

Part number:

HYDROMA

HYDRAULICKÉ SYSTÉMY

**HIDROMA
SYSTEMS**

UKŁADY HYDRAULICZNE

HYDROMA

ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ

83 210/109 ED



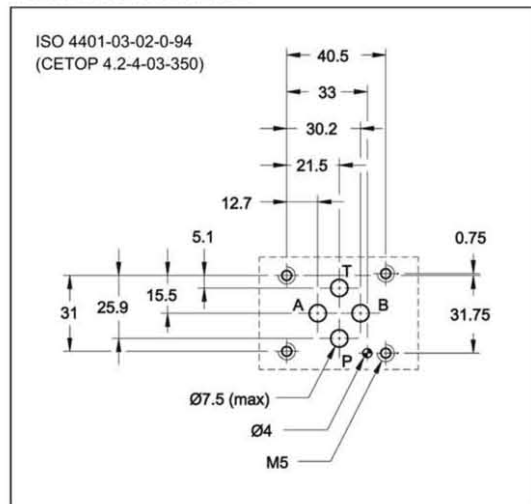
DSE3

DIRECTIONAL VALVE WITH PROPORTIONAL CONTROL SERIES 10

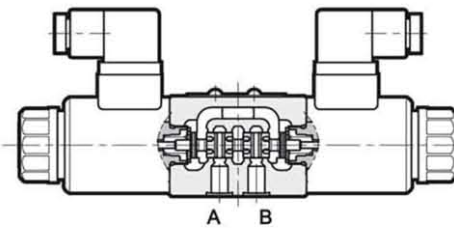
**SUBPLATE MOUNTING
ISO 4401-03 (CETOP 03)**

**p max 350 bar
Q max 40 l/min**

MOUNTING INTERFACE



OPERATING PRINCIPLE



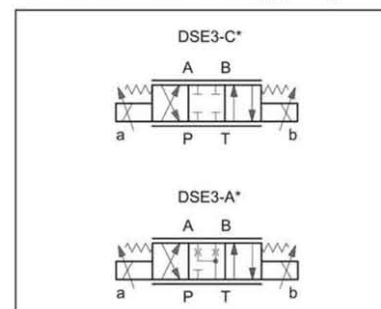
- The DSE3 valve is a directly operated directional control valve with electric proportional control and with ports, in compliance with ISO 4401 standards (CETOP RP 121H).
- It is used for directional and speed control of hydraulic actuators.
- Valve opening and hence flow rate can be modulated continuously in proportion to the current supplied to the solenoid.

PERFORMANCES (obtained with mineral oil with viscosity of 36 cSt at 50°C and with the relative electronic control units)

Max operating pressure:		
P - A - B ports	bar	350
T port		210
Maximum flow with Δp 10 bar P-T	l/min	1,3 - 4 - 8 - 16 - 26
Step response		see chapter 6
Hysteresis	% Q _{max}	< 6%
Repeatability	% Q _{max}	< ± 1,5%
Electrical characteristics		see chapter 5
Ambiente 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	kg	1,6
double solenoid valve		2,0

- The valve can be controlled directly by a current control supply unit or by means of the relative electronic control units to exploit valve performance to the full (see paragraph 10).

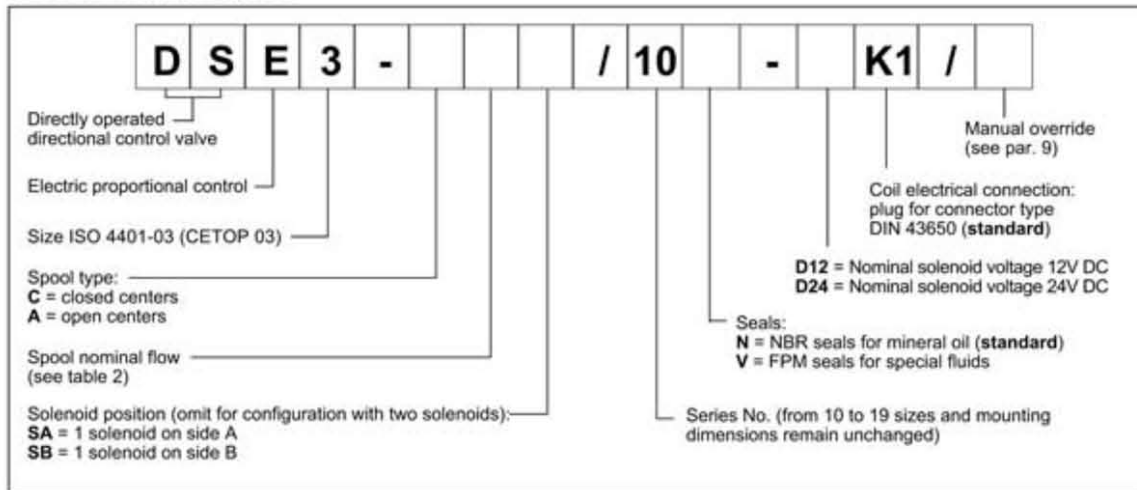
HYDRAULIC SYMBOLS (typical)



