

# DS(P)E\*K\*

## EXPLOSION-PROOF PROPORTIONAL DIRECTIONAL VALVES

in compliance with ATEX 94/9/EC

### SERIES 10

<b>DSE3K*</b>	<b>ISO 4401-03 (CETOP 03)</b>
<b>DSPE5K*</b>	<b>CETOP P05</b>
<b>DSPE5RK*</b>	<b>ISO 4401-05 (CETOP R05)</b>
<b>DSPE7K*</b>	<b>ISO 4401-07 (CETOP 07)</b>
<b>DSPE8K*</b>	<b>ISO 4401-08 (CETOP 08)</b>
<b>DSPE10K*</b>	<b>ISO 4401-10 (CETOP 10)</b>

#### OPERATING PRINCIPLE

- These explosion proof directional valves are available in size ISO 4401-03 (CETOP 03) for direct operated type. Available sizes for pilot operated type are CETOP P05, ISO 4401-05 (CETOP R05), ISO 4401-07 (CETOP 07), ISO 4401-08 (CETOP 08) and ISO 4401-10 (CETOP 10).
- They are compliant with ATEX 94/9/EC standards and are suitable for the use in potentially explosive atmospheres, that fall within the ATEX II 2GD (temperature class T4 or T5) or I M2, for mines. See par. 4 for ATEX classification, operating temperatures and electrical characteristics.
- The statement of conformity to the up-mentioned standards is always supplied with the valves .
- A low temperature version ( up to -40 °C) is also available.
- The DSE3K\* valves are supplied with a finishing surface treatment (zinc-nickel) suitable to ensure a salt spray resistance up to 600 hours; for DSPE\*K\* valves, this finishing is available upon request.

Type examination certificate No: CEC 13 ATEX 030-REV.2

<b>PERFORMANCES</b> (obtained with viscosity of 36 cSt at 50°C with the relative electronic control units)		<b>DSE3K*</b>	<b>DSPE5K*</b> <b>DSPE5RK*</b>	<b>DSPE7K*</b>	<b>DSPE8K*</b>	<b>DSPE10K*</b>
Max operating pressure: P - A - B ports T ports	bar	350 210	350 see par. 8			
Controlled flow rate with $\Delta p$ 10 bar P-T	l/min	see par. 2	see par. 7			
Step response		see par. 10				
Hysteresis	% of Q <sub>max</sub>	<6% (PWM 200Hz)	< 4% (PWM 100Hz)			
Repeatability	% of Q <sub>max</sub>	< ±1,5%	< ±2%			
Electrical characteristics		see par. 4.6				
Temperature ranges (ambient and fluid)	°C	see par. 4.5				
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	1,9 2,8	7,5 8,3	9,9 10,7	16,1 16,9	52,8 53,5



## 1 - IDENTIFICATION OF DIRECT OPERATED VALVE DSE3K\*

### 1.1 - Identification code

<b>D</b>	<b>S</b>	<b>E</b>	<b>3</b>		<b>-</b>				<b>/ 10</b>		<b>-</b>		<b>K9</b>	<b>/</b>		
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Direct operated solenoid valve

Electric proportional control

Size: ISO 4401-03 (CETOP 03)

Explosion-proof version: \_\_\_\_\_  
Protection type of the coil: "d"  
**KD2** = classified as ATEX II 2GD for gas or for dust  
**KDM2** = classified as ATEX I M2, for mines

Spool type: \_\_\_\_\_  
**C** = closed centers  
**A** = open centers

Spool nominal flow rate (see table par. 1.2) \_\_\_\_\_

Solenoid position \_\_\_\_\_  
(omit for double solenoid version):  
**SA** = 1 solenoid for cross configuration  
**SB** = 1 solenoid for parallel configuration

Series No.: \_\_\_\_\_  
(the overall and mounting dimensions do not change from 10 to 19)

Seals: \_\_\_\_\_  
For temperature range -20 / +80 °C  
**N** = NBR seals for mineral oil (**standard**)  
**V** = FPM seals for special fluids  
For temperature range -40 / +80 °C  
**NL** = seal for low temperatures (for mineral oil)

Nominal solenoid voltage: \_\_\_\_\_  
**D12** = 12V DC    **D24** = 24V DC

Option: **T5**  
version in T5 temperature class.  
See at par. 4.5  
Omit if not required.

Manual override:  
**CM** = boot protected **standard for both N and V seals**  
not available for NL seals  
**CB** = blind ring nut **standard for NL seals**  
available upon request for both N and V seals  
**CH** = lever manual override.  
Dimensions for CB and CH at par. 18

Connection type for cable gland  
upper connection:  
**T01** = M20x1.5 - ISO 261  
**T02** = Gk 1/2 - UNI EN 10226-2  
**T03** = 1/2" NPT - ANSI B1.20.1 (ex ANSI B2.1)  
side connection:  
**S01** = M20x1.5 - ISO 261  
**S02** = Gk 1/2 - UNI EN 10226-2  
**S03** = 1/2" NPT - ANSI B1.20.1 (ex ANSI B2.1)  
**S04** = M16x1.5 - ISO 261

Coil electrical connection: by terminal block

**NOTE:** The zinc-nickel standard finishing surface treatment is 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)

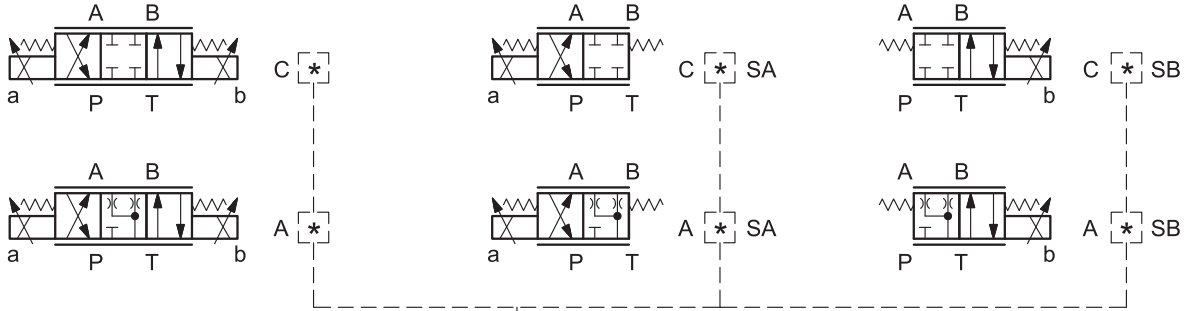
## 1.2 - Available configurations

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

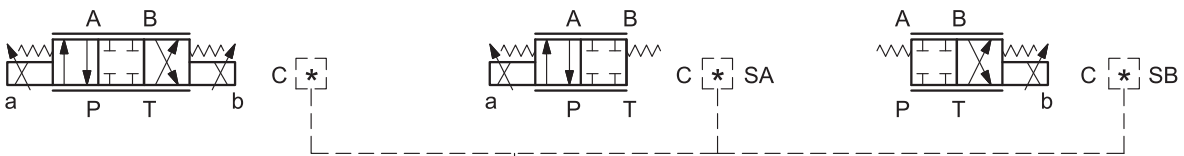
2 solenoids configuration:  
3 positions with spring centering

“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



*	Nominal flow with $\Delta p 10$ bar P→T
<b>04</b>	4 l/min
<b>08</b>	8 l/min
<b>16</b>	16 l/min
<b>16/08</b>	16 (P→A) / 08 (B→T) l/min
<b>26</b>	26 l/min
<b>26/13</b>	26 (P→A) / 13 (B→T) l/min



*	Nominal flow with $\Delta p 10$ bar P→T
<b>01R</b>	1 l/min



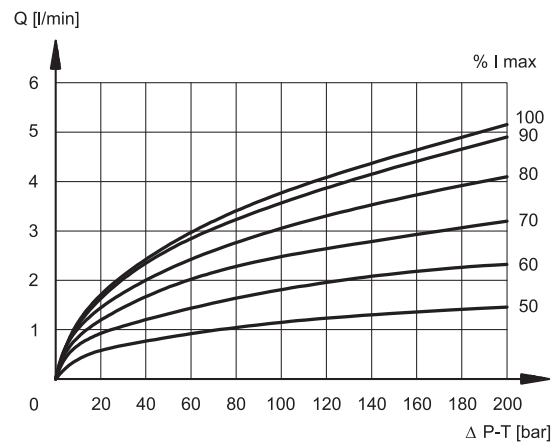
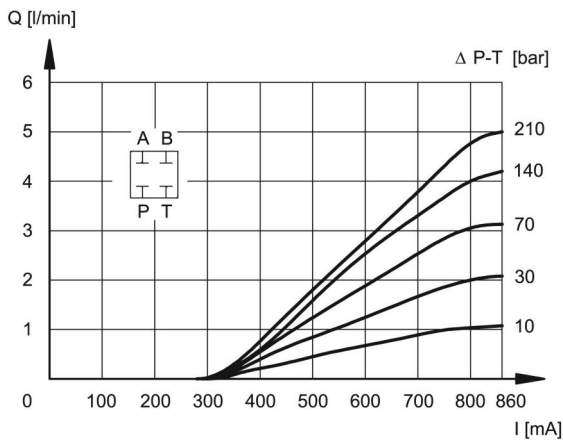
## 2 - DSE3K\* CHARACTERISTIC CURVES

