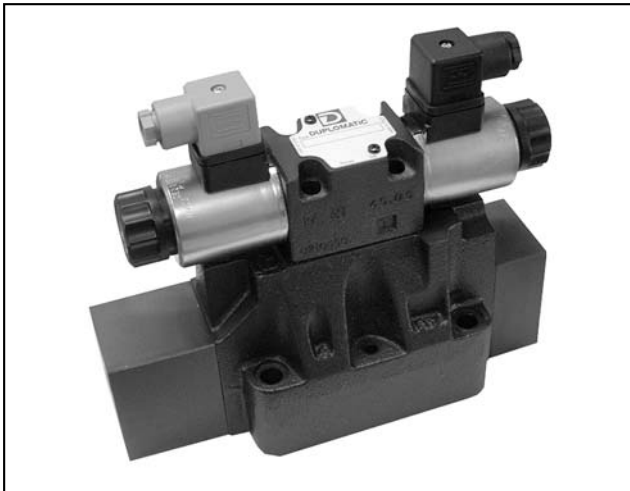




DIPLOMATIC
HYDRAULICS

83 310/107 ED



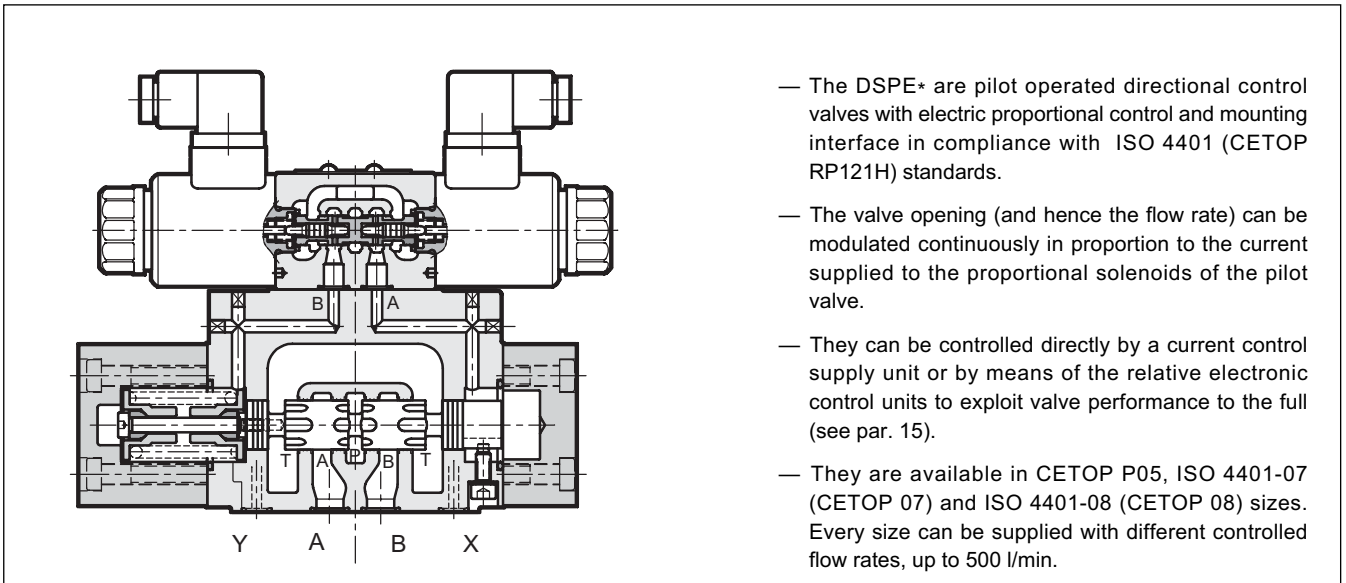
DSPE*

PILOT OPERATED DIRECTIONAL VALVE WITH PROPORTIONAL CONTROL SERIES 11

DSPE5 **CETOP P05**
DSPE7 **ISO 4401-07 (CETOP 07)**
DSPE8 **ISO 4401-08 (CETOP 08)**

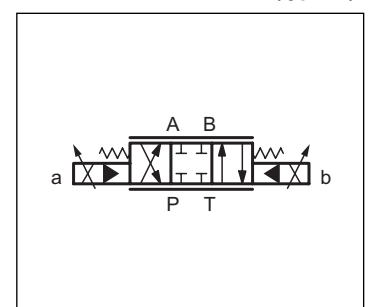
p max (see performances table)
Q max (see performances table)