DSE3

SERIES 10

1 - IDENTIFICATION CODE



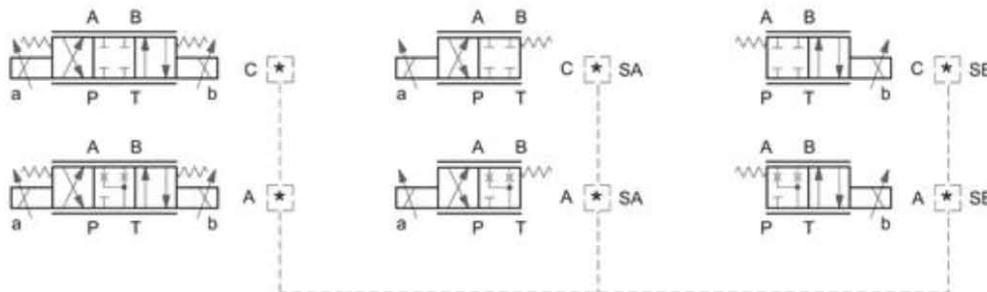
2 - CONFIGURATIONS

Valve configuration depends on the combination of the following elements:
 number of proportional solenoids, spool type, nominal flow rate.

2 solenoids configuration:
 3 positions with spring centering

"SA" configuration: 1 solenoid on side A.
 2 positions (central + external) with spring centering

"SB" configuration: 1 solenoid on side B.
 2 positions (central + external) with spring centering



*	Controlled flow with $\Delta p 10$ bar P-T
01	1,3 l/min (NOTE)
04	4 l/min
08	8 l/min
16	16 l/min
16/08	16 (P-A) / 08 (B-T) l/min
26	26 l/min
26/13	26 (P-A) / 13 (B-T) l/min

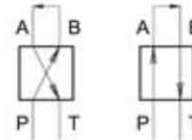
NOTE: the 01 spool is available in version C (closed center) only.

DSE3

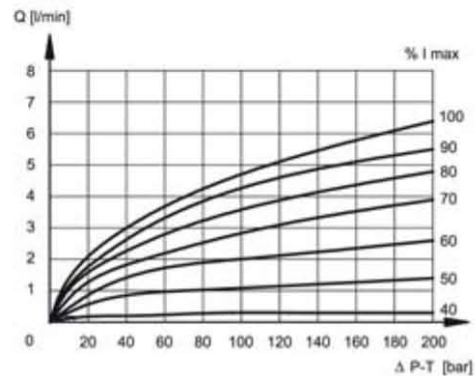
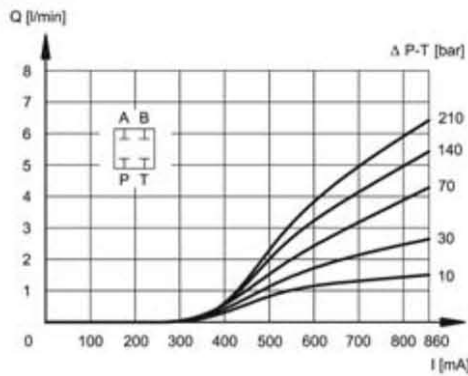
SERIES 10