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

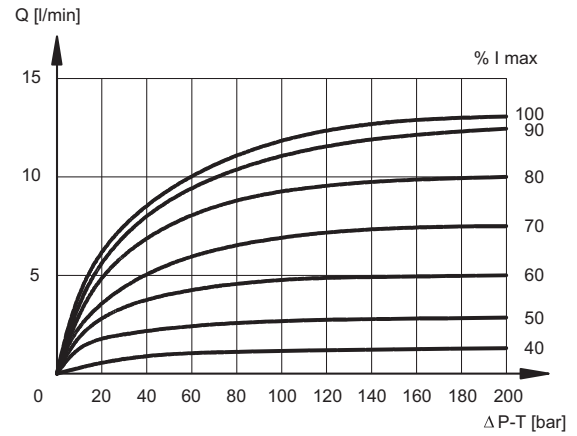
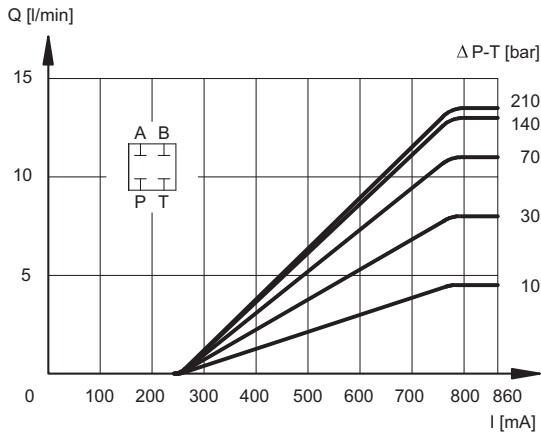
Typical flow control characteristics, according to current supply to the solenoid. The curves are obtained with D24 version, maximum current 860 mA.

The reference  $\Delta p$  values are measured between ports P and T on the valve.

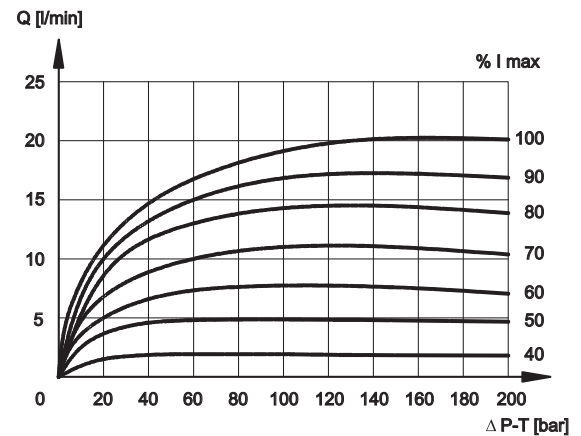
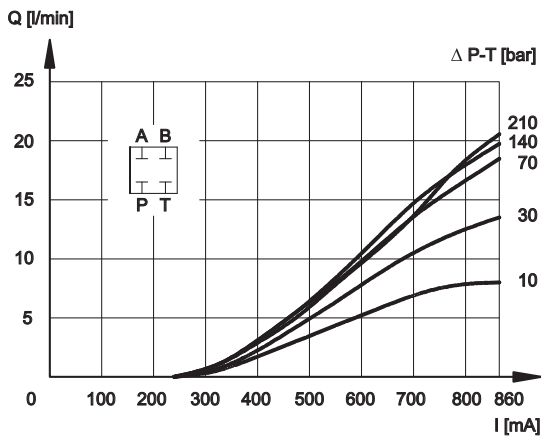
### SPOOL TYPE C01R



### SPOOL TYPE C04

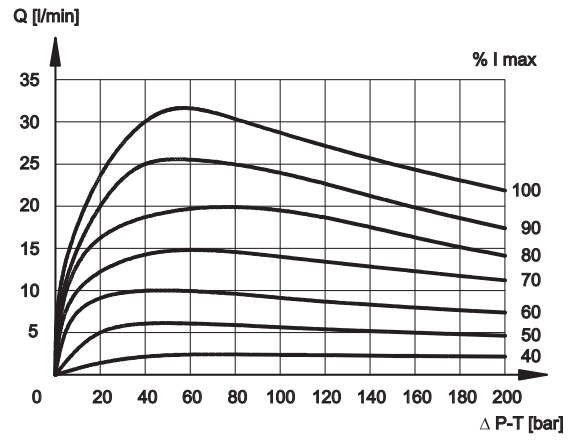
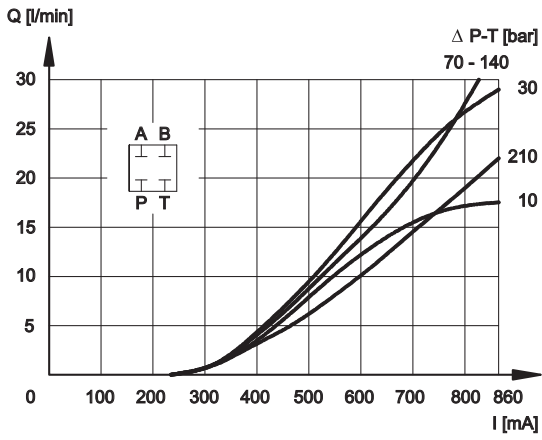


### SPOOL TYPE C08

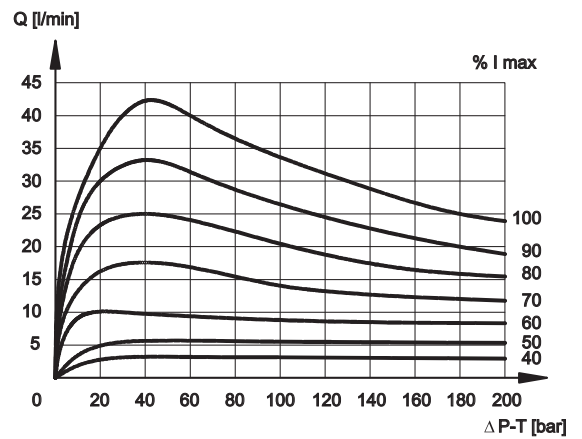
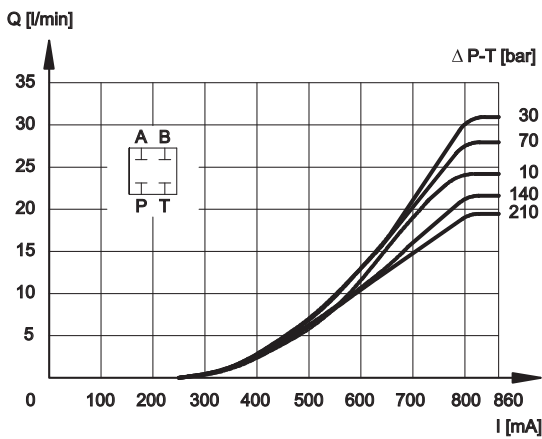




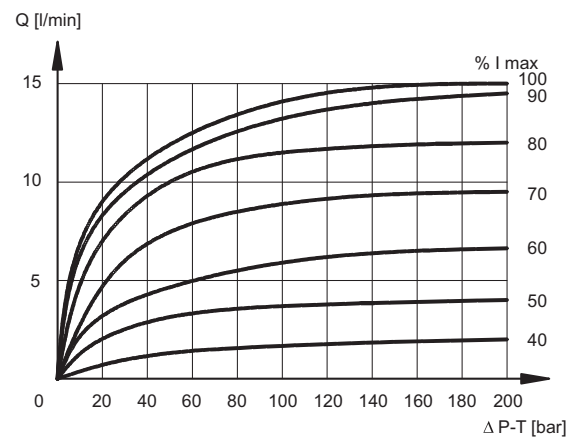
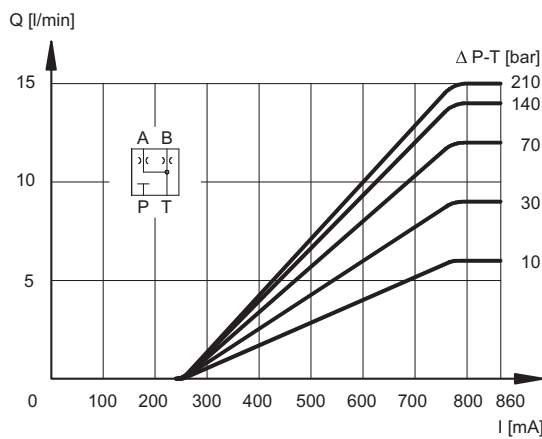
### SPOOL TYPE C16



