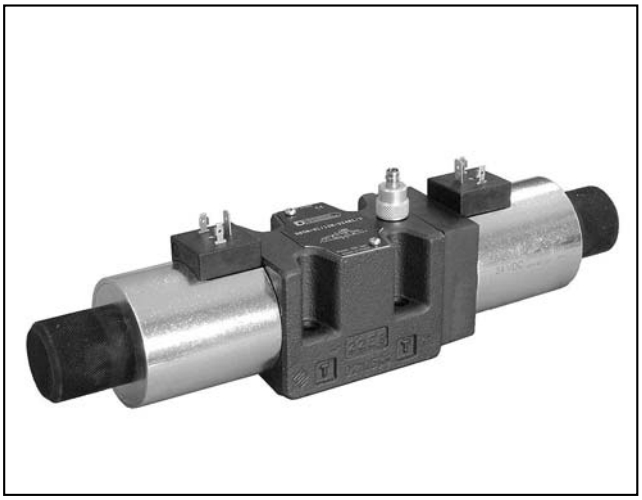
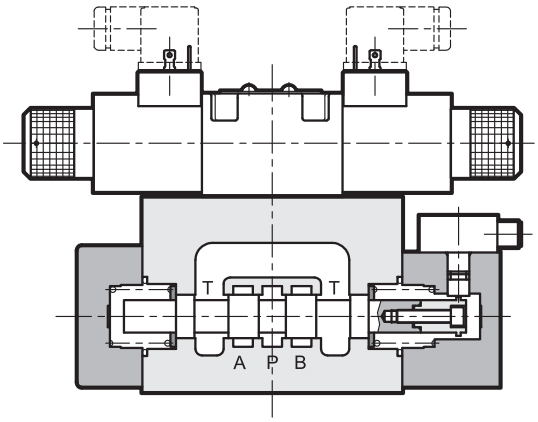


SOLENOID OPERATED DIRECTIONAL CONTROL VALVES WITH MONITORED SPOOLS

DS3M	**ISO 4401-03** (CETOP 03)
DS5M	**ISO 4401-05** (CETOP 05)
E4P4M	**CETOP P05**
E07P4M	**ISO 4401-07** (CETOP 07)
E5P4M	**ISO 4401-08** (CETOP 08)
DSP10M	**ISO 4401-10** (CETOP 10)

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

OPERATING PRINCIPLE



— Solenoid operated directional control valves with monitored spools are supplied with an inductive proximity sensor signalling the valve spool position (on pilot operated directional control valves type, the main spool is monitored).

— The PNP sensor with closed contact signals the position of the spool at rest (de-energized solenoid valve), recognizing the state of the directional control valve if connected to an electronic card, and controlling the combined function (see paragraph 5.3).

— The valves of sizes ISO 4401-03 (CETOP 03) and ISO 4401-05 (CETOP 05) are direct operated while sizes CETOP P05, ISO 4401-07 (CETOP 07), ISO 4401-08 (CETOP 08) and ISO 4401-10 (CETOP 10) are pilot operated.

— They are supplied with oil bath solenoids and only in direct current versions (see paragraph 5 for available voltages).

— These valves have no manual override, according to EN 693:2009

A wide range of configurations and different solenoid operated - hydropiloted directional control valve spool positions at rest are available:

– Type S*: 4-way, 3-position directional control valve, 2 solenoids; positioning of spool at rest is obtained by centering springs.

– Type SA* and SB*: 4-way, 2-position directional control valve, 1 solenoid; positioning of spool at rest is obtained by centering springs. For DS3M and DS5M only.

– Type “T*”: 4-way, 2-position directional control valve with 1 solenoid; for piloted versions positioning of the spool at rest is determined hydraulically by the pilot valve and mechanically (even without pressure) by the main stage return spring.

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

		DS3M	DS5M	E4P4M	E07P4M	E5P4M	DSP10M
Maximum operating pressure: P - A - B ports (**standard**) P - A - B ports (H version) T port	bar	350 - see paragraph 3.2	320 - 	320 420 see performance limits at paragraph 3.3			350 - see par 3.4
Maximum flow rate from P to A - B - T	l/min	see performance limits at paragraph 3.2		150	300	600	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: single solenoid valve double solenoid valve	kg	1,7 2,2	4,9 6,8	8,0 8,6	8,5 9,1	15,0 15,6	- 50

1 - IDENTIFICATION CODE

1.1 Identification code for DS3M solenoid valves

D	S	3	M	-		/	11		-		K1

Solenoid operated directional control valve

ISO 4401-03 (CETOP 03) size

Monitored

Spool type: see paragraph 1.2

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

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

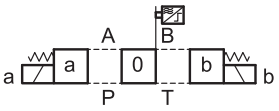
DC supply voltage
D12 = 12 V
D24 = 24 V
D110 = 110 V
D220 = 220 V

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

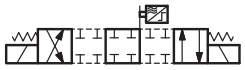
NOTE: In compliance with EN 693:2009 standards, valves are without manual override.

1.2 - Available spools for DS3M solenoid valves

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

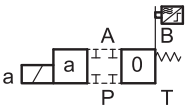


S1



S4

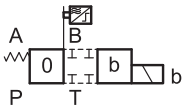
Type **SA***:
1 solenoid side A
2 positions (central + external)
with spring centering



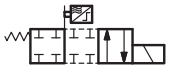
SA1

SA4

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

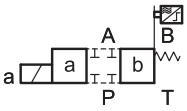


SB1



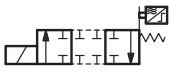
SB4

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

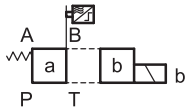


TA

TA100



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



TB

TB100

1.3 - Identification code for DS5M solenoid valves

D	S	5	M	-		/	12		-		K1	/	Y

Solenoid operated directional control valve

ISO 4401-05 (CETOP 05) size

Monitored

Configuration and spool type (see par. 1.4)

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

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

DC supply voltage
D12 = 12 V
D24 = 24 V
D110 = 110 V
D220 = 220 V

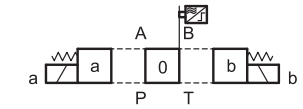
Coil electrical connection:
plug for connector type DIN 43650 (**standard**)

External subplate drain port (**standard**)

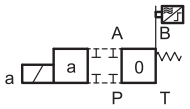
NOTE: In compliance with EN 693:2009 standards, valves are without manual override.

1.4 - Available spools for DS5M solenoid valves

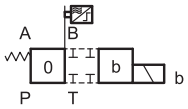
Type **S***:
2 solenoids - 3 positions
with spring centering

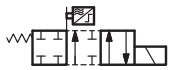


Type **SA***:
1 solenoid side A
2 positions (central + external)
with spring centering

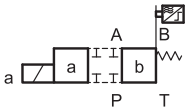


Type **SB***:
1 solenoid side B
2 positions (central + external)
with spring centering





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



1.5 - Identification code for E4P4M, E07P4M and E5P4M solenoid valves

E P 4 M - / / 20 - K1

Pilot-solenoid operated directional control valve

Size:
4 = CETOP P05
07 = ISO 4401-07 (CETOP 07)
5 = ISO 4401-08 (CETOP 08)

H = high pressure version (pmax = 420 bar)
not available with S4 spool.
Omit for standard version (pmax = 320 bar)

P = Subplate mounting

R = Mounting interface ISO 4401-05 (CETOP R05) - only for valve E4 (not available for version H high pressure)

Number of ways

Monitored

Spool type: **S* - TA** (see paragraph 1.6)

Options (see par. 13):
D = main spool shifting speed control
PF = subplate with restrictor Ø0.8 on port P placed under pilot operated solenoid valve

Piloting:
E = external piloting (mandatory for spool S4)
omit for internal piloting

Drainage:
I = internal drainage
omit for external drainage which is recommended when the valve is used with back pressure on the outlet

Series No. (the overall and mounting dimensions remain unchanged from 20 to 29)