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

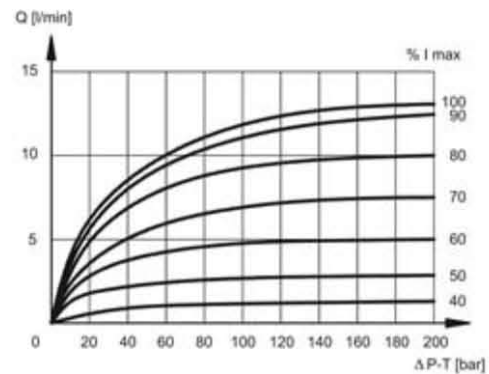
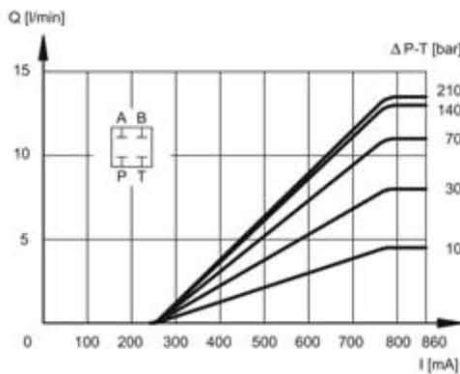
Typical constant flow rate control curves at Δp according to current supply to solenoid (D24 version, maximum current 860 mA), measured for the various spool types available. The reference Δp values are measured between ports P and T on the valve.



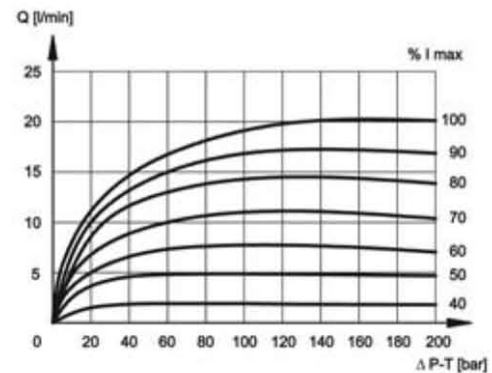
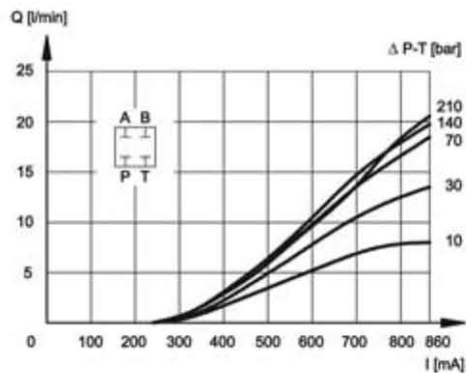
SPOOL TYPE C01



SPOOL TYPE C04



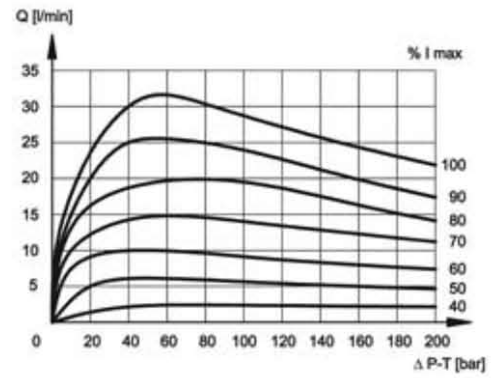
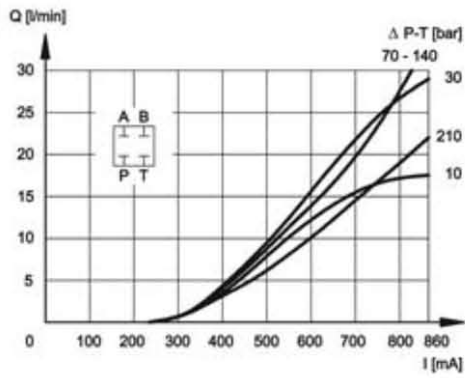
SPOOL TYPE C08



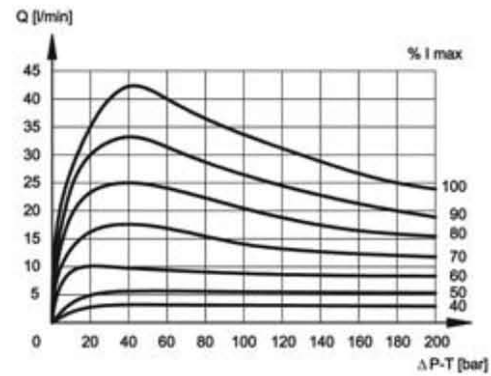
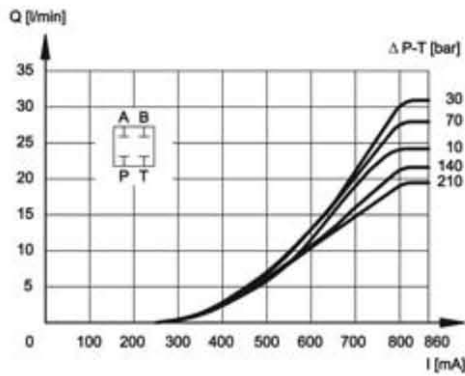
DSE3