### SPOOL TYPE C26

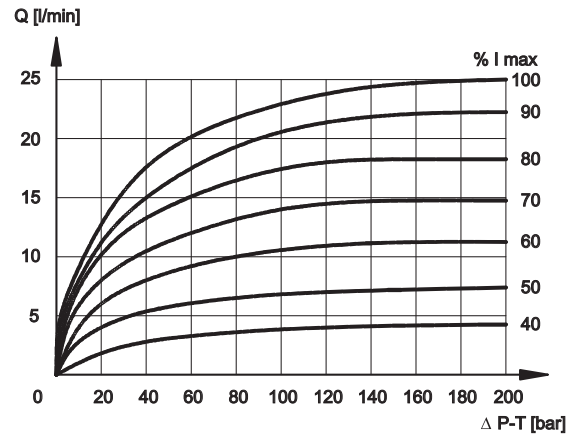
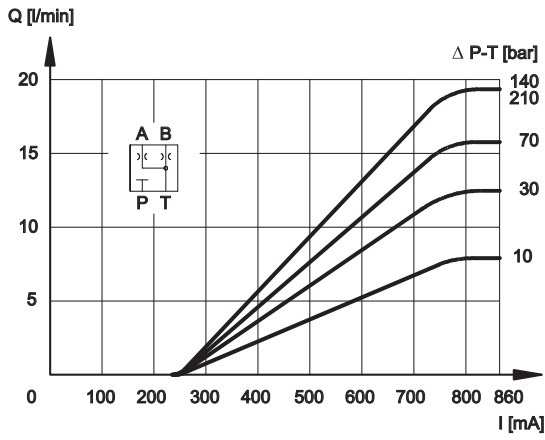


### SPOOL TYPE A04

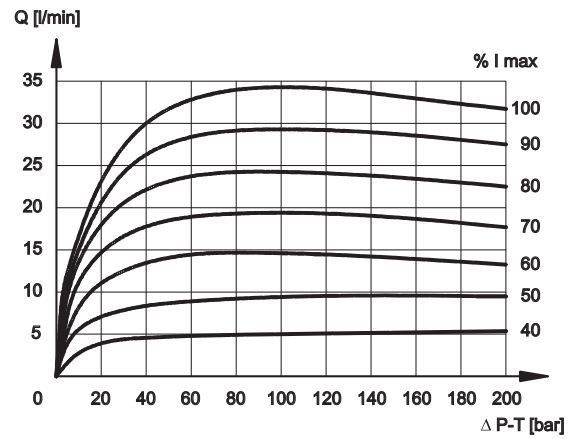
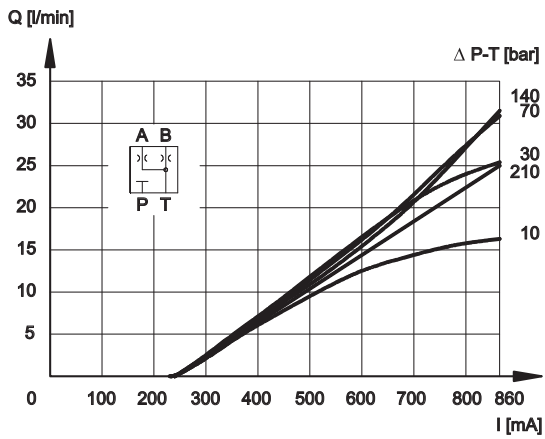




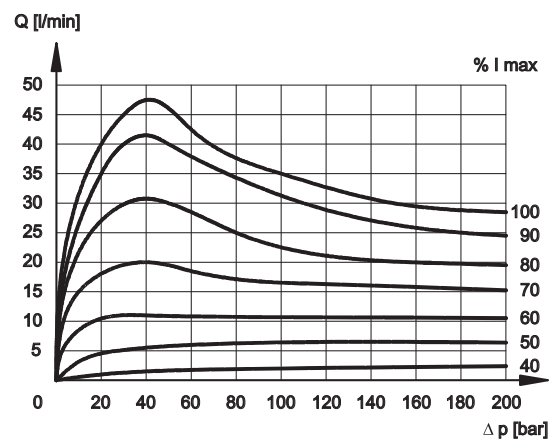
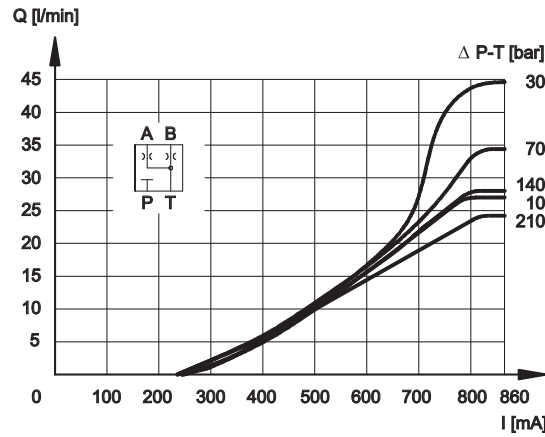
### SPOOL TYPE A08



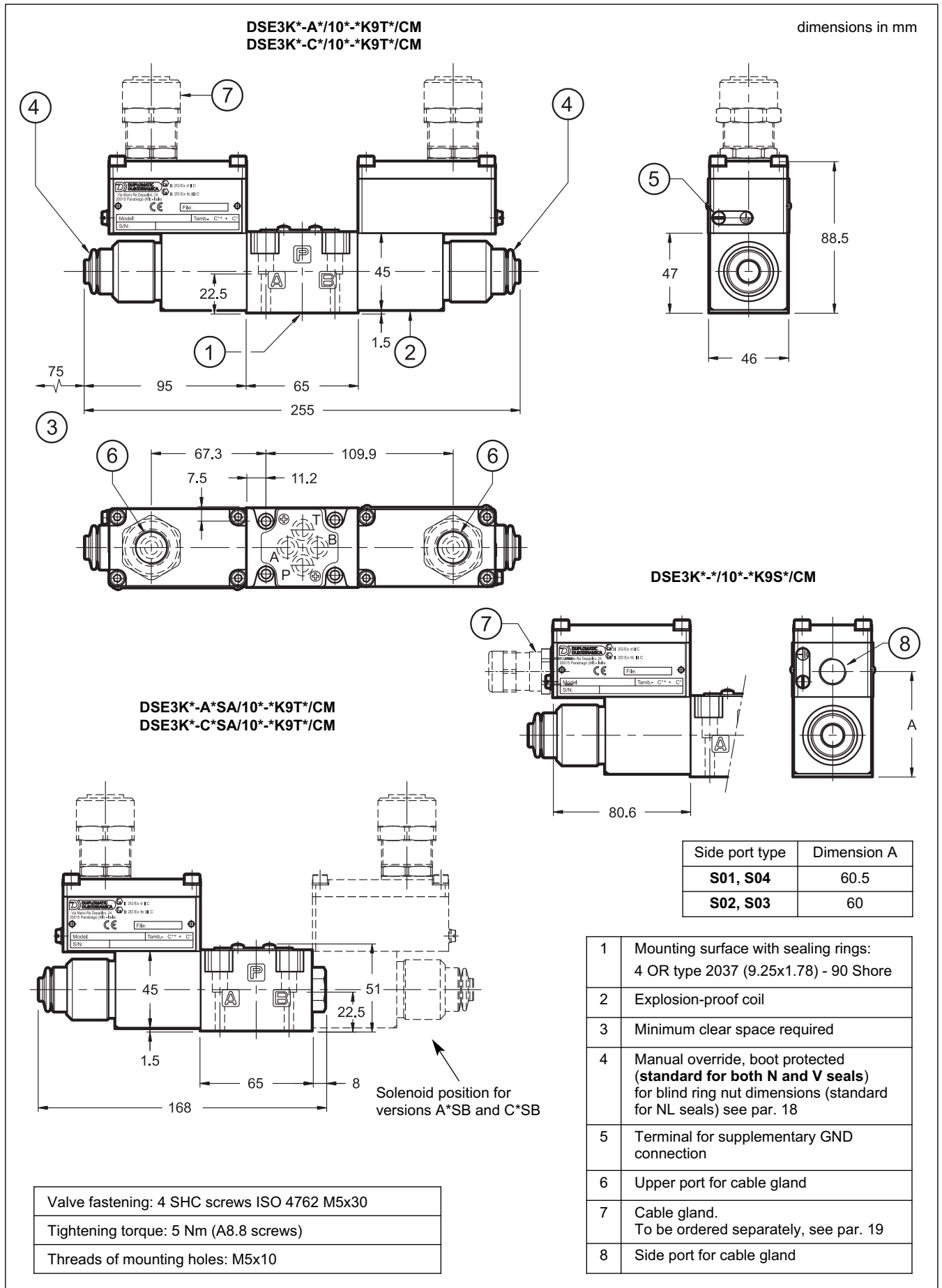
### SPOOL TYPE A16



### SPOOL TYPE A26



### 3 - DSE3K\* OVERALL AND MOUNTING DIMENSIONS



## 4 - ATEX CLASSIFICATION, OPERATING TEMPERATURES AND ELECTRICAL CHARACTERISTICS

Diplomatic certifies the combination valve-coil for the valves suitable for application and installation in potentially explosive atmospheres, according to ATEX directive prescriptions; **the supply always includes the declaration of conformity to the directive and the operating and maintenance manual, that contains all the information needed for a correct use of the valve in potentially explosive environments.**

Coils assembled on these valves have been separately certified according to ATEX directive and so they are suitable for use in potentially explosive atmospheres.