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

DC power supply
D12 = 12 V
D24 = 24 V
D110 = 110 V
D220 = 220 V

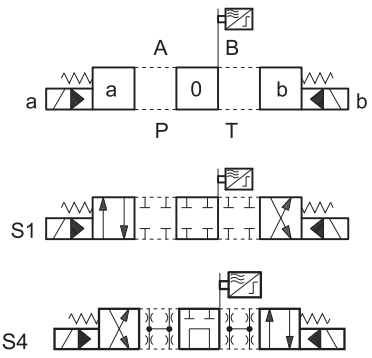
NOTE : voltages for alternating current are available on request

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

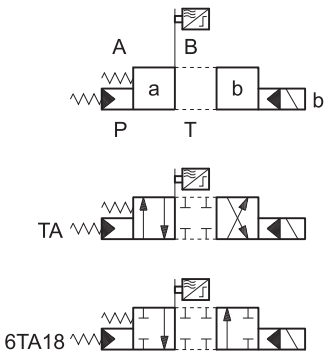
NOTE: In compliance with EN 693:2009 standards, valves are without manual override

1.6 - Available spools for E4P4M - E07P4M - E5P4M solenoid valves

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



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



1.7 - Identification code for DSP10M solenoid valves

D	S	P	10	M	-		/	20		-			/		/		K1

Pilot-solenoid operated directional control valve

Size ISO 4401-10 (CETOP 10)

Monitored

Spool type (see at par. 1.8)
S1
S4

Series No. (the overall and mounting dimensions remain unchanged from 20 to 29)

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

Piloting (see at par. 4):
I = internal (not available with S4 spool)
E = external

Drainage (see at par. 4):
I = Internal
E = External

Options (see par. 13):
D = main spool shifting speed control
P15 = subplate with restrictor Ø1.5 on port P placed under pilot operated solenoid valve

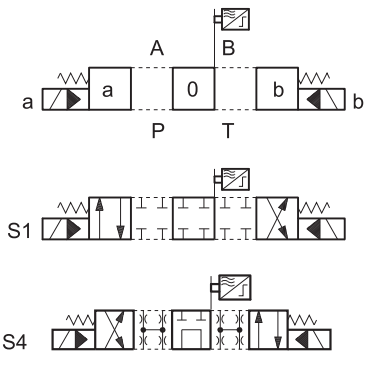
DC power supply
D12 = 12 V
D24 = 24 V
D110 = 110 V
D220 = 220 V
NOTE : voltages for alternating current are available on request

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

NOTE: In compliance with EN 693:2009 standards, valves are without manual override

1.8 - Available spools for DSP10M

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

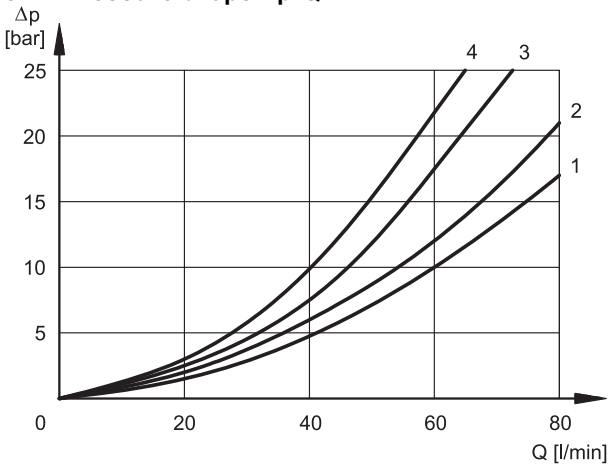


2 - HYDRAULIC FLUIDS

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.

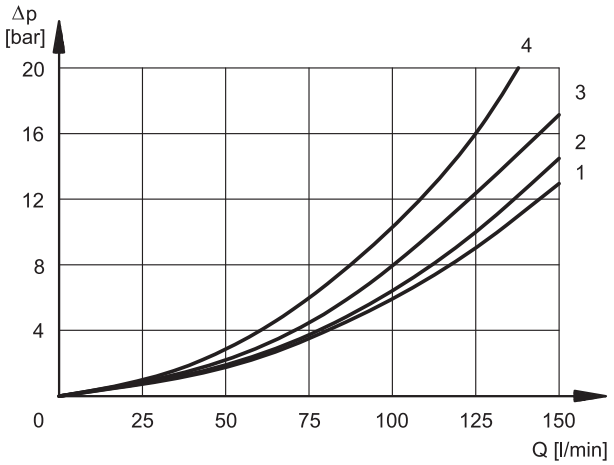
3 - PERFORMANCE CHARACTERISTICS (values obtained with viscosity 36 cSt at 50 °C)

3.1 - Pressure drops Δp-Q



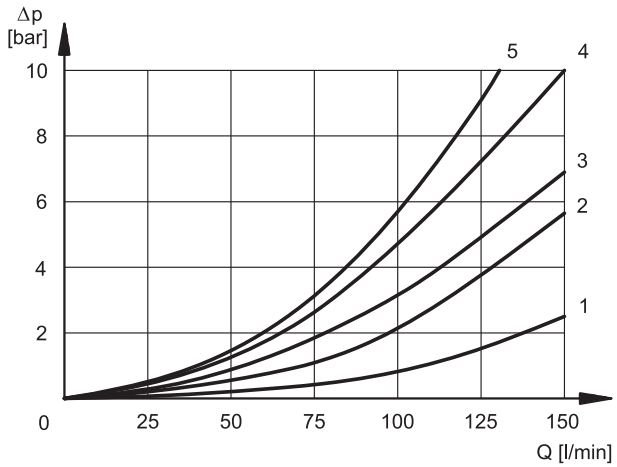
DS3M

SPOOL	SPOOL POSITION	CONNECTIONS				
		P→A	P→B	A→T	B→T	P→T
		CURVES ON GRAPH				
S1, SA1, SB1	energized	1	1	2	2	-
S4, SA4, SB4	de-energized energized	4	4	4	4	2
TA, TB	de-energized energized	1	1	1	1	-
TA100	de-energized energized	3	-	-	3	-
TB100	de-energized energized	-	3	3	-	-



DS5M

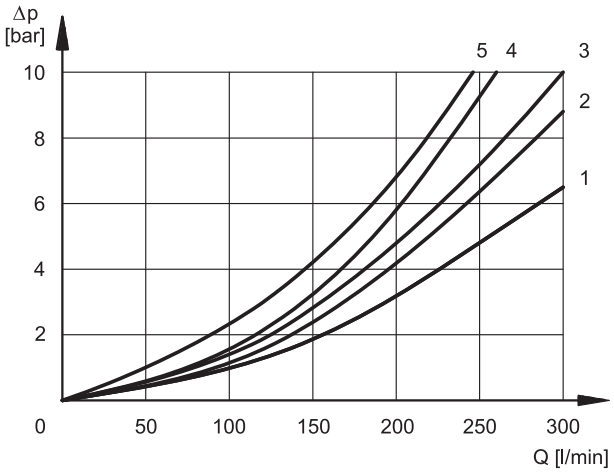
SPOOL	SPOOL POSITION	CONNECTIONS				
		P→A	P→B	A→T	B→T	P→T
		CURVES ON GRAPH				
S1, SA1, SB1	energized	2	2	1	1	-
S4, SA4, SB4	de-energized energized	1	1	2	2	4
TA, TA02	de-energized energized	3	3	2	2	-
TA100	de-energized energized	2	-	-	2	-



