 90 Shore				

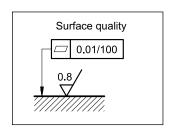
Short-circuit subplate

14 - INSTALLATION

Configurations with centring 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.

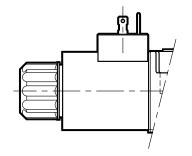
NOTE: Use of fastening screws class 10.9 is recommended for valves in version H (high pressure).

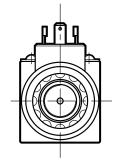


41 420/117 ED 11/12

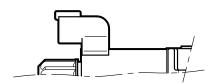
15 - ELECTRIC CONNECTIONS

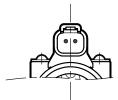
connection for EN 175301-803 (ex DIN 43650) connector code **K1** (standard) code **WK1** (W7 version only)



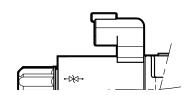


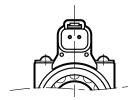
connection for DEUTSCH DT06-2S male connector type code **K7**





connection for DEUTSCH DT06-2S male connector - coil with diode code **WK7D** (W7 version only)





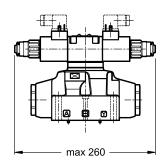
16 - ELECTRIC CONNECTORS

Solenoid valves are delivered without connectors. Connectors type EN 175301-803 (ex DIN 43650) for K1 and WK1 connections can be ordered separately. See catalogue 49 000.

17 - MANUAL OVERRIDE

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).



18 - SUBPLATES

(see catalogue 51 000)

These plates are not suitable for high pressure valves DSP7H.

Type with rear ports	PME07-Al6G		
Type with side ports	PME07-AL6G		
P, T, A, B, port dimensions X, Y; L port dimensions	1" BSP 1/4" BSP		

Магнитогорск (3519)55-03-13

Архангельск (8182)63-90-72 Астана (7172)727-132 Астарахань (8512)99-46-04 Барнаул (3852)73-04-60 Белгород (4722)40-23-64 Брянск (4832)59-03-52 Владивосток (423)249-28-31 Волгоград (844)278-03-48 Вологда (8172)26-41-59 Воронеж (473)204-51-73 Екатеринбург (343)384-55-89 Иваново (4932)77-34-06 Ижевск (3412)26-03-58 Иркутск (395)279-98-46 Казань (843)206-01-48 Калининград (4012)72-03-81 Калуга (4842)92-23-67 Кемерово (3842)65-04-62 Киров (8332)68-02-04 Краснодар (861)203-40-90 Красноярск (391)204-63-61 Курск (4712)77-13-04 Липецк (4742)52-20-81

Киргизия (996)312-96-26-47

Москва (495)268-04-70 Мурманск (8152)59-64-93 Набережные Челны (8552)20-53-41 Нижний Новгород (831)429-08-12 Новокузнецк (3843)20-46-81 Новосибирск (383)227-86-73 Омск (3812)21-46-40 Орел (4862)44-53-42 Оренбург (3532)37-68-04 Пенза (8412)22-31-16 Пермь (342)205-81-47 Ростов-на-Дону (863)308-18-15 Рязань (4912)46-61-64 Самара (846)206-03-16 Санкт-Петербург (812)309-46-40 Саратов (845)249-38-78 Севастополь (8692)22-31-93 Симферополь (3652)67-13-56 Смоленск (4812)29-41-54 Сочи (862)225-72-31 Ставрополь (8652)20-65-13

Тула (4872)74-02-29 Тюмень (3452)66-21-18 Ульяновск (8422)24-23-59 Уфа (347)229-48-12 Хабаровск (4212)92-98-04 Челябинск (351)202-03-61 Череповец (8202)49-02-64 Ярославль (4852)69-52-93

Сургут (3462)77-98-35

(4822)63-31-35 (3822)98-41-53

Тверь Томск

Россия (495)268-04-70 Казахстан (772)734-952-31