OPERATING PRINCIPLE



PERFORMANCES (obtained with viscosity of 36 cSt at 50°C with the relative electronic control units)		DSPE5	DSPE7	DSPE8
Max operating: - P - A - B ports - T port	bar	350 see paragraph 6		
Controlled flow rate with Δp 10 bar P-T	l/min	see paragraph 2		
Step response		see paragraph 8		
Hysteresis	% Q_{max}	< 4%		
Repeatability	% Q_{max}	< $\pm 2\%$		
Electrical characteristics		see paragraph 7		
Ambient temperature range	°C	-10 / +50		
Fluid temperature range	°C	-20 / +80		
Fluid viscosity range	cSt	10 ÷ 400		
Fluid contamination degree	According to ISO 4406:1999 class 18/16/13			
Recommended viscosity	cSt	25		
Mass: single solenoid valve double solenoid valve	kg	7,1 7,5	9,3 9,7	15,6 16

HYDRAULIC SYMBOL (typical)





1 - IDENTIFICATION CODE

D	S	P	E	-				/ 11				/	K1	/	
----------	----------	----------	----------	---	--	--	--	------	--	--	--	---	-----------	---	--

Pilot operated directional control valve

Electric proportional control

Nominal size:
5 = CETOP P05
7 = ISO 4401-07 (CETOP 07)
8 = ISO 4401-08 (CETOP 08)

Spool type:
C = closed centres
A = open centres
RC = regenerative closed centres
RA = regenerative open centres

Spool nominal flow rate (see table par. 2)

Configurations for single solenoid version (omit for double solenoid version):
SA = 1 solenoid for cross configuration
SB = 1 solenoid for parallel configuration

Series No. (the overall and mounting dimensions remain unchanged from 10 to 19)

Manual override: (see par. 14)

Coil electrical connection: for connector type DIN 43650 (standard)

D12 = voltage 12V DC
D24 = voltage 24V DC

Drainage: **I** = internal
E = external

Piloting: **I** = internal
E = external
Z = internal piloting with 30 bar fixed adj. pressure reducing valve (see par. 6)

Seals:
N = NBR seals for mineral oil (standard)
V = FPM seals for special fluids

2 - AVAILABLE CONFIGURATIONS

The valve configuration depends on the combination of the following elements:
 number of proportional solenoids, spool type, rated flow.

Configuration 2 solenoids:
3 positions with spring centering

1 solenoid for cross configuration "SA":
2 positions (central + external) with spring centering

1 solenoid for parallel configuration "SB":
2 positions (central + external) with spring centering

valve type	*	nominal flow rate with Δp 10 bar P-T
DSPE5	80	80 l/min
	80/40	80 (P-A) /40 (B-T) l/min
DSPE7	100	100 l/min
	150	150 l/min
	150/75	150 (P-A) /75 (B-T) l/min
DSPE8	200	200 l/min
	300	300 l/min
	300/150	300 (P-A) /150 (B-T) l/min

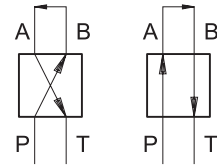
valve type	*	nominal flow rate with Δp 10 bar P-T
DSPE7	150/75	150 (P-A) /75 (B-T) l/min
DSPE8	300/150	300 (P-A) /150 (B-T) l/min



3 - CHARACTERISTIC CURVES (values measured with viscosity of 36 cSt at 50°C with valves in conjunction with the relative electronic control units)

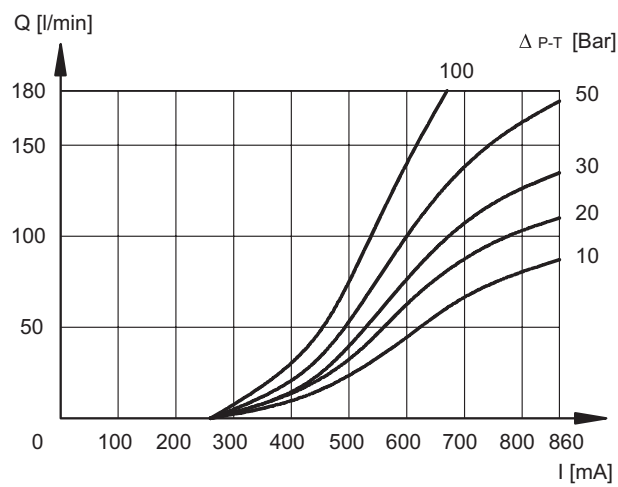
Typical flow rate control curves at constant Δp according to current supply to the solenoid (D24 version, 860 mA max current), measured for the available spool types.

The reference Δp values are measured between valve ports P and T.