E4P4M

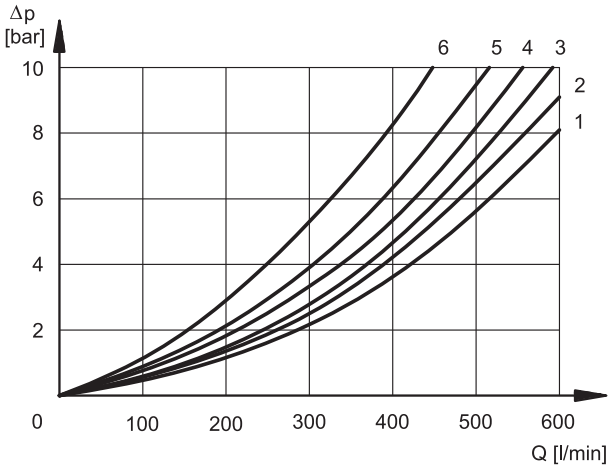
SPOOL	SPOOL POSITION	CONNECTIONS				
		P→A	P→B	A→T	B→T	P→T
		CURVES ON GRAPH				
S1	energized	4	4	1	1	-
S4	de-energized energized	5	5	2	3	5
TA	de-energized energized	4	4	1	1	-
6TA18	de-energized energized	4	-	-	4	-

E07P4M



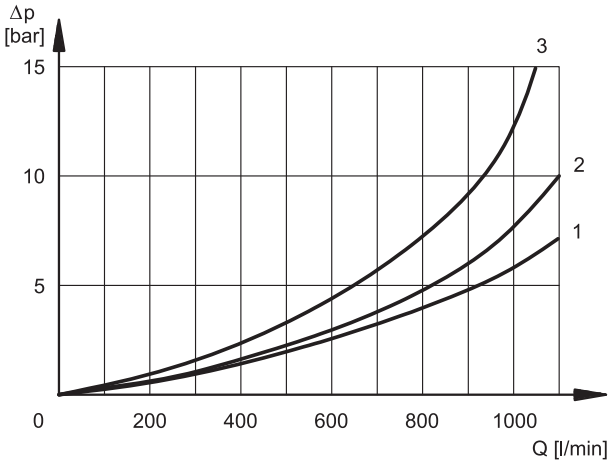
SPOOL	SPOOL POSITION	CONNECTIONS				
		P→A	P→B	A→T	B→T	P→T
		CURVES ON GRAPH				
S1	energized	1	1	2	2	-
S4	de-energized energized	4	4	2	3	4
TA	de-energized energized	1	1	2	2	-
6TA18	de-energized energized	5	-	-	5	-

E5P4M



SPOOL	SPOOL POSITION	CONNECTIONS				
		P→A	P→B	A→T	B→T	P→T
		CURVES ON GRAPH				
S1	energized	2	2	3	3	-
S4	de-energized energized	4	4	3	5	6
TA	de-energized energized	2	2	1	3	-
6TA18	de-energized energized	5	-	-	5	-

DSP10M

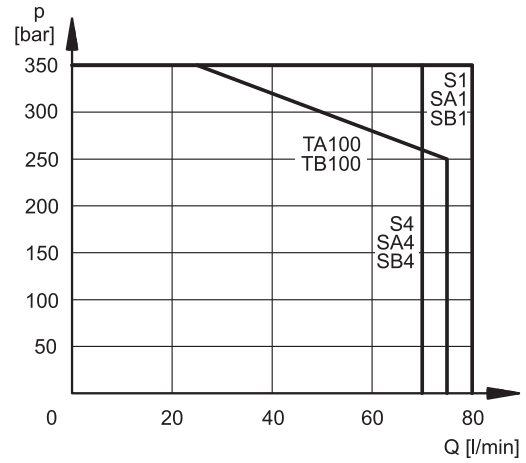


SPOOL	SPOOL POSITION	CONNECTIONS				
		P→A	P→B	A→T	B→T	P→T
		CURVES ON GRAPH				
S1	energized	1	1	1	1	-
S4	de-energized energized	2	2	2	2	3

3.2 - Performance limits for DS3M and DS5M solenoid valves

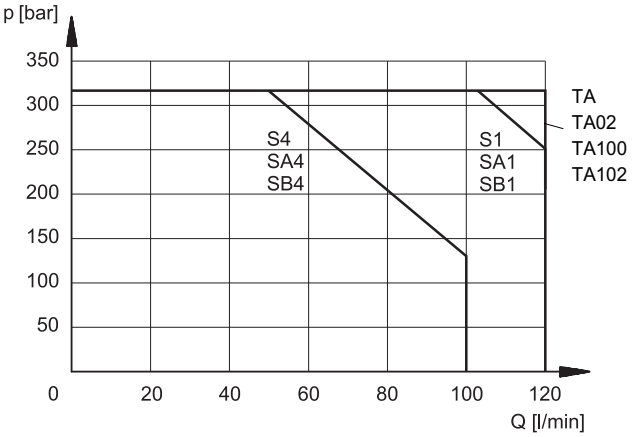
The curves state the flow rate functioning range according to the pressure.
The values are obtained with solenoids at a standard temperature power supplied with a voltage equal to 90% of the rated voltage.The values indicated in the graphs are relevant to the standard solenoid valve. The operating limits can be considerably reduced if a 4-way valve is used as 3-way valve with port A or B plugged or without flow.

DS3M



MAXIMUM PRESSURE ON LINE T [bar]	
dynamic	50
static	100

DS5M



MAXIMUM PRESSURE ON LINE T [bar]	
standard version with Y port connected	320
version with Y port not connected	50 dynamic 100 static

3.3 - Performance limits for E4P4M - E07P4M - E5P4M solenoid operated directional control valves

PRESSURES [bar]	MIN	MAX
Piloting pressure	5	210*
Pressure on line T with internal drainage	-	140
Pressure on line T with external drainage	-	250

* For the **H** execution maximum piloting pressure is 280 bar

MAXIMUM FLOW RATES		**E4P4M**		**E07P4M**		**E5P4M**	
		PRESSURES					
Spool type		210 bar	320 bar	210 bar	320 bar	210 bar	320 bar
S4 - 6TA18	[l/min]	120	100	250	200	500	450
S1 - TA	[l/min]	150	120	300	250	600	500

3.4 -Performance limits for DSP10M solenoid operated directional control valves

PRESSURES [bar]	MIN	MAX
Pilot pressure	12 (**a**)	280 (**b**)
Pressure in T line with internal drainage	-	140
Pressure in T line with external drainage	-	210

MAX FLOW [l/min]	DSP10M	
	100 bar	350 bar
S1 spool	1100	700
S4 spool	900	600

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 required.
b) If the valve operates with higher pressures it is necessary to use the version with external pilot and reduced pressure.

3.5 - Switching times

The indicated values had obtained according to ISO 6403 standards, using mineral oil with viscosity 36 cSt at 50 °C.
The switch on times are obtained at the time the spool switches over.
The switch off times values are obtained at the time a pressure variation occurs on the line.

TIMES [ms]	ENERGIZING	DE-ENERGIZING
DS3M	25 ÷ 75	15 ÷ 25

The values indicated refer to a solenoid valve in configuration S1 with Q = 60 l/min, p = 150 bar and with PA and BT connections.

TIMES (± 10%) [ms]	ENERGIZING	DE-ENERGIZING
DS5M	120	100

The indicated values refer to a solenoid operated directional control valve operating with piloting pressure = 100 bar and with PA and BT connections.

TIMES (± 10%) [ms]	ENERGIZING		DE-ENERGIZING	
	2 Pos.	3 Pos.	2 Pos.	3 Pos.
E4P4	70	60	70	50
E07P4M	70	60	80	50
E5P4M	80	60	90	60

TEMPI (± 10%) [ms]	ENERGIZING	DE-ENERGIZING
DSP10M	100	60

4 - PILOTING AND DRAINAGE

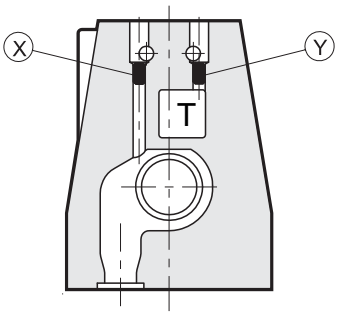
The piloted valves are available with piloting and drainage, both internal and external.

Versions with internal drainage and S4 spool are not allowed.