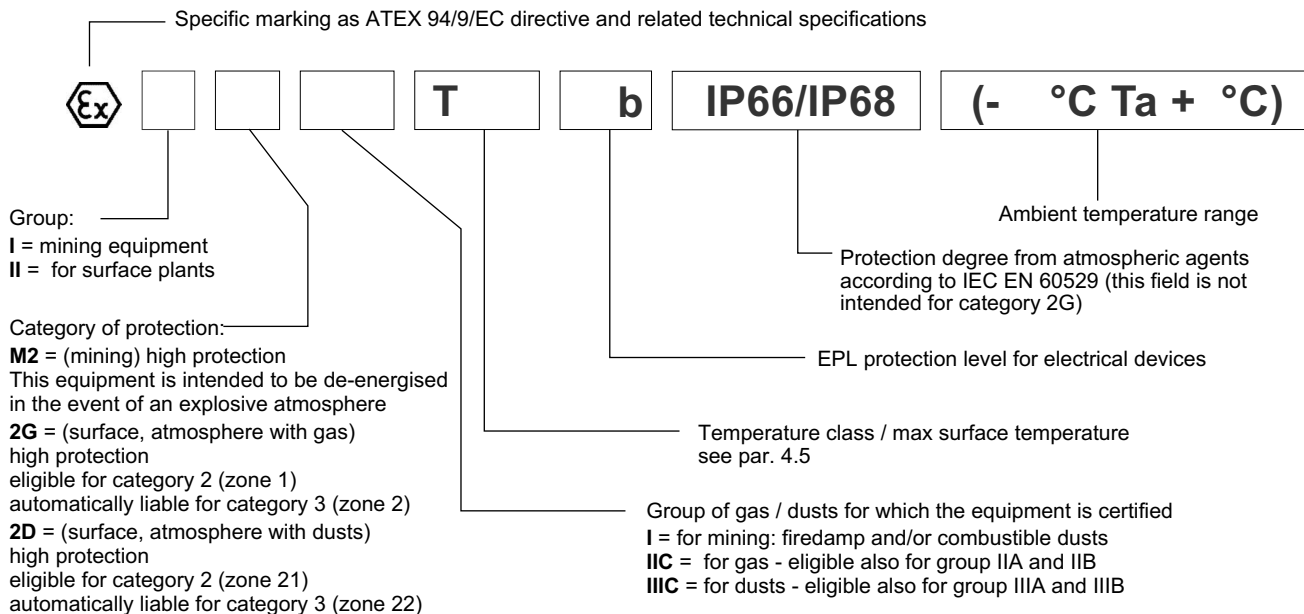
### 4.1 - ATEX classification for valves

The valves are suitable for applications and installations in potentially explosive atmospheres that fall within:

ATEX II 2G ATEX II 2D	<b>*KD2</b>	intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur occasionally.
ATEX I M2	<b>*KDM2</b>	intended for use in underground parts of mines as well as those parts of surface installations of such mines likely to be endangered by firedamp and/or combustible dust. This equipment is intended to be de-energised in the event of an explosive atmosphere.

### 4.2 - ATEX marking for valves

valve code		N and V seals	NL seals
<b>*KD2</b>	for gas	II 2G IIC T4 Gb (-20°C Ta +80°C)	II 2G IIC T4 Gb (-40°C Ta +80°C)
	for dusts	II 2D IIIC T154°C Db IP66/IP68 (-20°C Ta +80°C)	II 2D IIIC T154°C Db IP66/IP68 (-40°C Ta +80°C)
<b>*KD2 /T5</b>	for gas	II 2G IIC T5 Gb (-20°C Ta +55°C)	II 2G IIC T5 Gb (-40°C Ta +55°C)
	for dusts	II 2D IIIC T129°C Db IP66/IP68 (-20°C Ta +55°C)	II 2D IIIC T129°C Db IP66/IP68 (-40°C Ta +55°C)
<b>*KDM2</b>	mining	I M2 I T150°C Mb IP66/68 (-20°C Ta +75°C)	I M2 I T150°C Mb IP66/68 (-40°C Ta +75°C)



### 4.3 - ATEX classification of the coils

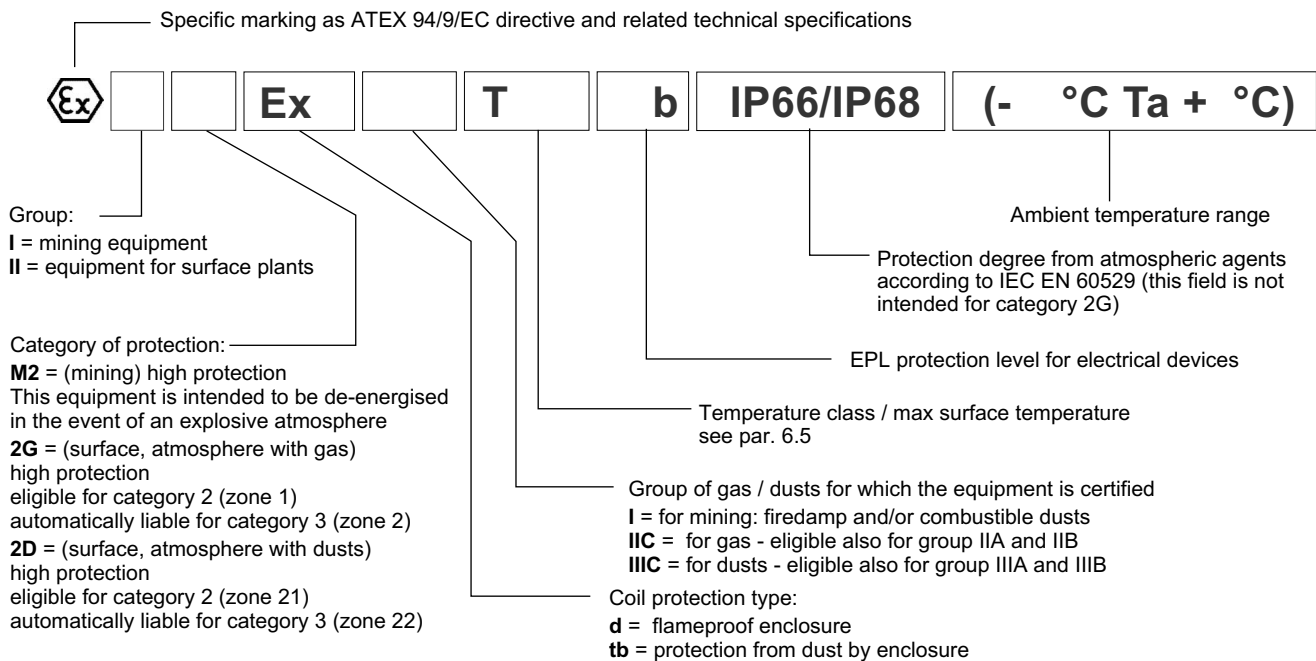
The coil of the explosion-proof valves is identified with its own tag, which carries the relative ATEX marking. **The mechanical construction of the coil housing is made in order to ensure its resistance to possible internal explosion and to avoid any explosion propagation to the outside environment, matching an "Ex d" type protection (explosion-proof coil).**

Moreover, the solenoid is designed to maintain its surface temperature below the limits specified to the relevant class.



#### 4.4 - ATEX marking on coils

for valve type <b>*KD2</b>	for gas <b>Ex</b> II 2G Ex d IIC T4 Gb (-40°C Ta +80°C)
	for dusts <b>Ex</b> II 2D Ex tb IIIC T154°C Db IP66/IP68 (-40°C Ta +80°C)
for valve type <b>*KD2 /T5</b>	for gas <b>Ex</b> II 2G Ex d IIC T5 Gb (-40°C Ta +55°C)
	for dusts <b>Ex</b> II 2D Ex tb IIIC T129°C Db IP66/IP68 (-40°C Ta +55°C)
for valve type <b>*KDM2</b>	mining <b>Ex</b> I M2 Ex d I T150°C Mb IP66/IP68 (-40°C Ta +75°C)



#### 4.5 - Operating temperatures

These valves are classified according to their maximum surface temperature (EN 13463-1), which must be lower than the ignition temperature of the gases, vapors and dusts for which the area in which they will be used is classified.

The valves in group II can also be used for less limiting temperature classes (surface temperature allowed higher).

		temperature range	N and V seals	NL seals	Temperature class	eligible also for
ATEX II 2G ATEX II 2D	<b>*KD2</b>	of ambient	-20 / +80 °C	-40 / +80 °C	T4 (gas) T154°C (dusts)	T3, T2, T1 T200°C and higher
		of fluid				
	<b>*KD2 /T5</b>	of ambient	-20 / +55 °C	-40 / +55 °C	T5 (gas) T129°C (dusts)	T4, T3, T2, T1 T135°C and higher
		of fluid				
ATEX I M2	<b>*KDM2</b>	of ambient	-20 / +75 °C	-40 / +75 °C	T150°C	-
		of fluid				

#### 4.6 - Electrical characteristics (values ± 5%)

NOMINAL VOLTAGE	V DC	12	24
RESISTANCE (AT 20°C)	Ω	3,4	15,6
NOMINAL CURRENT	A	1,88	0,86

DUTY CYCLE	100%
EXPLOSION-PROOF VERSION	According to ATEX 94/9/EC
ELECTROMAGNETIC COMPATIBILITY (EMC)	According to 2004/108/EC
CLASS OF PROTECTION: Atmospheric agents Coil insulation (VDE 0580)	IP66 / IP68 class H

## 5 - ELECTRICAL CONNECTION

### 5.1 - Wiring

In order to realise the electrical connection of the coil, it is necessary to access the terminal block (1) unscrewing the 4 screws (2) that fasten the cover (3) with the box (4) that contains the terminal block.