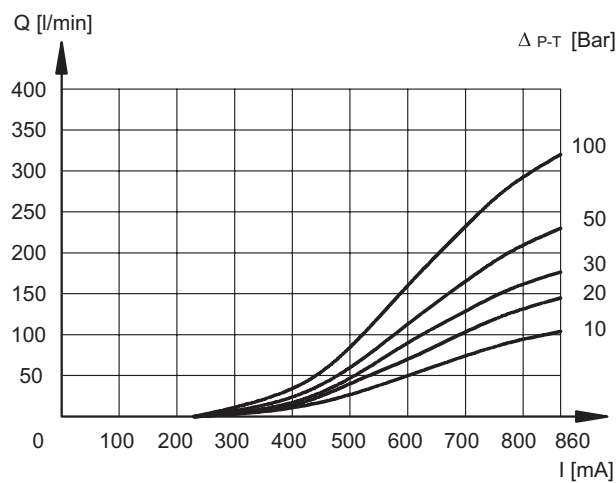
3.1 - Characteristic curves DSPE5

SPOOL C80 - A80



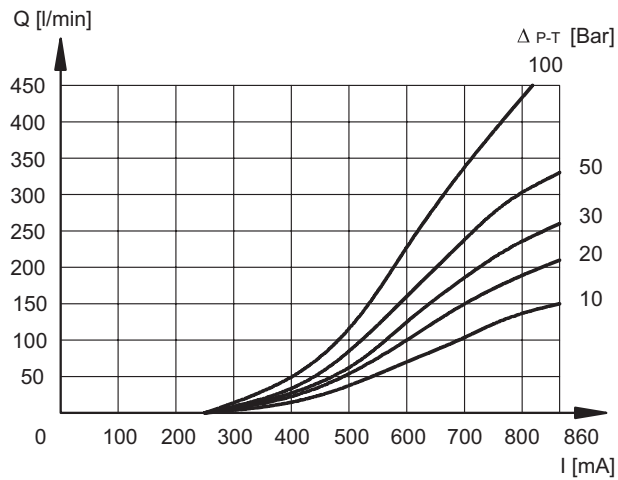
3.2 - Characteristic curves DSPE7

SPOOL C100 - A100



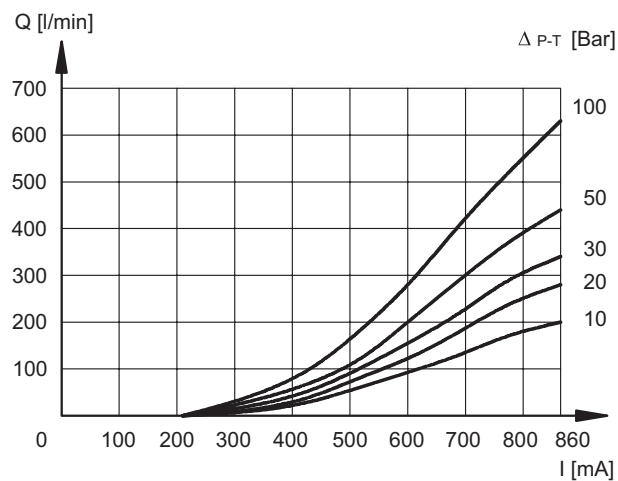


SPOOL C150 - A150

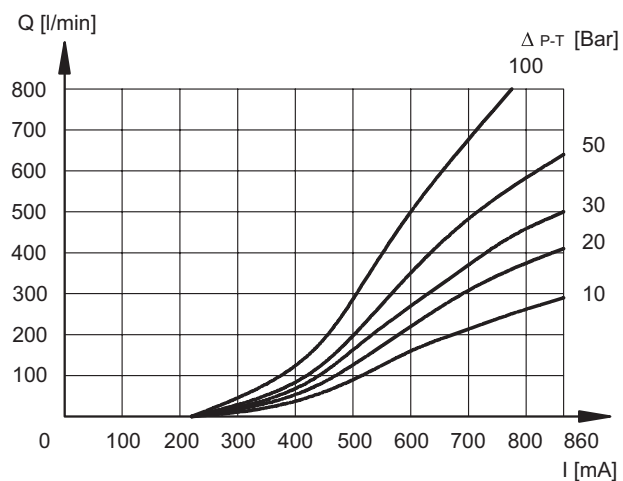


3.3 - Characteristic curves DSPE8

SPOOL C200 - A200



SPOOL C300 - A300





4 - HYDRAULIC CHARACTERISTICS (values measured with viscosity of 36 cSt at 50°C with valves in conjunction with the relative electronic control units)

		DSPE5	DSPE7	DSPE8
Max flow rate	l/min	180	450	800
Piloting flow requested with operation 0 → 100%	l/min	5,2	9,6	11
Piloting volume requested with operation 0 → 100%	cm ³	1,7	3,2	9,1

5 - 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 fluid types 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.

6 - PILOTING AND DRAINAGE

The DSPE valves are available with piloting and drainage, both internal and external.
 The version with external drainage allows a higher backpressure on the unloading.

VALVE TYPE	Plug assembly	
	X	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

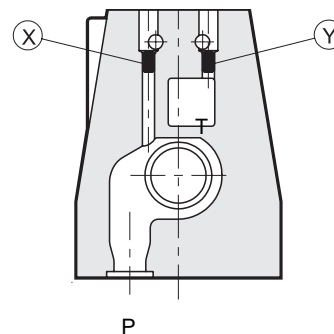
PRESSURES (bar)

Pressure	MIN	MAX
Piloting pressure on X port	30	210 (NOTE)
Pressure on T port with internal drain	-	10
Pressure on T port with external drain	-	250

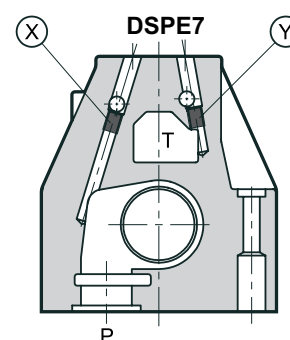
NOTE: the version with external pilot with reduced pressure must be used when higher pressures are needed.