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

TYPE OF VALVE		Plug assembly	
		X	Y
E*P4M-** DSP10M-/**IE**	INTERNAL PILOT AND EXTERNAL DRAIN	NO	YES
E*P4M-**/**I** DSP10M-/**II**	INTERNAL PILOT AND INTERNAL DRAIN	NO	NO
E*P4M-**/**E** DSP10M-/**EE**	EXTERNAL PILOT AND EXTERNAL DRAIN	YES	YES
E*P4M-**/**EI** DSP10M-/**EI**	EXTERNAL PILOT AND INTERNAL DRAIN	YES	NO

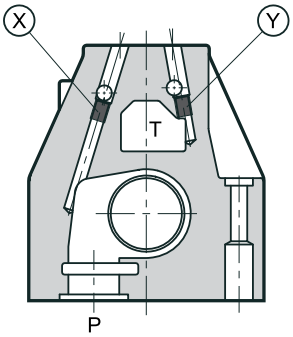
E4P4M



X: plug M5x6 for external pilot

Y: plug M5x6 for external drain

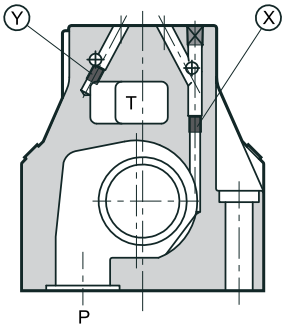
E07P4M



X: plug M6x8 for external pilot

Y: plug M6x8 for external drain

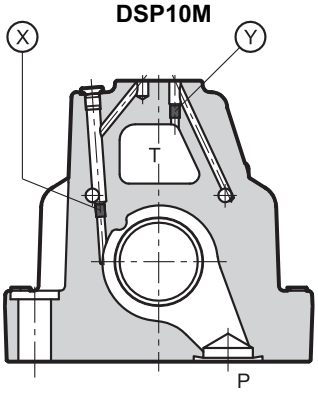
E5P4M



X: plug M6x8 for external pilot

Y: plug M6x8 for external drain

DSP10M



X: plug M6x8 for external pilot

Y: plug M6x8 for external drain

5 - ELECTRICAL FEATURES

5.1 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 and locked 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 catalogue 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 DS3M - DS5M - E4P4M - E07P4M E5P4M DSP10M	 5.000 ins/hr 4.000 ins/hr 3.000 ins/hr
DUTY CYCLE	100%
ELECTROMAGNETIC COMPATIBILITY (EMC)	In compliance with 2004/108/EC
LOW VOLTAGE	In compliance with 2006/95/EC
CLASS OF PROTECTION: Atmospheric agents (CEI EN 60529) Coil insulation (VDE 0580) Impregnation:	 IP 65 (**NOTE 2**) class H class F

5.2 Current and absorbed power

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

DS3M, E4P4M, E07P4M e E5P4M (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	1903080
D24	24	18,6	1,29	31	1903081
D110	110	423	0,26	28,6	1903084
D220	220	1692	0,13	28,6	1903085

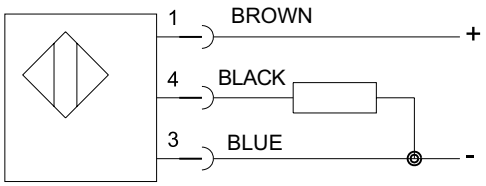
DS5M, (values ± 5%)

Suffix	Nominal voltage [V]	Resistance at 20°C [Ω]	Current consumpt. [A]	Power consumpt [W]	Coil code
D12	12	3,2	3,75	45	1903200
D24	24	12	2	48	1903201
D110	110	250	0,44	48	1903204
D220	220	1050	0,21	47	1903205

6 - PROXIMITY SENSORS

6.1 Proximity sensor PNP type

CONNECTION SCHEME



de-energized valve = closed contact = LED on
energized valve = open contact = LED off

		DS3M DS5M	E4P4M E07P4M E5P4M DSP10M
Rated voltage	V DC	24	
Power supply voltage range	V DC	10 ÷ 30	
Absorbed current	mA	150	200
Output	normally open contact		
Electric protection	polarity inversion short circuit overvoltage		
Electric connection	with connector		
Max operating pressure	bar	100	350
Operating temperature range	°C	-25 / +70	-25 / +80
Class of protection according to CEI EN 60529 standards (atmospheric agents)		IP65	IP68
Spool position LED (**NOTE**)		YES	NO

NOTE: On the DS3M and DS5M valves the led is placed straight on the proximity sensor and its light is RED.
On the E4P4M, E07P4M E5P4M and DSP10M valves the led is placed in the connector and its light is YELLOW.

6.2 - Proximity sensor connectors

Connectors for proximity sensors must be ordered separately, by specifying the descriptions here below, depending on the type of valve ordered.

CONNECTOR FOR DS3M AND DS5M
description: ECM3S / M8L / 10

Connector: pre-wired connector M8 - IP67
Cable: with 3 conductors 0.34 mm^2 - length 5 mt - cable material: polyurethane resin (oil resistant)

Without LED. Leds are placed straight on the proximity sensor.

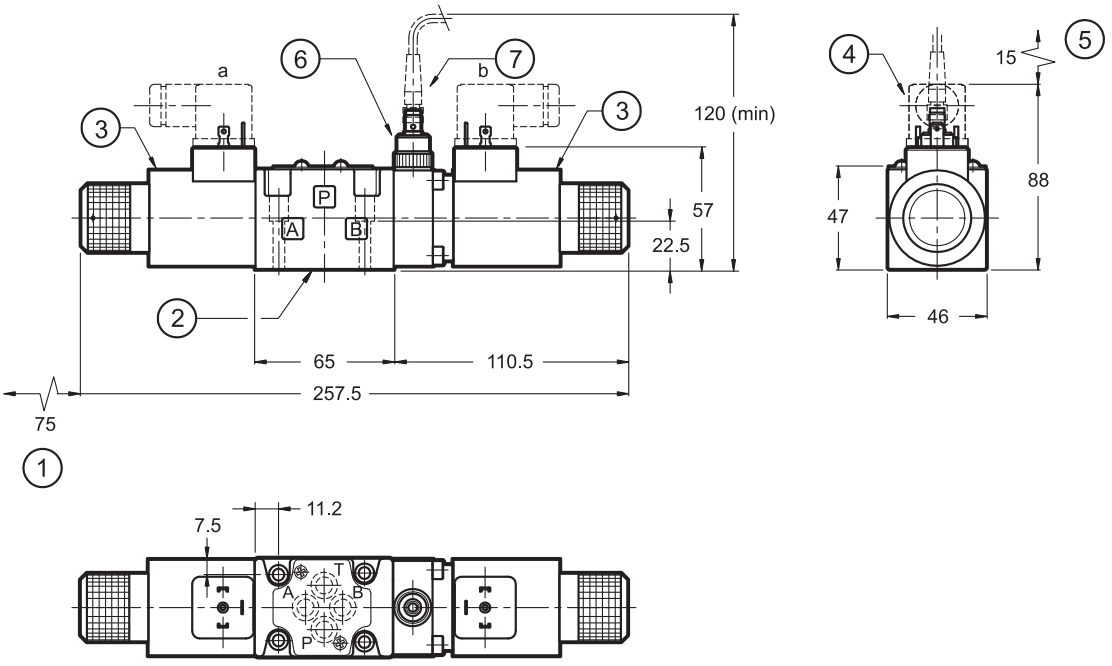
CONNECTOR FOR E4P4M, E07P4M AND E5P4M
description: ECM3S / M12L / 10

Connector: pre-wired connector M12 - IP68
cable: with 3 conductors 0.34 mm^2 - length 5 mt - cable material: polyurethane resin (oil resistant)