SERIES 10

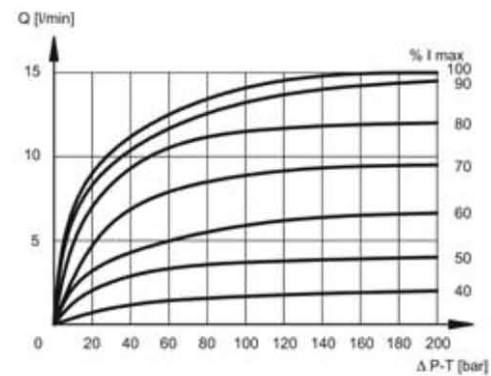
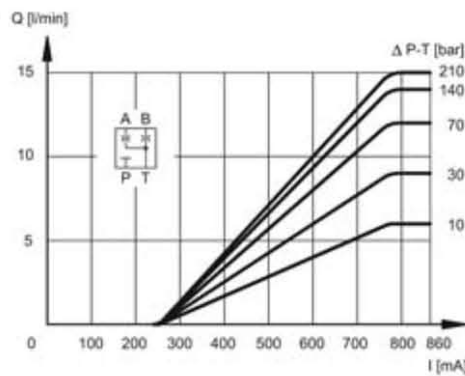
SPOOL TYPE C16



SPOOL TYPE C26



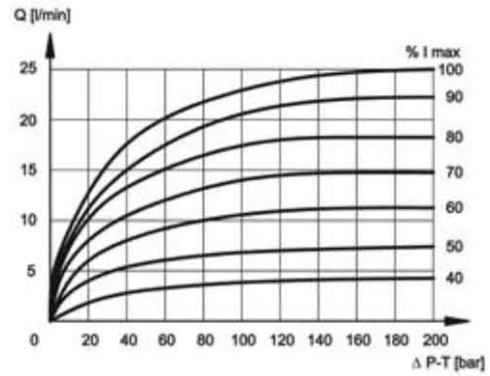
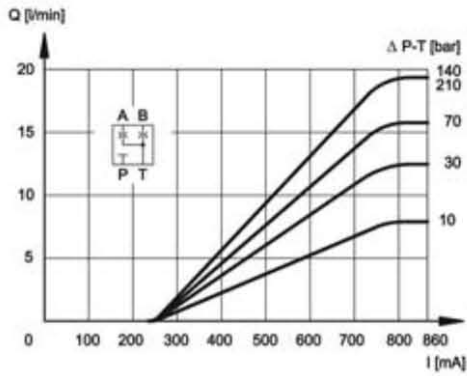
SPOOL TYPE A04



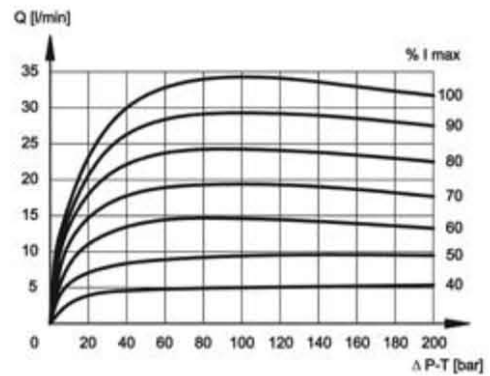
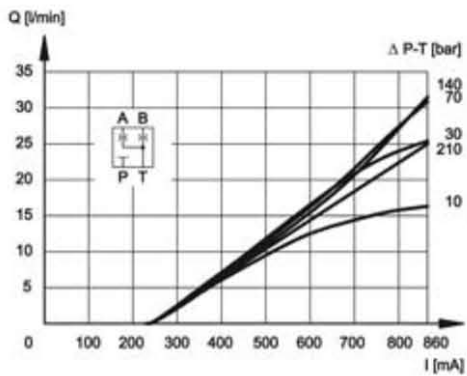
DSE3