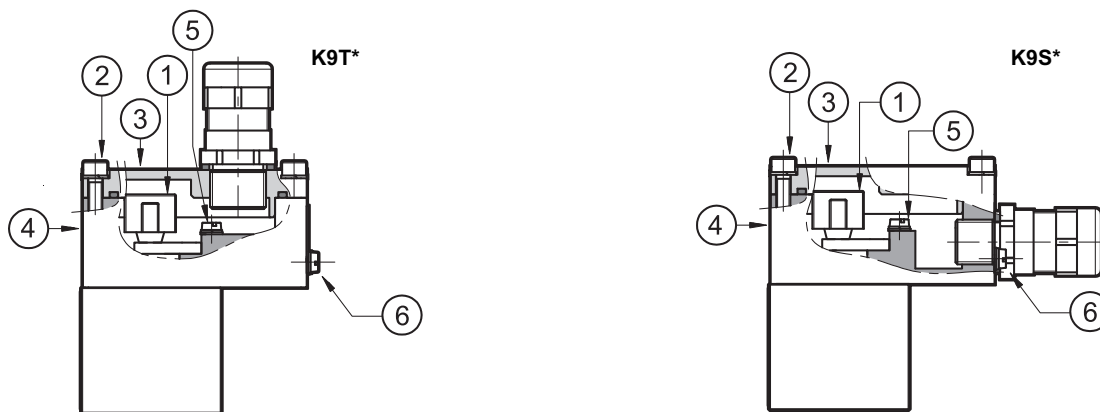
**The electrical connection is polarity-independent.**

By doing electrical connection it is important to connect also the grounding point (5) in the terminal block box (M4 screws), through suitable conductors with the general grounding line of the system.

On the external body of the coil there is a grounding point (6) (M4 screw) that allow to ensure equipotentiality between the valve and the general grounding line of the system; connecting this point the regulation of the EN 13463-1 standard, that impose to verify the equipotentiality of the elements included in a potentially explosive environment (the maximum resistance between the elements must be 100 Ω), is guaranteed.

At the end of the electrical wiring, it is necessary to reassemble the cover (3) on the box (4), checking the correct positioning of the seal located in the cover seat and fastening the 4 M5 screws with a torque of  $4.9 \pm 6$  Nm.

Electrical wiring must be done following the instructions of the rules in compliance with ATEX standards.



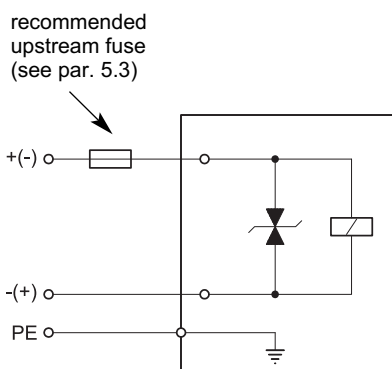
Characteristics of the cables connectable for wiring are indicated in the table below:

Function	Cable section
Operating voltage cables connection	max 2.5 mm <sup>2</sup>
Connection for internal grounding point	max 2.5 mm <sup>2</sup>
Connection for external equipotential grounding point	max 6 mm <sup>2</sup>

Cables for wiring must be non-armoured cables, with external covering sheath and must be suitable for use in environments with temperatures from - 20 °C to +110 °C (for valves either with N or V seals) or from - 40 °C to +110 °C (for valves with NL seals).

Cable glands (which must be ordered separately, see paragraph 19) allow to use cables with external diameter between 8 and 10 mm.

### 5.2 - Electrical diagrams



### 5.3 - Overcurrent fuse and switch-off voltage peak

Upstream of each valve, an appropriate fuse (max 3 x I<sub>n</sub> according to IEC 60127) or a protective motor switch with short-circuit and thermal instantaneous tripping, as short-circuit protection, must be connected. The cut-off power of the fuse must correspond or exceed the short circuit current of the supply source. The fuse or the protective motor must be placed outside the dangerous area or they must be protected with an explosion-proof covering.

In order to safeguard the electronic device to which the valve is connected, there is a protection circuit in the coil, that reduces voltage peaks, which can occur when inductances are switched off.

The table shows the type of fuse recommended according to the nominal voltage of the valve and to the value of the voltage peaks reduction.

Coil type	Nominal voltage [V]	Rated current [A]	Recommended pre-fuse characteristics medium time-lag according to DIN 41571 [A]	Maximum voltage value upon switch off [V]	Suppressor circuit
D12	12	1,88	2,5	- 49	Transient voltage suppressor bidirectional
D24	24	0,86	1,25	- 49	



## 6 - IDENTIFICATION OF PILOT OPERATED SOLENOID VALVES DSPE\*K\*

### 6.1 - Identification code

<b>DSP</b>	<b>E</b>		-		/ 10	-		/	<b>K9</b>	/			
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Pilot operated directional valve

Electric proportional control

Size:

**5** = CETOP P05  
**5R** = ISO 4401-05 (CETOP R05)  
**7** = ISO 4401-07 (CETOP 07)  
**8** = ISO 4401-08 (CETOP 08)  
**10** = ISO 4401-10 (CETOP 10)

Explosion-proof version: Protection type of the coil: "d"

**KD2** = classified as ATEX II 2GD for gas or for dust  
**KDM2** = classified as ATEX I M2, for mines

Spool type:

**C** = closed centres  
**A** = open centres  
**RC** = regenerative closed centres  
**RA** = regenerative open centres

Spool nominal flow rate (see table par. 6.2)

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)

Seals:

For temperature range -20 / +80 °C  
**N** = NBR seals for mineral oil (standard)  
**V** = FPM seals for special fluids

For temperature range -40 / +80 °C  
**NL** = seal for low temperatures (for mineral oil)

Piloting:

**I** = internal  
**E** = external  
**Z** = internal piloting with 30 bar fixed adjustment pressure reducing valve

Drainage:

**I** = internal  
**E** = external

Option: surface treatment not standard. Omit if not required (see NOTE)

Option: **/T5** version in T5 temperature class. See at par. 4.5 Omit if not required.

Manual override:  
**CM** = boot protected **standard for both N and V seals** not available for NL seals  
**CB** = blind ring nut **standard for NL seals** available upon request for both N and V seals see dimensions at paragraph 18

Connection type for cable gland upper connection:  
**T01** = M20x1.5 - ISO 261  
**T02** = Gk 1/2 - UNI EN 10226-2  
**T03** = 1/2" NPT - ANSI B1.20.1 (ex ANSI B2.1)  
side connection:  
**S01** = M20x1.5 - ISO 261  
**S02** = Gk 1/2 - UNI EN 10226-2  
**S03** = 1/2" NPT - ANSI B1.20.1 (ex ANSI B2.1)  
**S04** = M16x1.5 - ISO 261

Coil electrical connection: by terminal block

Nominal solenoid voltage:  
**D12** = 12V DC  
**D24** = 24V DC

**NOTE:** the valves are supplied with standard surface treatment of phosphating black for the main body and zinc-nickel for the pilot body. Upon request we can supply these valves with full zinc-nickel surface treatment, suitable to ensure a salt spray resistance up to 600 h (test operated according to UNI EN ISO 9227 standards and test evaluation operated according to UNI EN ISO 10289 standards). For full zinc-nickel surface treatment add **/W7** at the end of the identification code.

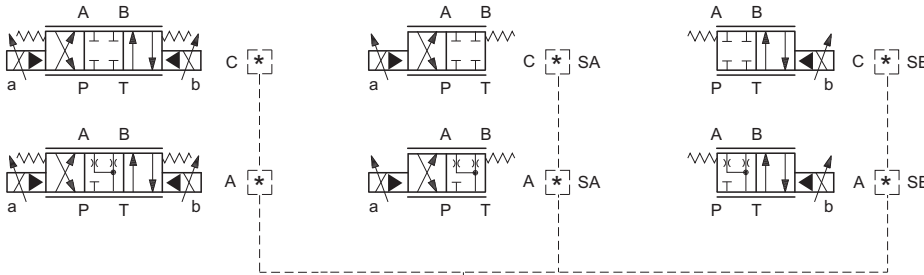
## 6.2 - Configurations

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

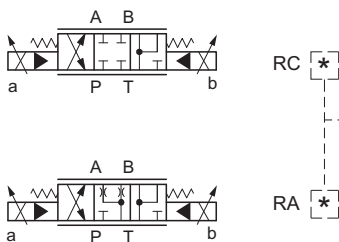
Configuration 2 solenoids:  
3 positions with spring centering

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 $\Delta p$ 10 bar P-T
DSPE5K*	<b>80</b>	80 l/min
DSPE5RK*	<b>80/40</b>	80 (P-A) / 40 (B-T) l/min
DSPE7K*	<b>100</b>	100 l/min
	<b>150/75</b>	150 (P-A) / 75 (B-T) l/min
DSPE8K*	<b>200</b>	200 l/min
	<b>300/150</b>	300 (P-A) / 150 (B-T) l/min
DSPE10K*	<b>350</b>	350 l/min
	<b>500</b>	500 l/min
	<b>500/250</b>	500 (P-A) / 250 (B-T) l/min



valve type	*	nominal flow rate with $\Delta p$ 10 bar P-T
DSPE7K*	<b>150/75</b>	150 (P-A) / 75 (B-T) l/min
DSPE8K*	<b>300/150</b>	300 (P-A) / 150 (B-T) l/min
DSPE10K*	<b>500/250</b>	500 (P-A) / 250 (B-T) l/min