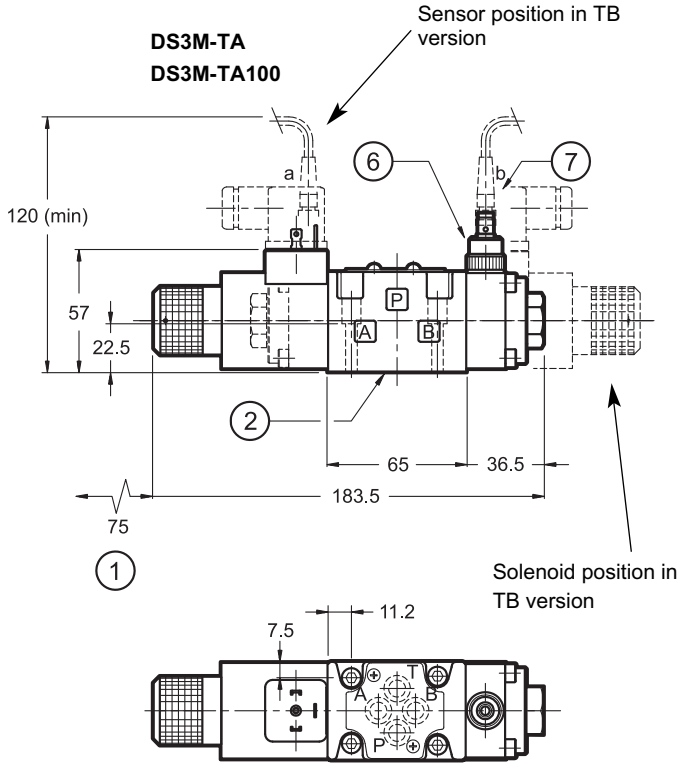
LEDS:
GREEN: show the presence of power supply voltage to the connector. If the LED is off, the connector is not supplied.
YELLOW: show the valve condition:
- valve at rest yellow LED on - green LED on
- switched valve yellow LED off - green LED on

7 - OVERALL AND MOUNTING DIMENSIONS FOR DS3M SOLENOID VALVES

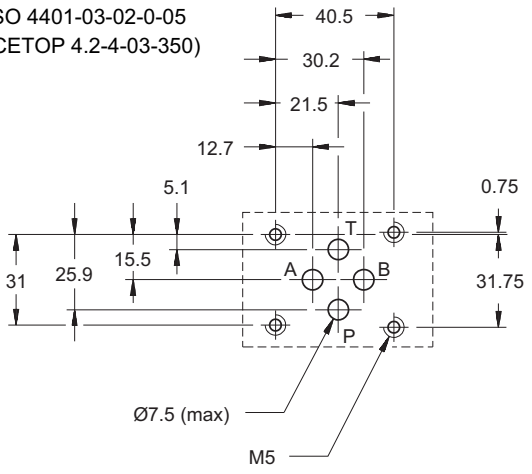
DS3M - S*



DS3M-TA
DS3M-TA100



MOUNTING SURFACE
ISO 4401-03-02-0-05
(CETOP 4.2-4-03-350)



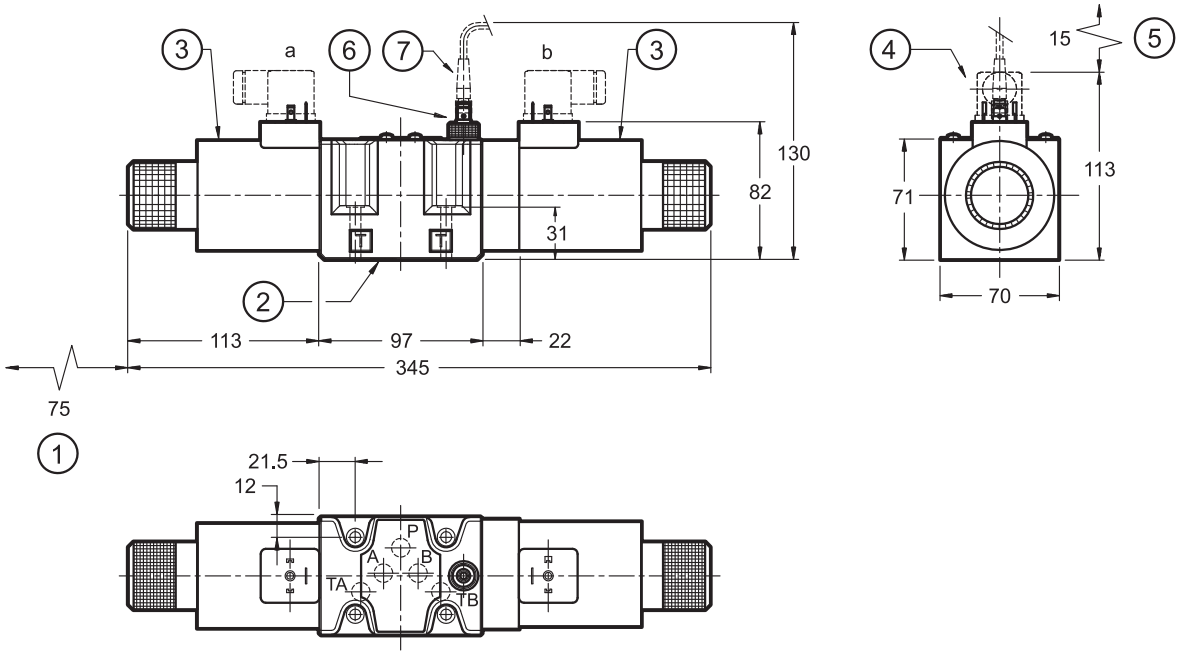
dimensions in mm

1	Coil removal space
2	Mounting surface with sealing rings
3	Coil electric connector DIN 43650 type to be ordered separately - cat. 49 000
4	Coil (360° orientable)
5	Connector removal space
6	Proximity sensor
7	Connector for proximity sensor (see par. 6)

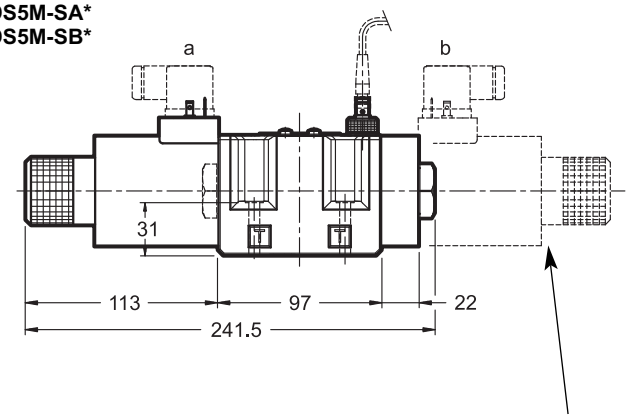
Fastening of single valve: 4 SHC screws M5x30
Tightening torque: 5 Nm
Threads of mounting holes: M5x10
Sealing rings: 4 OR type 2037 (9.25x1.78) - 90 Shore

8 - OVERALL AND MOUNTING DIMENSIONS FOR DS5M SOLENOID VALVE

DS5M-S*

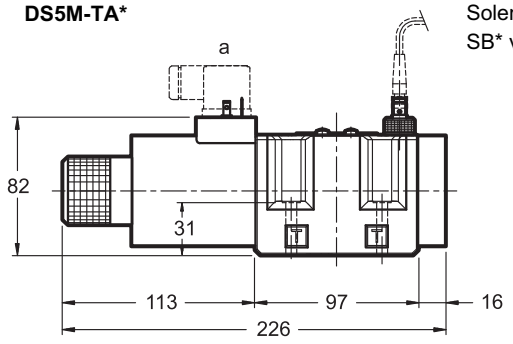


DS5M-SA*
DS5M-SB*

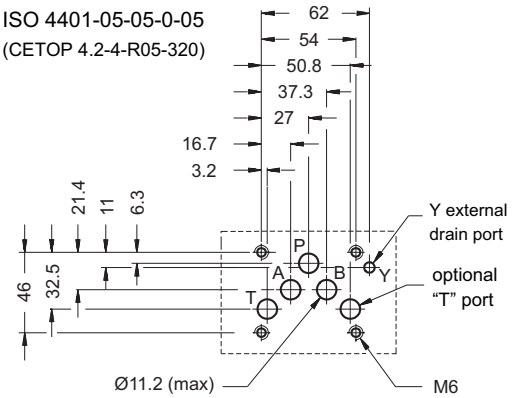


Solenoid position in SB* version

DS5M-TA*



MOUNTING SURFACE
ISO 4401-05-05-0-05
(CETOP 4.2-4-R05-320)