Otherwise the valve with internal pilot and pressure reducing valve with 30 bar fixed adjustment can be ordered.

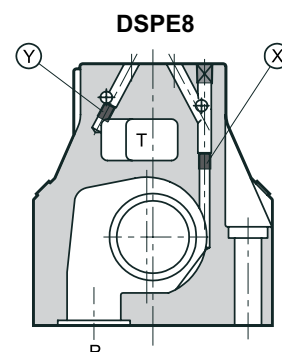
Add the letter Z to the identification code to order this option (see par. 1).



X: M5x6 plug for external pilot
Y: M5x6 plug for external drain



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



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



7 - ELECTRICAL CHARACTERISTICS

Proportional solenoid

The proportional solenoid comprises two parts: tube and coil.

The tube, screwed to the valve body, contains the armature which is designed to maintain friction to a minimum thereby reducing hysteresis.

The coil is mounted on the tube secured by means of a lock nut. It can be rotated through 360° depending on installation clearances.

NOMINAL VOLTAGE	VCC	12	24
RESISTANCE (at 20°C)	Ω	3,66	17,6
MAXIMUM CURRENT	A	1,88	0,86
DUTY CYCLE	100%		
ELECTROMAGNETIC COMPATIBILITY (EMC) - EMISSIONS EN 50081-1 - IMMUNITY EN 50082-2	in compliance with 89/336 CEE		
PROTECTION TO ATMOSPHERIC AGENTS (according to IEC 144 standards)	IP 65		

8 - STEP RESPONSE (measured with mineral oil with viscosity of 36 cSt at 50°C in conjunction with the relative electronic control units)

Step response is the time taken for the valve to reach 90% of the set pressure value following a step change of reference signal.

The table shows the typical step response tested with static pressure 100 bar.

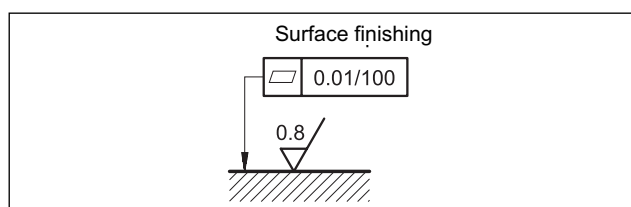
Reference signal step	0→100%	100%→0
Step response [ms]		
DSPE5	50	30
DSPE7	80	50
DSPE8	100	70

9 - INSTALLATION

The DSPE* valves can be installed in any position without impairing correct operation.

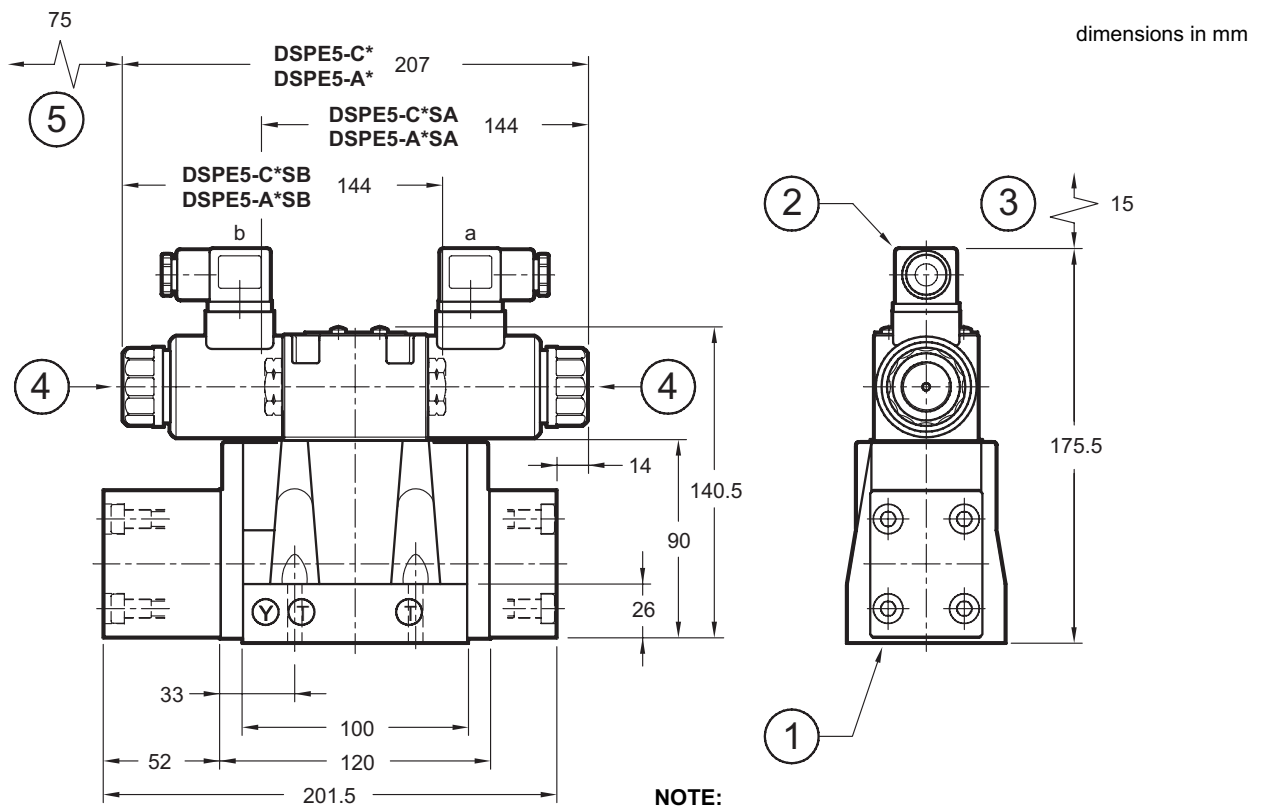
Ensure that there is no air in the hydraulic circuit.