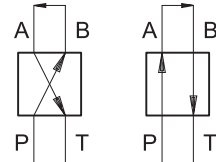


## 7 - CHARACTERISTIC CURVES OF PILOT OPERATED SOLENOID VALVES DSPE\*K\*

(values measured with viscosity of 36 cSt at 50°C with valves with the relative electronic control units)

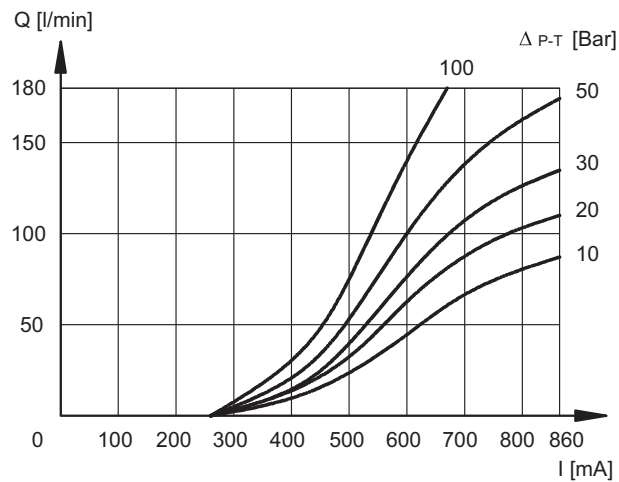
Typical flow rate control curves at constant  $\Delta p$  according to current supply to the solenoid (D24 version, 860 mA max current), measured for the available spool types.

The reference  $\Delta p$  values are measured between valve ports P and T.



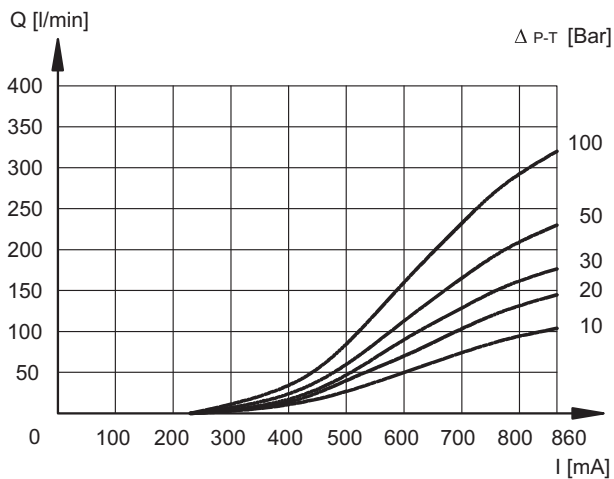
### 7.1 - Characteristic curves DSPE5K\* and DSPE5RK\*

#### SPOOL C80 - A80

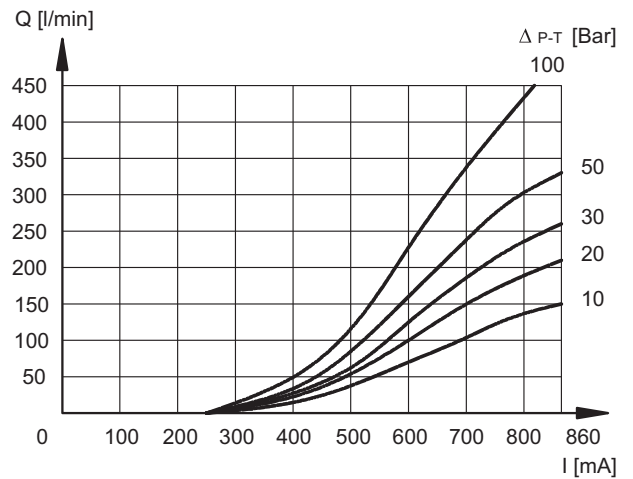


### 7.2 - Characteristic curves DSPE7K\*

#### SPOOL C100 - A100



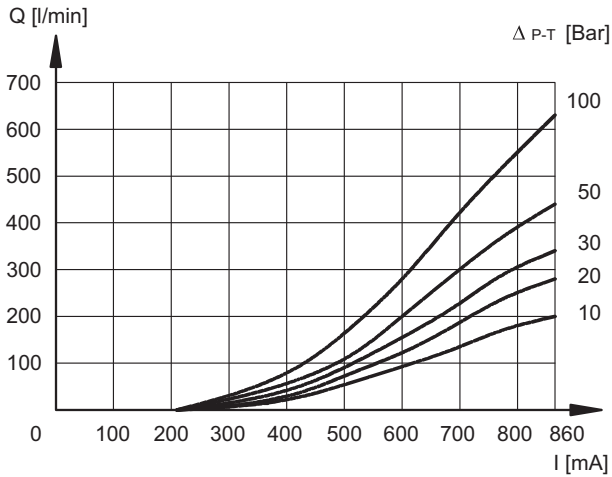
#### SPOOL C150 - A150



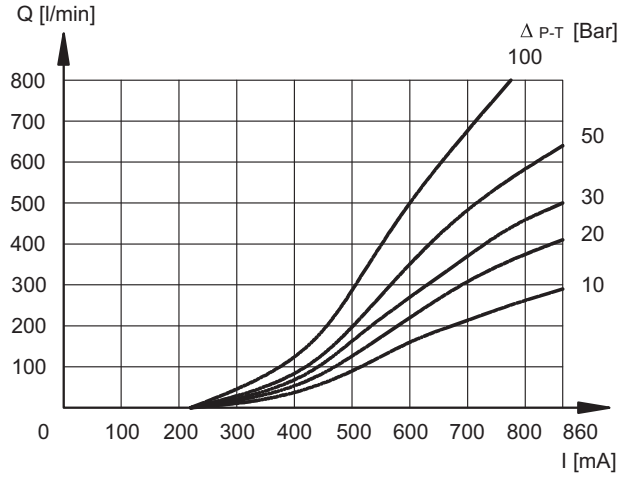


### 7.3 - Characteristic curves DSPE8K\*

SPOOL C200 - A200

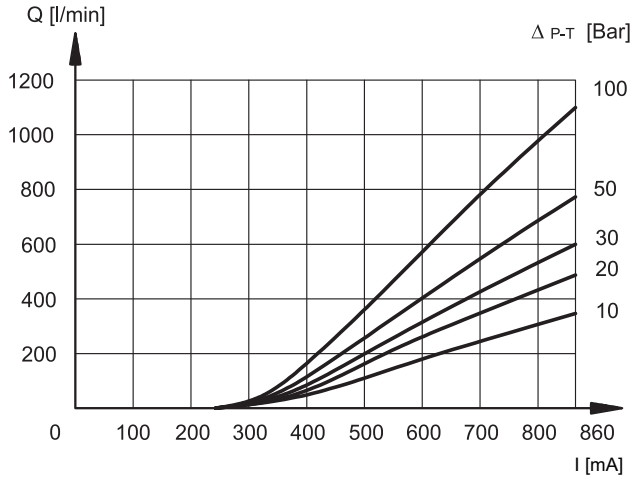


SPOOL C300 - A300

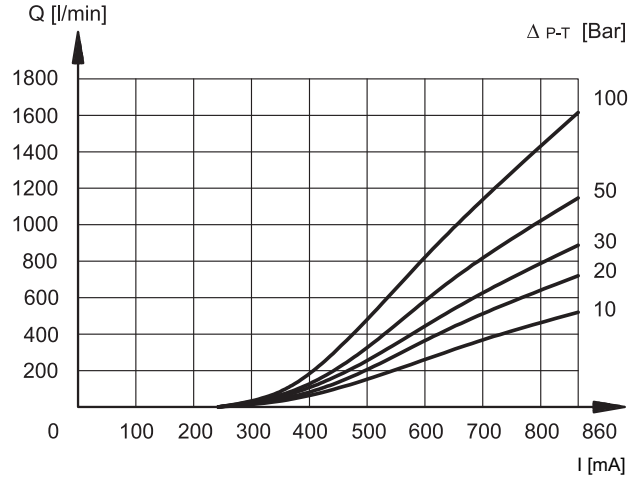


### 7.4 - Characteristic curves DSPE10K\*

SPOOL C350 - A350



SPOOL C500 - A500



## 8 - PRESSURES

	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:** 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.

Add the letter **Z** to the identification code to order this option (see par. 6.1). Consider that, by adding the pressure reducing valve, the overall dimensions increase 40 mm in height.

## 9 - HYDRAULIC CHARACTERISTICS

(values measured with viscosity of 36 cSt at 50°C and electronic control units)

		DSPE5K* DSPER5K*	DSPE7K*	DSPE8K*	DSPE10K*
Max flow rate	l/min	180	450	800	1600
Piloting flow requested with operation 0 → 100%	l/min	3	5	9	13
Piloting volume requested with operation 0 → 100%	cm <sup>3</sup>	1,7	3,2	9,1	21,6

## 10 - STEP RESPONSE

(measured with mineral oil with viscosity of 36 cSt at 50°C and electronic control units)

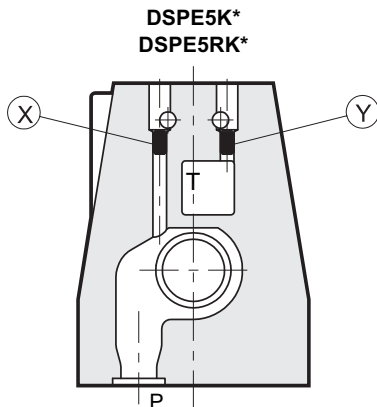
Step response is the time taken for the valve to reach 90% of the set pressure value following a step change of reference signal.