dimensions in mm

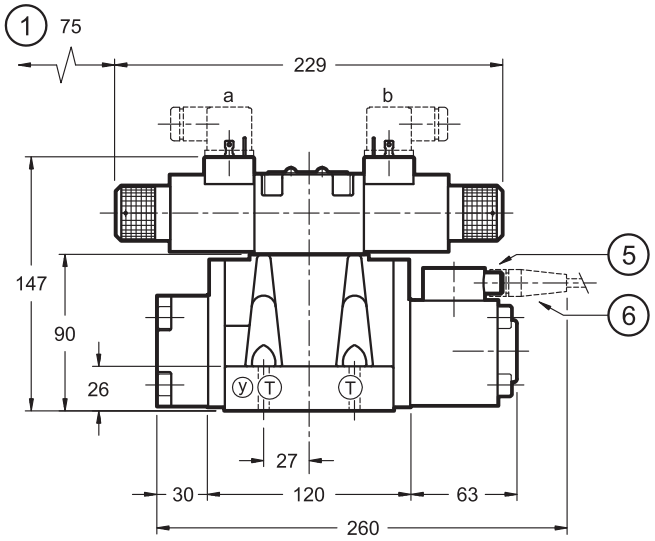
1	Coil removal space
2	Mounting surface with sealing rings
3	Coil electric connector DIN 43650 type to be ordered separately - cat. 49 000
4	Coil (90° orientable)
5	Connector removal space
6	Proximity sensor
7	Connector for proximity sensor (see par. 6)

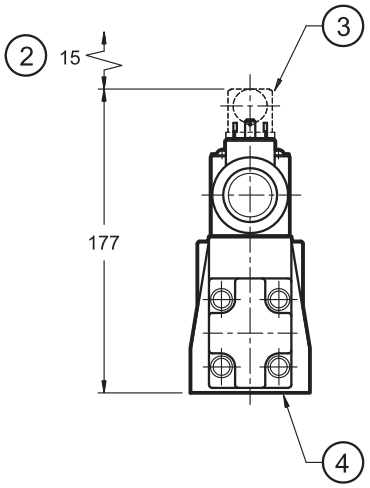
Fastening of single valve: 4 SHC screws M6x40
Tightening torque: 8 Nm
Threads of mounting holes: M6x10
Sealing rings: 5 OR type 2050 (12.42x1.78) - 90 Shore 1 OR type 2037 (9.25x1.78) - 90 Shore

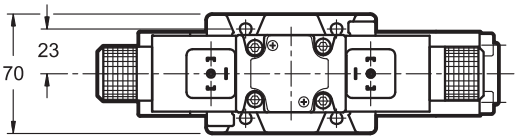
9 - E4P4M OVERALL AND MOUNTING DIMENSIONS

E4P4M-S*

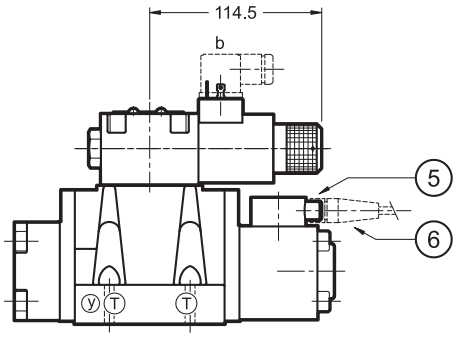
dimensions in mm







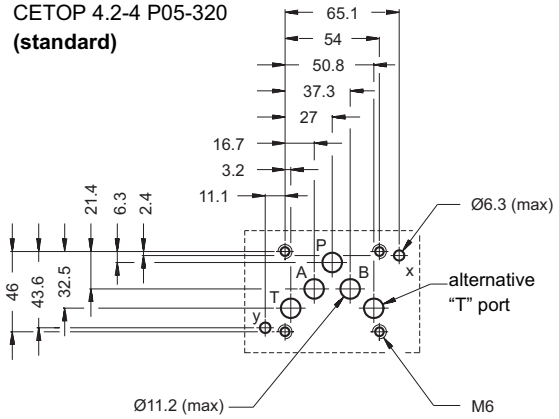
E4P4M-TA
E4P4M-6TA18



for dimensions not shown here see E4P4M-S*

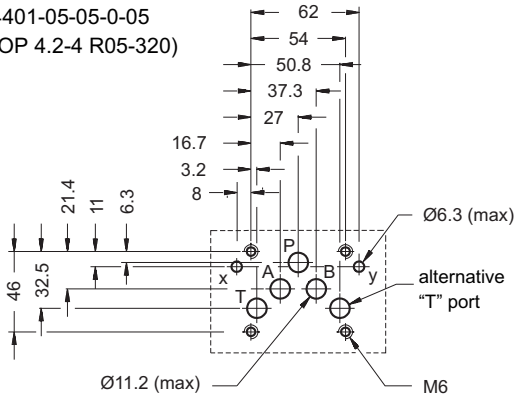
MOUNTING SURFACES

CETOP 4.2-4 P05-320
(standard)



Valves with CETOP R05 mounting interface are available upon request.

ISO 4401-05-05-0-05
(CETOP 4.2-4 R05-320)



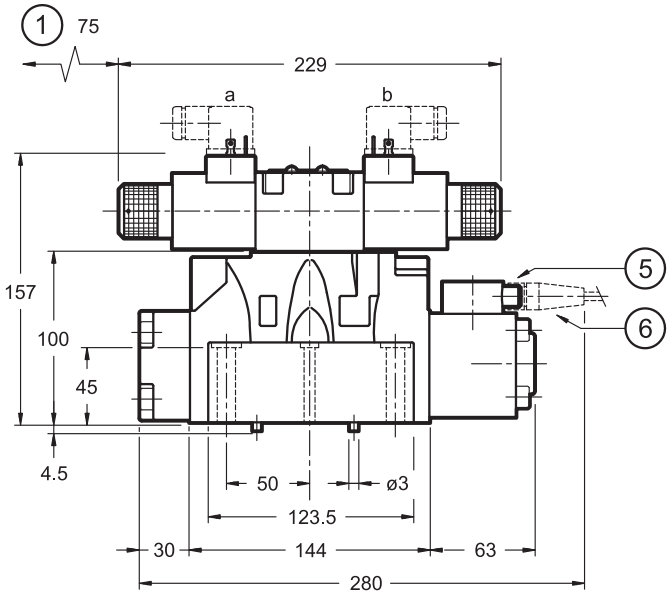
Fastening of single valve: 4 screws M6x35 (**NOTE**)
Tightening torque: 8 Nm (screws A 8.8) 14 Nm (screws A 12.9)
Threads of mounting holes: M6x10
Sealing rings: 5 OR type 2050 (12.42x1.78) - 90 Shore 2 OR type 2037 (9.25x1.78) - 90 Shore

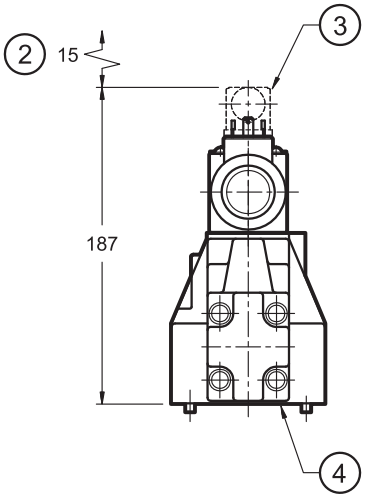
1	Coil removal space
2	Connector removal space
3	Coil electric connector DIN 43650 type to be ordered separately - cat. 49 000
4	Mounting surface with sealing rings
5	Proximity sensor
6	Connector for proximity sensor (see par. 6)

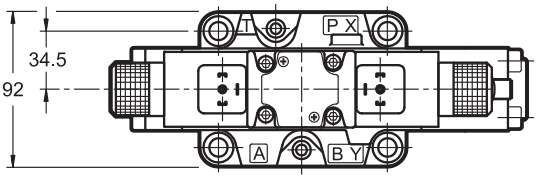
NOTE: Use of class 12.9 fastening screws is recommended for valves in version **H** (high pressure).