SERIES 10

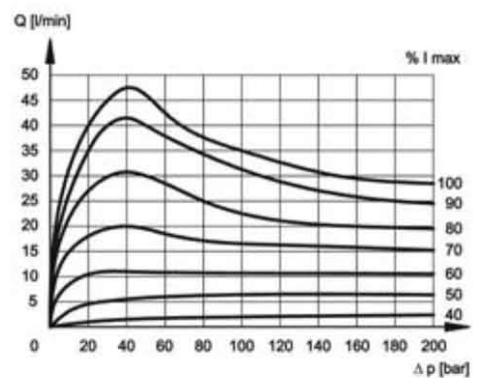
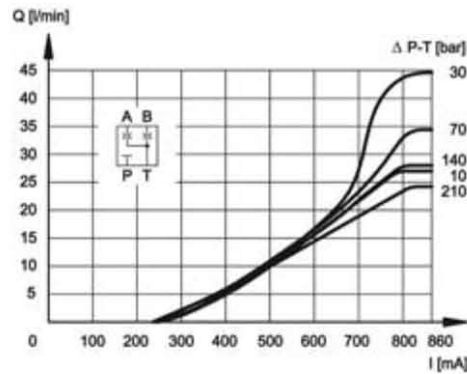
SPOOL TYPE A08



SPOOLTYPE A16



SPOOL TYPE A26



DSE3

SERIES 10

4 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids like HL or HM type, according to ISO 6743-4. With this kind of fluids, use NBR seals type (code N).
 For HFDR fluids type (phosphate esters) use FPM seals (code V).
 For use with other kind of fluids such as HFA, HFB, HFC please consult our technical department.

Operation with fluid temperature exceeding 80°C causes premature deterioration of the quality of the fluid and seals.
 The physical and chemical properties of the fluid must be maintained.

5 - 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)	according to 89/336 CEE		
- EMISSIONS	EN 50081-1		
- IMMUNITY	EN 50082-2		
PROTECTION AGAINST ATMOSPHERIC AGENTS (IEC 144 standards)	IP 65		

6 - STEP RESPONSE

(measured with mineral oil with viscosity of 36 cSt at 50°C 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 typical response times tested with spool type C16 and $\Delta p = 30$ bar P-T.

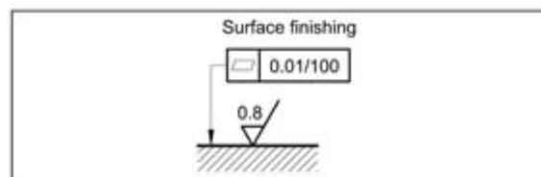
Reference signal step	0 → 100%	100 → 0%
Step response [ms]		
DSE3-A*	50	40
DSE3-C*	50	40

7 - INSTALLATION

DSE3 valves can be installed in any position without impairing correct operation.

Ensure that there is no air in the hydraulic circuit.

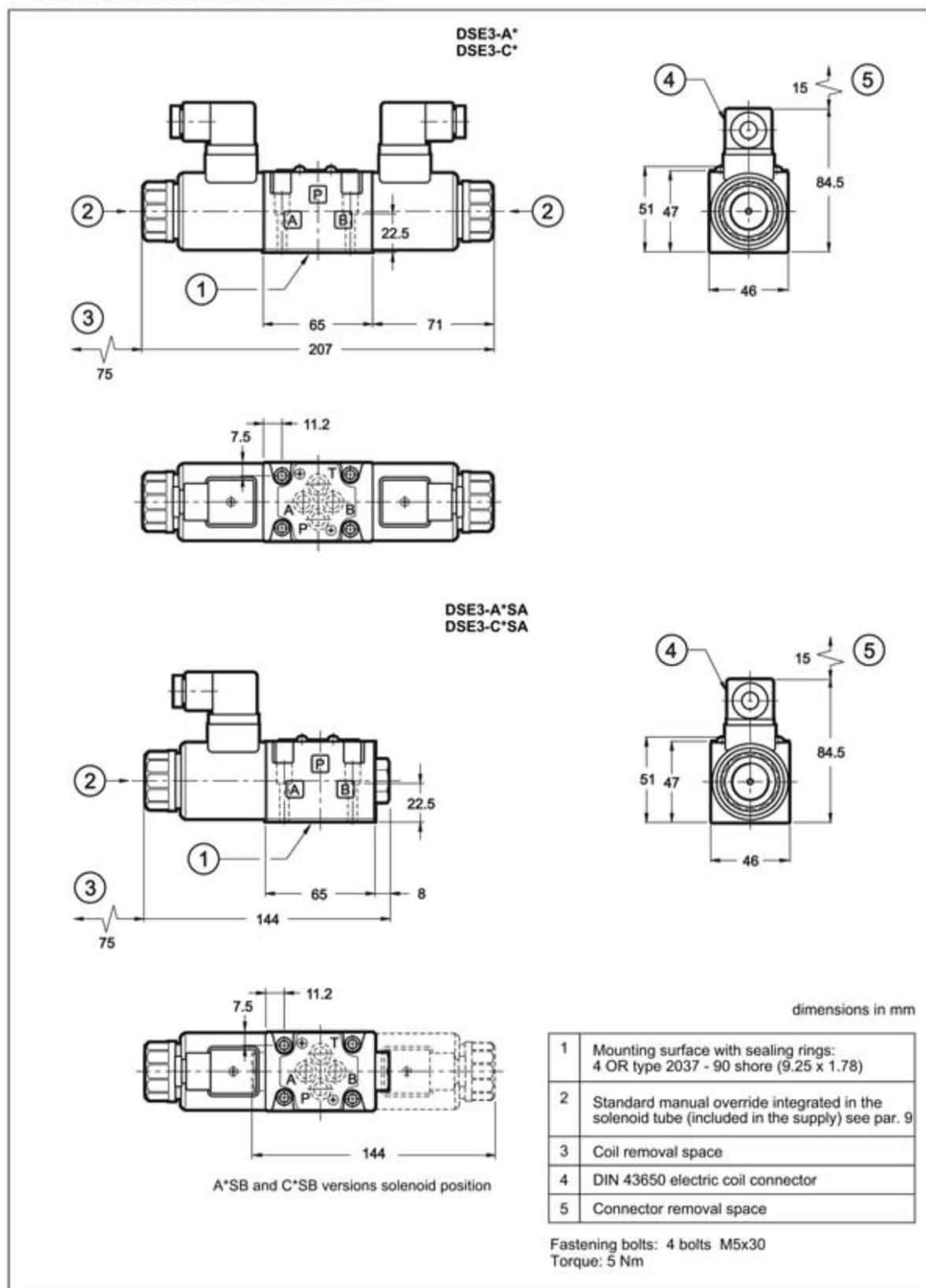
Valves are fixed by means of screws or tie rods on a flat surface with planarity and roughness equal to or better than those indicated in the relative symbols. If minimum values are not observed fluid can easily leak between the valve and support surface.