Valves are fixed by means of screws or tie rods on a flat surface with planarity and roughness equal to or better than those indicated in the relative symbols. If minimum values are not observed, fluid can easily leak between the valve and support surface.

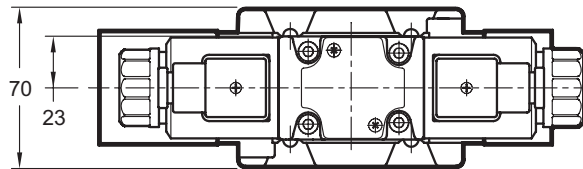




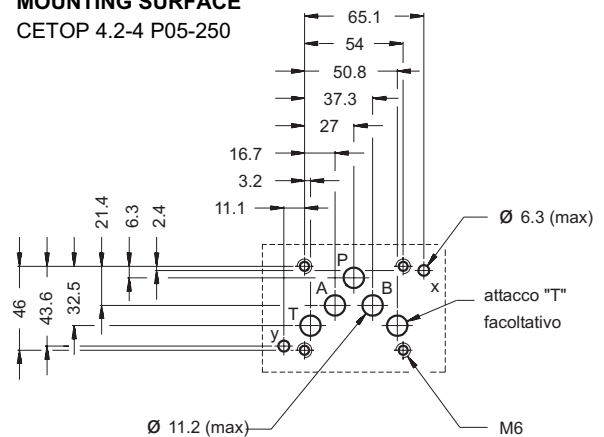
10 - OVERALL AND MOUNTING DIMENSIONS DSPE5



NOTE:
for overall dimensions with Z option (fixed adjustment pressure reducing valve) see par. 13.