10 - E07P4M OVERALL AND MOUNTING DIMENSIONS

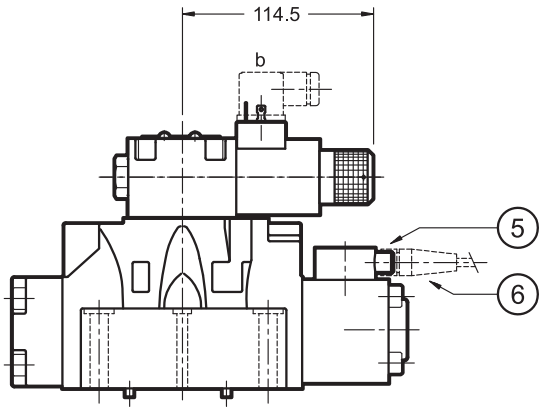
dimensions in mm





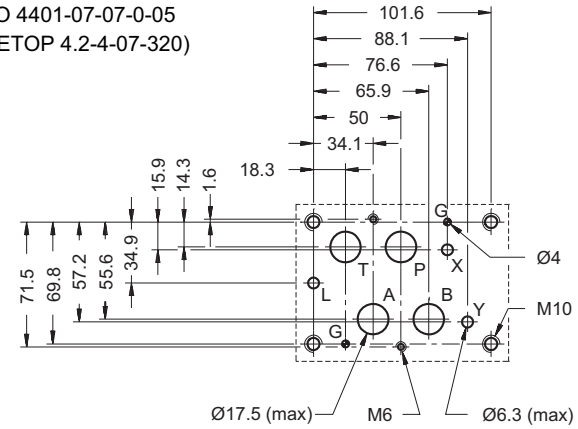


E07P4M-TA
E07P4M-6TA18



for dimensions not shown here see E07P4M-S*

MOUNTING SURFACE
ISO 4401-07-07-0-05
(CETOP 4.2-4-07-320)

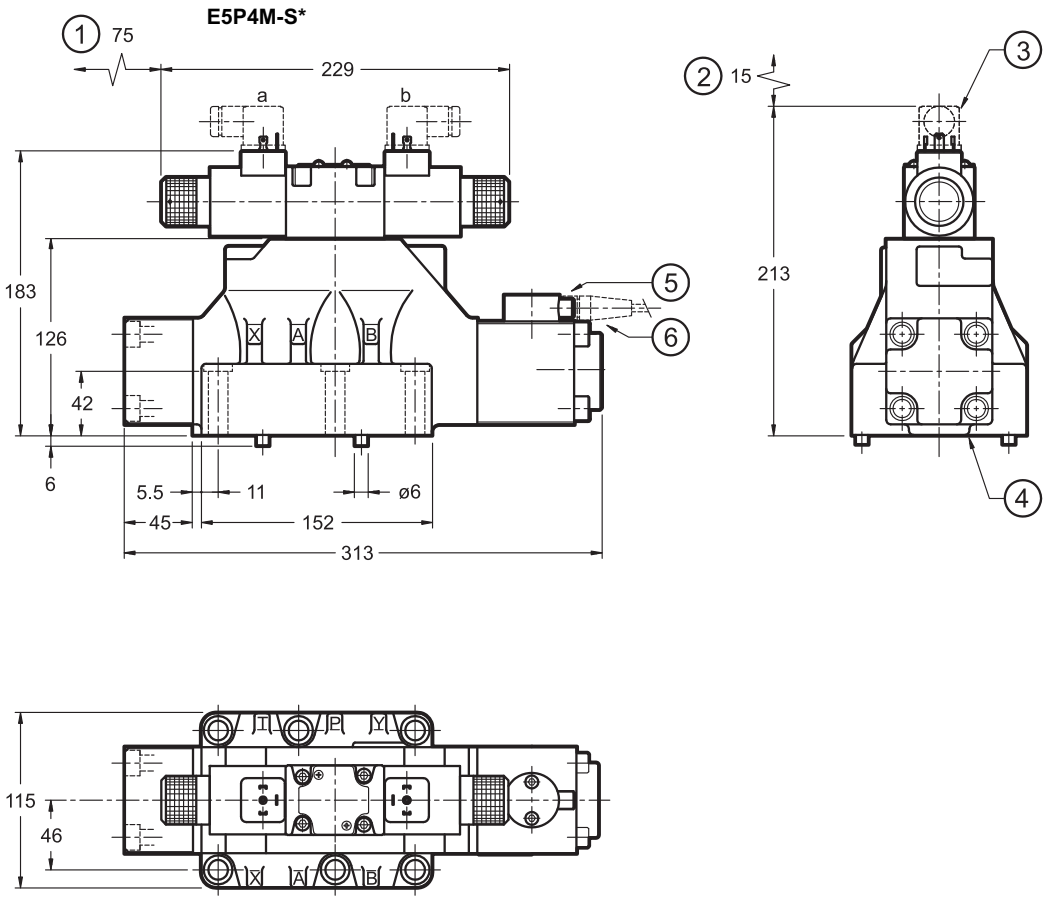


Fastening of single valve: 4 SHC screws M10x60 (**NOTE**) 2 SHC screws M6x60
Tightening torque: M10x60: 40 Nm (A 8.8 screws) - 67 Nm (A12.9 screws) M6x60: 8 Nm (A 8.8 screws) - 14 Nm (A12.9 screws)
Threads of mounting holes: M6x18; M10x18
Sealing rings: 4 OR type 130 (22.22X2.62) - 90 Shore 2 OR type 2043 (10.82x1.78) - 90 Shore

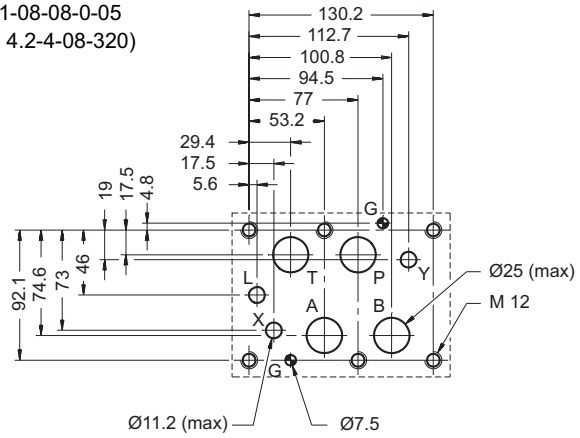
1	Coil removal space
2	Connector removal space
3	Coil electric connector DIN 43650 type to be ordered separately - cat. 49 000
4	Mounting surface with sealing rings
5	Proximity sensor
6	Connector for proximity sensor (see par. 6)

NOTE: Use of class 12.9 fastening screws is recommended for valves in version **H** (high pressure).