DSE3

SERIES 10

8 - OVERALL AND MOUNTING DIMENSIONS



DSE3

SERIES 10

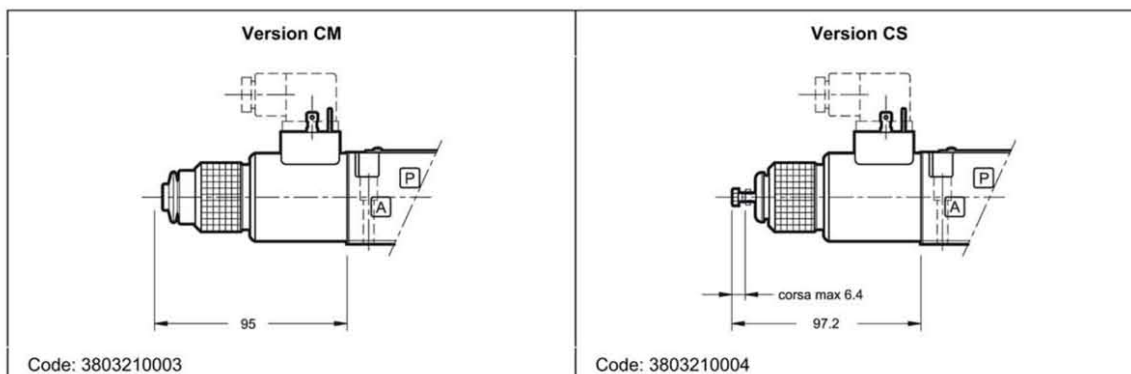
9 - MANUAL OVERRIDE

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.



10 - ELECTRONIC CONTROL UNITS

DSE3 - ** SA (SB)

EDC-112	for solenoid 24V DC	plug version	see cat.89 120
EDM-M112	for solenoid 24V DC	DIN EN 50022 rail mounting	see cat. 89 250
EDM-M142	for solenoid 12V DC		
UEIK-11	for solenoid 24V DC	Eurocard type	see cat. 89 300

DSE3 - A* DSE3 - C*

EDM-M212	24V DC solenoids	rail mounting DIN EN 50022	see cat. 89 250
EDM-M242	12V DC solenoids		
UEIK-21	24V DC solenoids	Eurocard format	see cat. 89 320

11 - SUBPLATES (see cat. 51 000)

Type PMMD-AI3G ports on rear
Type PMMD-AL3G side ports