MOUNTING SURFACE CETOP 4.2-4 P05-250

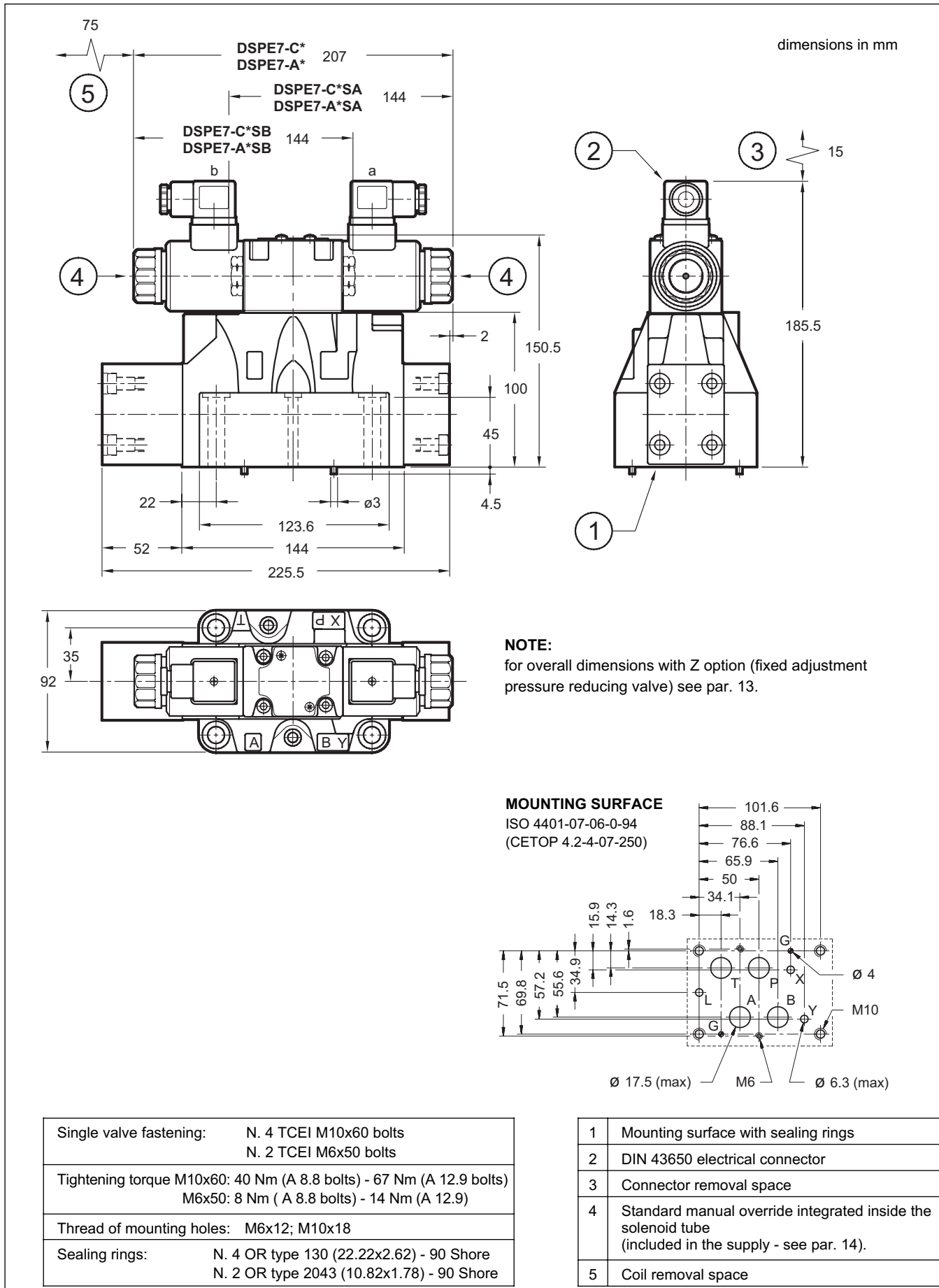


Valve fastening: N. 4 bolts TCEI M6x35
Tightening torque: 8 Nm (A 8.8 bolts) 14 Nm (A 12.9 bolts)
Thread of mounting holes: M6x10
Sealing rings: N. 5 OR type 2050 (12.42x1.78) - 90 Shore N. 2 OR type 2037 (9.25x1.78) - 90 Shore

1	Mounting surface with sealing rings
2	DIN 43650 electrical connector
3	Connector removal space
4	Standard manual override integrated inside the solenoid tube (included in the supply - see par. 14).
5	Coil removal space