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

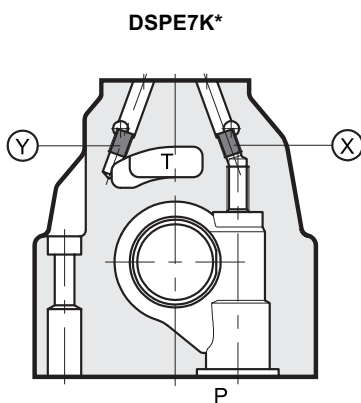
REFERENCE SIGNAL	0 → 100%	100 → 0%
	Step response [ms]	
DSE3K*	50	40
DSPE5K* and DSPER5K*	50	40
DSPE7K*	80	50
DSPE8K*	100	70
DSPE10K*	200	120

## 11 - PILOTING AND DRAINAGE

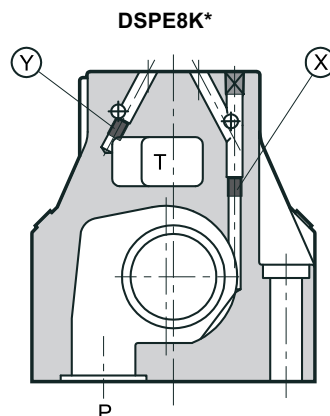
DSPE\*K\* valves are available with piloting and drainage, both internal and external. The version with external drainage allows for a higher back pressure on the outlet.



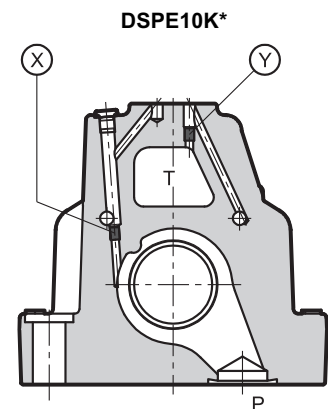
X: plug M5x6 for external pilot  
Y: plug M5x6 for external drain



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



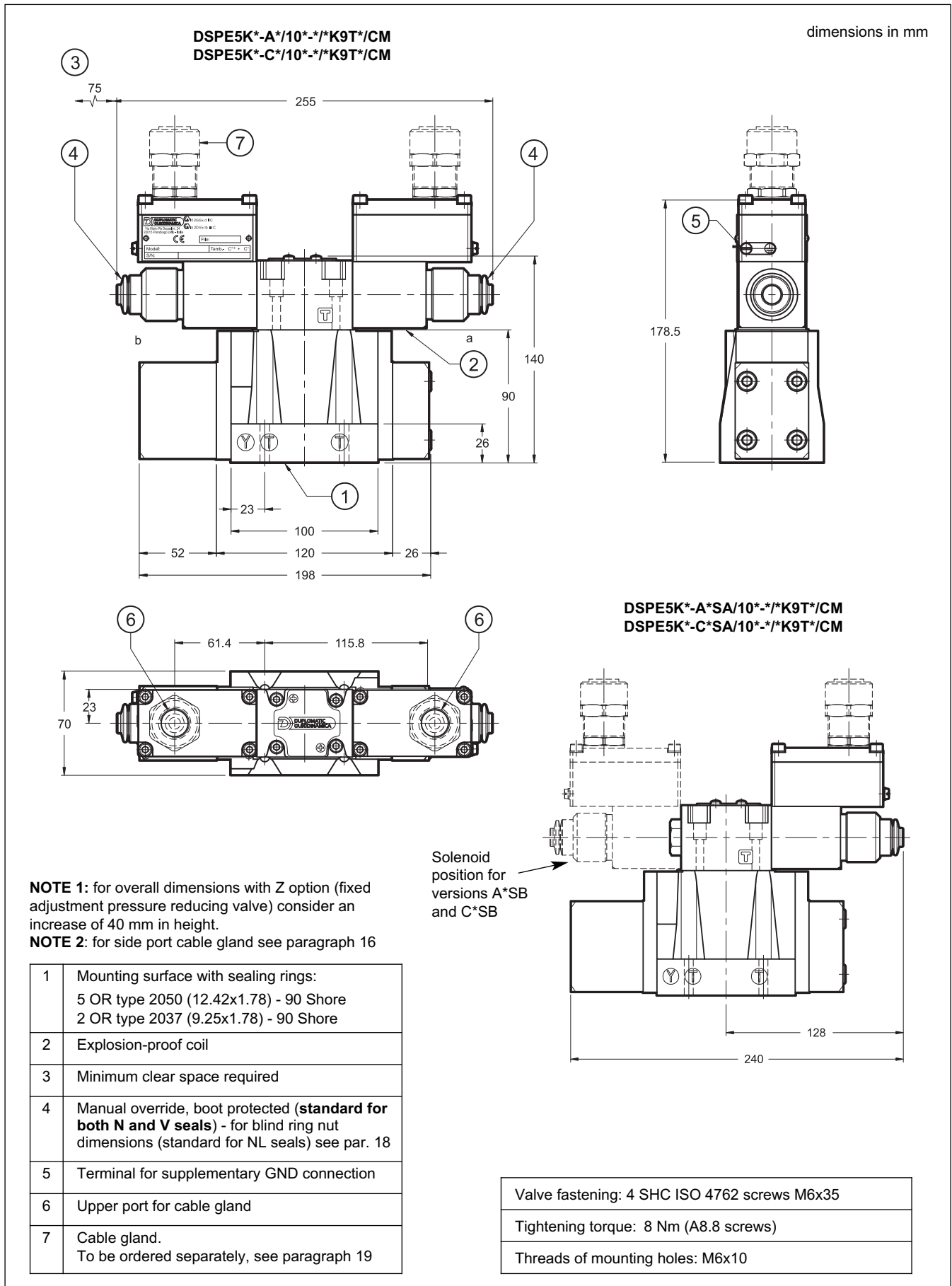
X: plug M6x8 for external pilot  
Y: plug M6x8 for external drain



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

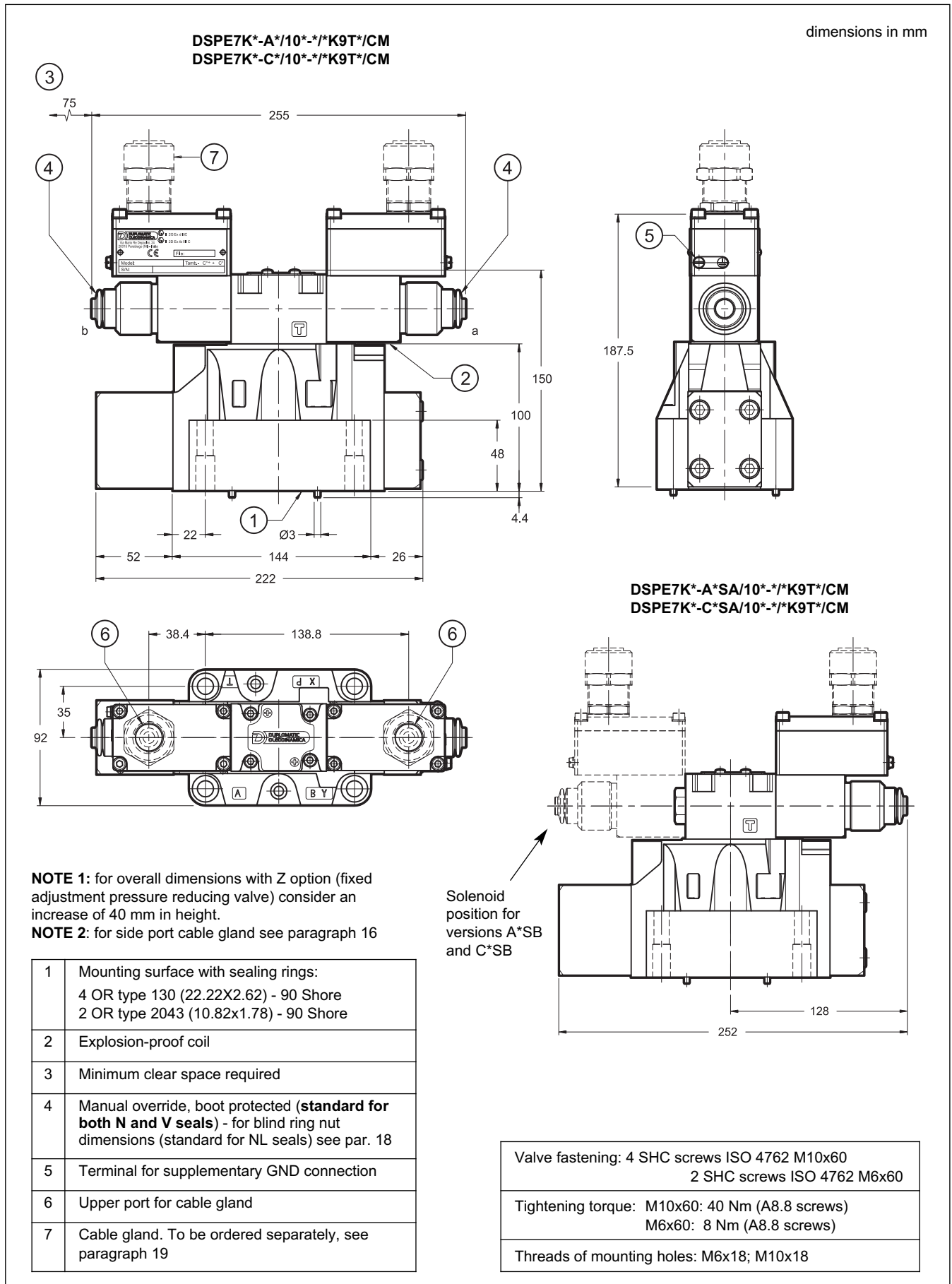
TYPE OF VALVE	Plug assembly	
	X	Y
<b>IE</b> INTERNAL PILOT AND EXTERNAL DRAIN	NO	YES
<b>II</b> INTERNAL PILOT AND INTERNAL DRAIN	NO	NO
<b>EE</b> EXTERNAL PILOT AND EXTERNAL DRAIN	YES	YES
<b>EI</b> EXTERNAL PILOT AND INTERNAL DRAIN	YES	NO