11 - E5P4M OVERALL AND MOUNTING DIMENSIONS



MOUNTING SURFACE
ISO 4401-08-08-0-05
(CETOP 4.2-4-08-320)



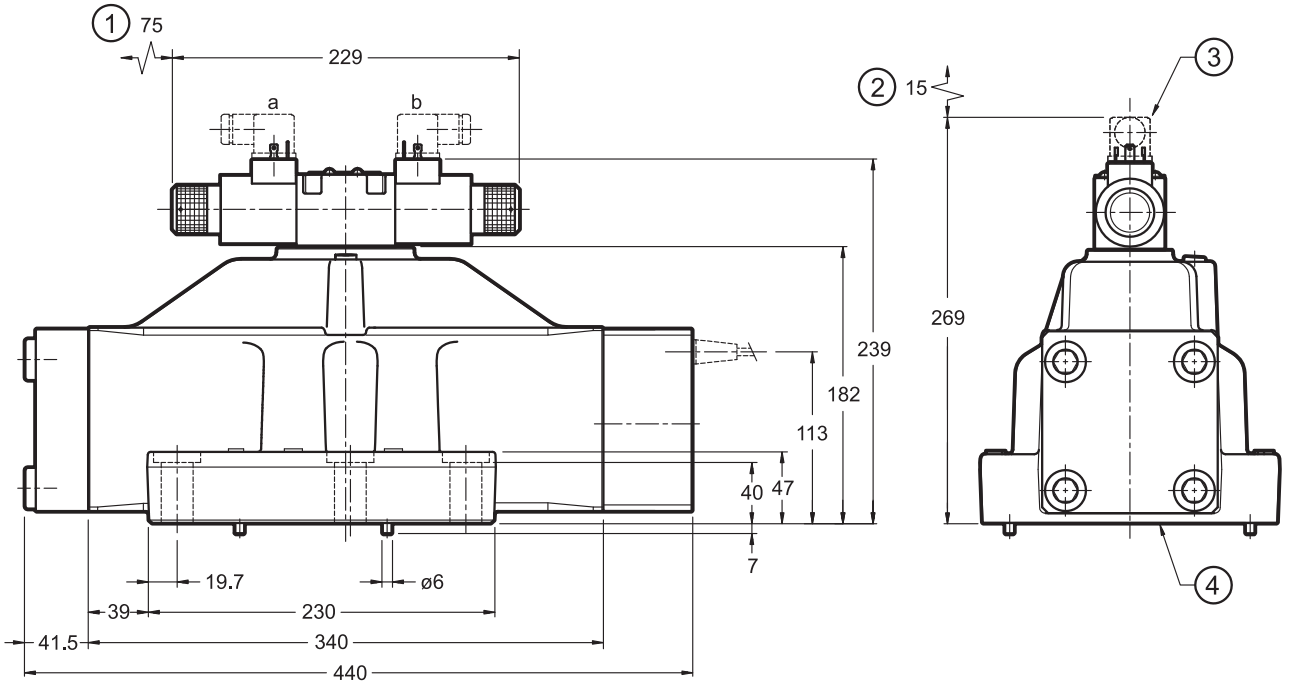
dimensions in mm

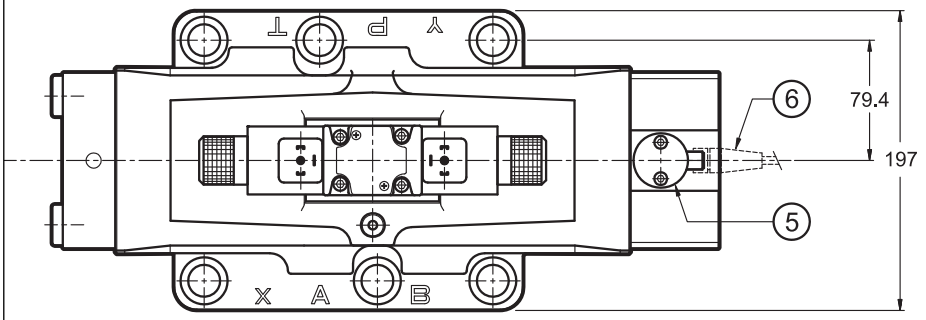
1	Coil removal space
2	Connector removal space
3	Coil electric connector DIN 43650 type to be ordered separately - cat. 49 000
4	Mounting surface with sealing rings
5	Proximity sensor
6	Connector for proximity sensor (see par. 6)

Fastening of single valve: 6 SHC screws M12X60 (**NOTE**)
Tightening torque: 69 Nm (A 8.8 screws) 115 Nm (A 12.9 screws)
Threads of mounting holes: M12x20
Sealing rings: 4 OR type 3118 (29.82x2.62) - 90 Shore 2 OR type 3081 (20.24x2.62) - 90 Shore

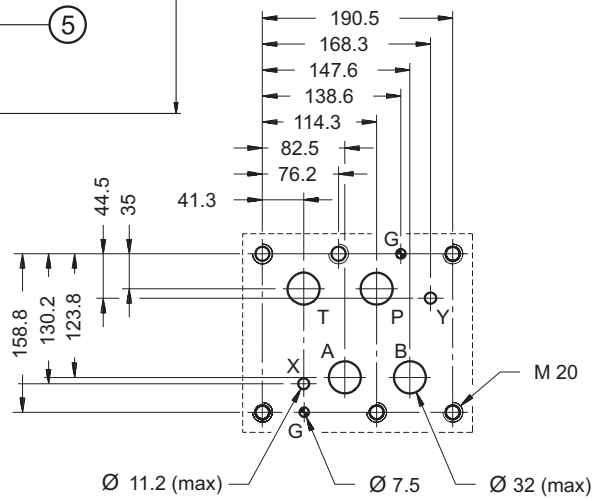
NOTE: Use of class 12.9 fastening screws is recommended for valves in version **H** (high pressure).

12 - DSP10M OVERALL AND MOUNTING DIMENSIONS





MOUNTING SURFACE
ISO 4401-10-09-0-05
(CETOP 4.2-4-10-350)



1	Coil removal space
2	Connector removal space
3	Coil electric connector DIN 43650 type to be ordered separately - cat. 49 000
4	Mounting surface with sealing rings
5	Proximity sensor
6	Connector for proximity sensor (see par. 6)

Fastening of single valve: 6 SHC screws M20x70
Tightening torque: 330 Nm (A 8.8 screws) 560 Nm (A 12.9 screws)
Threads of mounting holes: M20x40
Sealing rings: 4 OR type 4150 (37.59x3.53) - 90 Shore 2 OR type 3081 (20.24x2.62) - 90 Shore

13 - OPTIONS

13.1 - Control of the main spool shifting speed

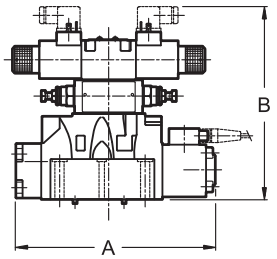
By placing a MERS type double flow control valve (cat. 64 200) between the pilot solenoid valve and the hydropiloted valve, the piloted flow rate can be controlled and therefore the change over smoothness can be varied.

Add the letter **D** to the identification code to request this device (see paragraph 1.5).

13.2 Subplate with throttle on line P

It is possible to introduce a subplate with a restrictor of Ø0,8 (Ø1.5 on DSP10M) on line P between the pilot solenoid valve and the main distributor. The subplate thickness is 10 mm.

Add **PF** to the identification code to request this option (see paragraphs 1.5 and 1.7).



dimensions in mm

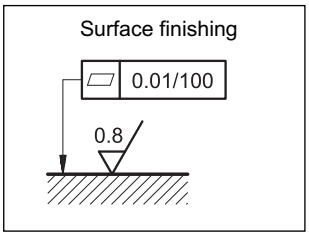
	E4	E07	E5	DSP10
A	239	251	310	440
B	214	224	250	309

14 - INSTALLATION

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

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.



15 - SUBPLATES (see catalogue 51 000)

		DS3M	DS5M	E4P4M	E07P4M	E5P4M	DSP10M
Type with rear ports		PMMD-AI3G	PMD4-AI4G	PME4-AI5G	PME07-AI6G	-	-
Port threading:	P - T - A - B X - Y	3/8” BSP -	3/4” BSP -	3/4” BSP 1/4” BSP	1” BSP 1/4” BSP		
Type with side ports		PMMD-AL3G	PMD4-AL4G	PME4-AL5G	PME07-AL6G	PME5-AL8G	-
Port threading:	P - T - A - B X - Y	3/8” BSP -	1/2” BSP -	3/4” BSP 1/4” BSP	1” BSP 1/4” BSP	1½” BSP 1/4” BSP	

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