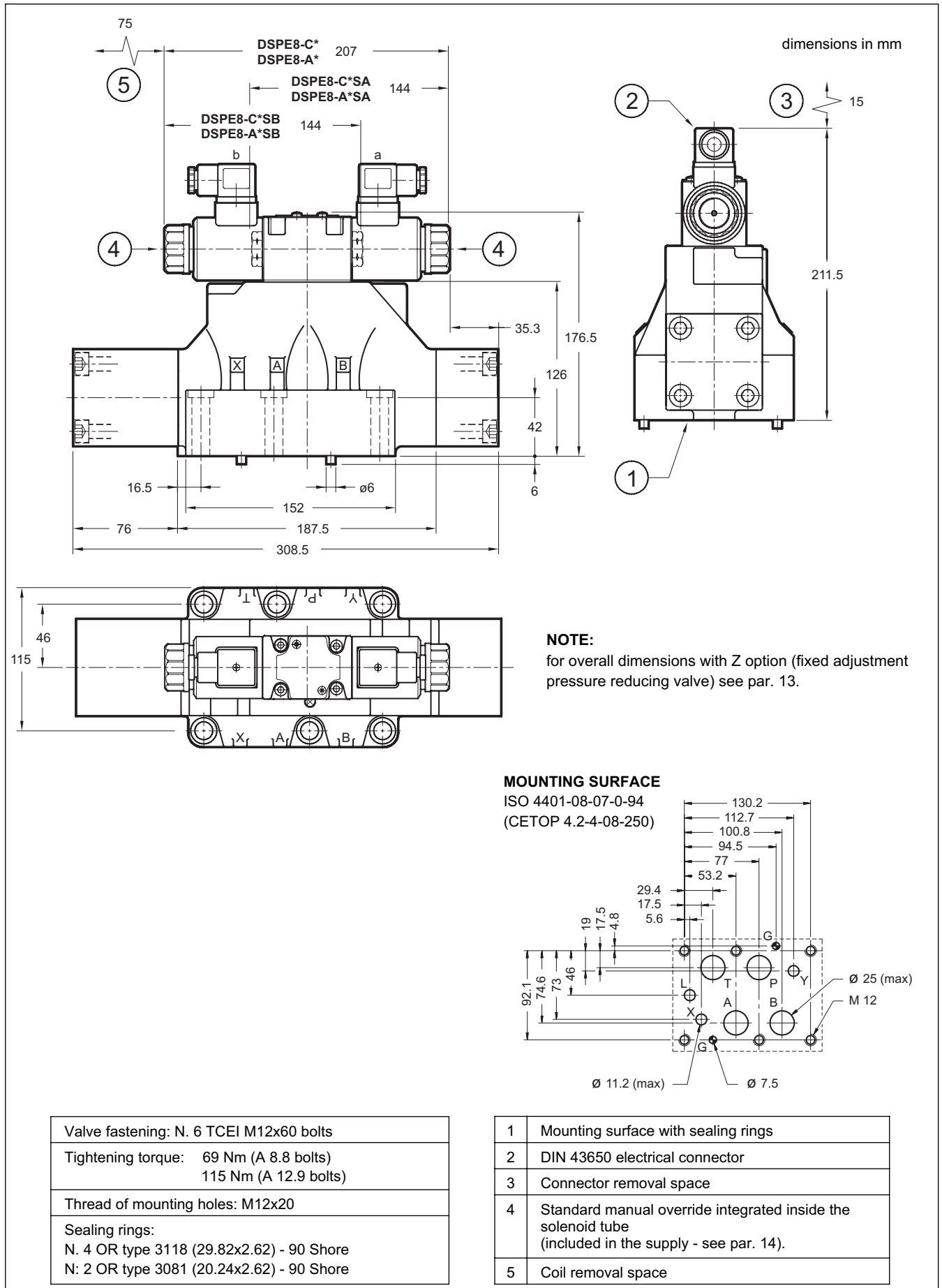


11 - OVERALL AND MOUNTING DIMENSIONS DSPE7





12 - OVERALL AND MOUNTING DIMENSIONS DSPE8

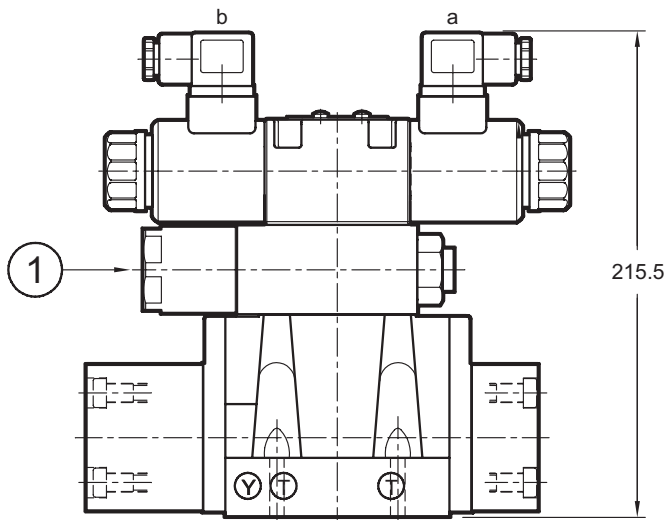




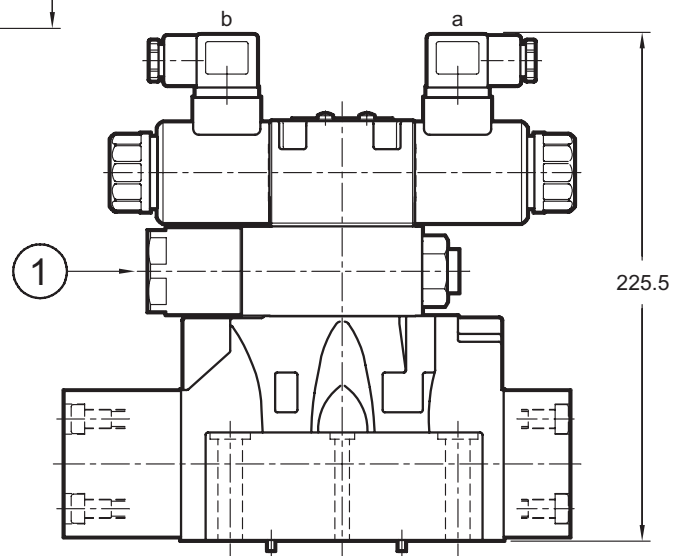
13 - OVERALL AND MOUNTING DIMENSIONS DSPE*-*/10*-Z*/*

dimensions in mm

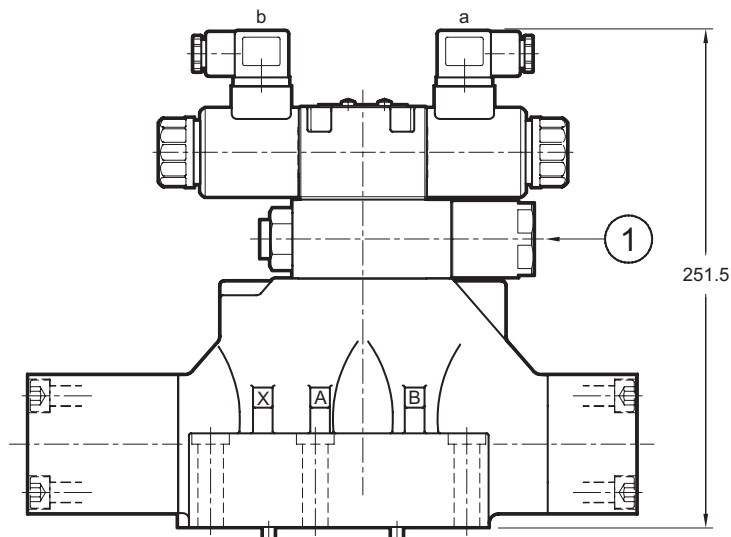
DSPE5-*/10*-Z*/*



DSPE7-*/10*-Z*/*



DSPE8-*/10*-Z*/*



NOTE: for missing overall dimensions and characteristics see par. 10 - 11 - 12.

1	30 bar fixed adjustment pressure reducing valve
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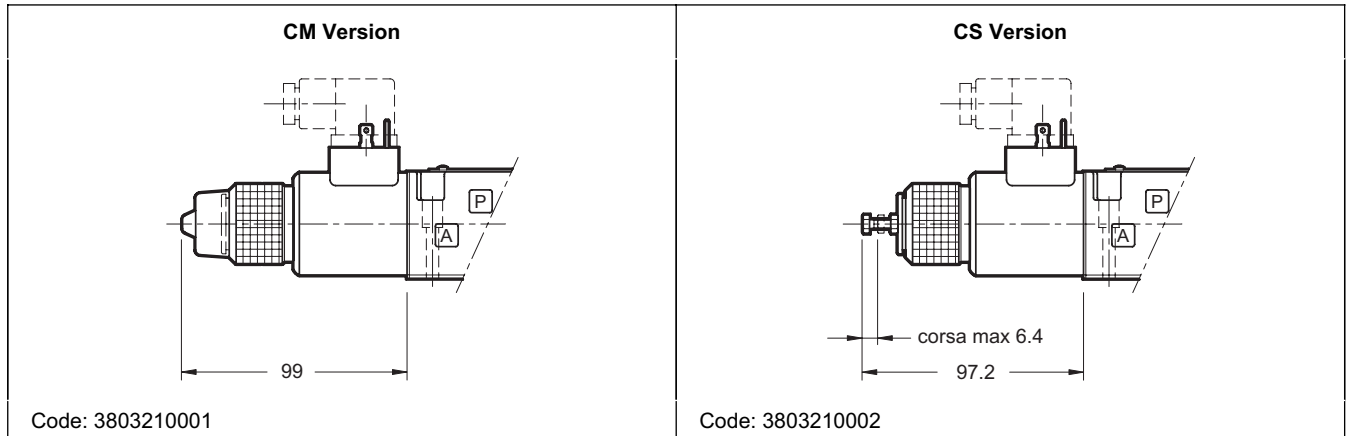
14 - MANUAL OVERRIDE

The standard valve has solenoids whose pin for the manual operation is integrated in the tube. The operation of this control must be executed with a suitable tool, minding not to damage the sliding surface.

Two different manual override version are available upon request:

- CM version, manual override belt protected
- CS version, with metal ring nut provided with a M4 screw and a blocking locknut to allow the continuous mechanical operations.

NOTE: The manual override use doesn't allow any proportional regulation; in fact using this kind of override, the main stage spool will open completely and the valve will behave as an on-off valve.



15 - ELECTRONIC CONTROL UNITS

DSPE* - ** SA (SB)

EDC-112	for solenoid 24V DC	plug version	see cat.89 120
EDM-M111	for solenoid 24V DC	DIN EN 50022 rail mounting	see cat. 89 250
EDM-M141	for solenoid 12V DC		
UEIK-11	for solenoid 24V DC	Eurocard type	see cat. 89 300

DSPE* - A* DSPE* - C*

EDM-M211	for solenoid 24V DC	rail mounting DIN EN 50022	see cat. 89 250
EDM-M241	for solenoid 12V DC		
UEIK-21	for solenoid 24V DC	Eurocard format	see cat. 89 320

16 - SUBPLATES (See catalogue 51 000)

	DSPE5	DSPE7	DSPE8
Model with rear ports	PME4-AI5G	PME07-AI6G	
Model with side ports	PME4-AL5G	PME07-AL6G	PME5-AL8G
Thread of ports:	P - T - A - B X - Y	3/4" BSP 1/4" BSP	1" BSP 1/4" BSP



DSPE*
SERIES 11



**DIPLOMATIC
HYDRAULICS**

DIPLOMATIC OLEODINAMICA SpA

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