## 12 - DSPE5K\* AND DSPE5RK\* OVERALL AND MOUNTING DIMENSIONS

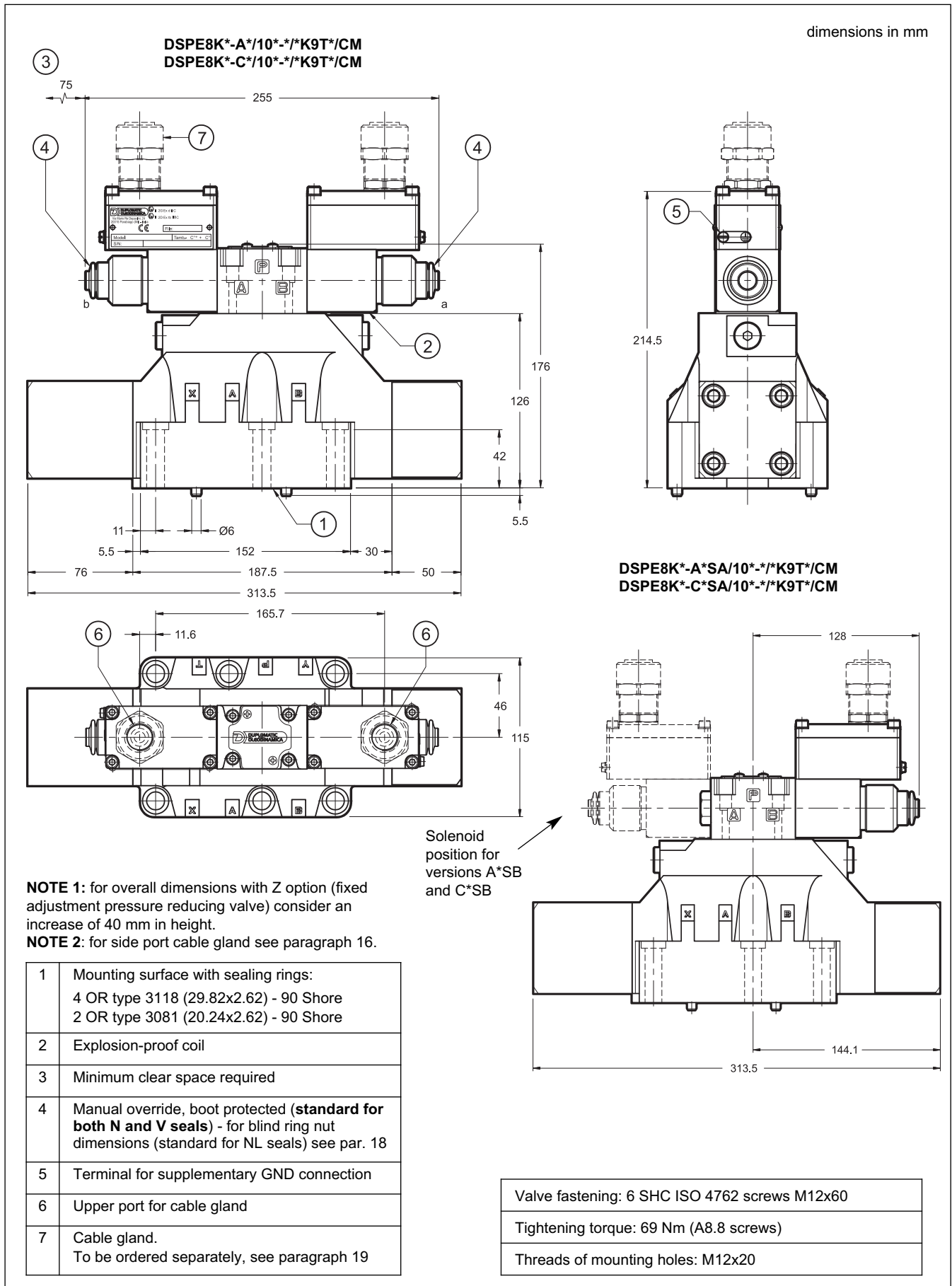




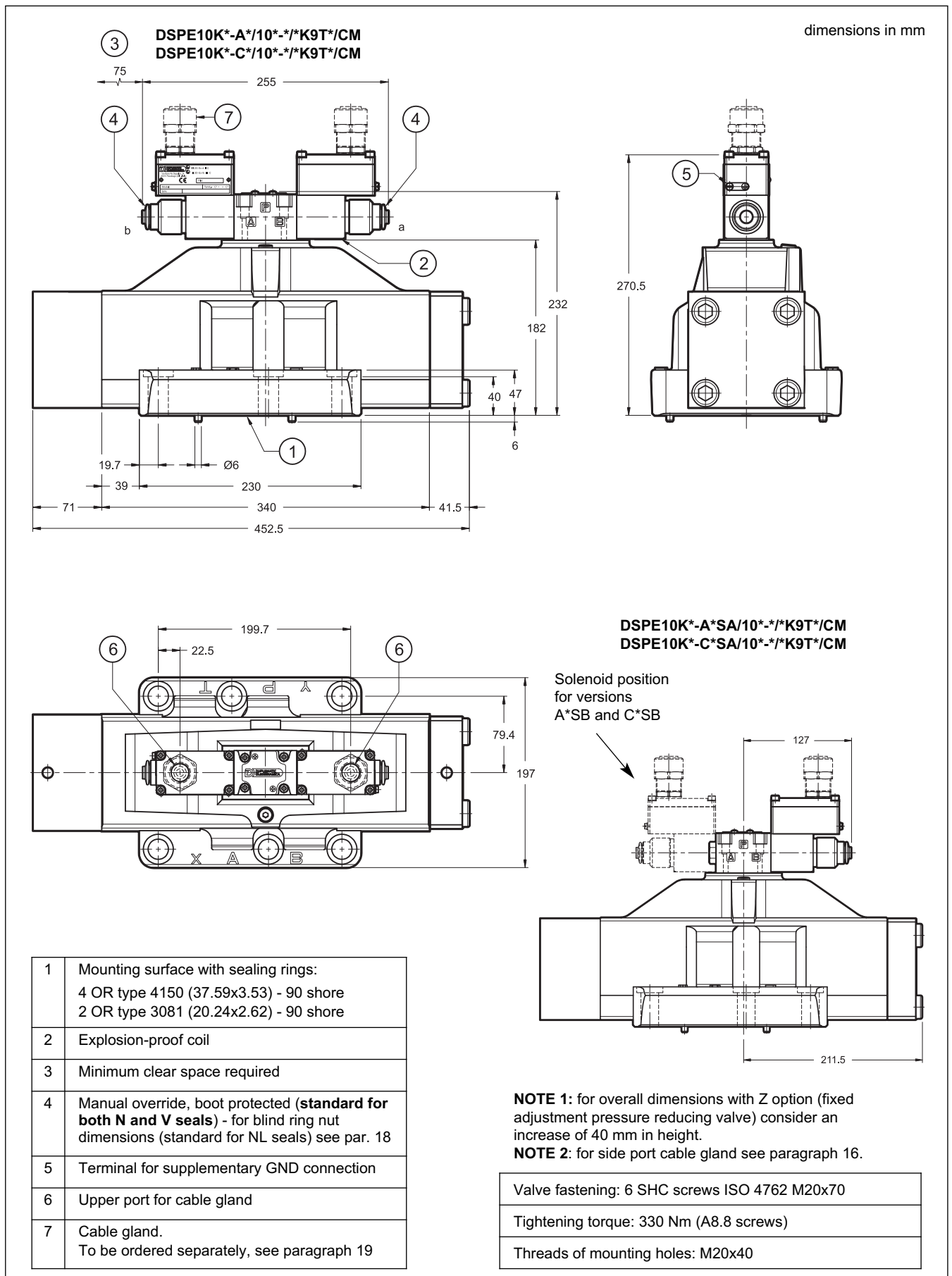
### 13 - DSPE7K\* OVERALL AND MOUNTING DIMENSIONS



## 14 - DSPE8K\* OVERALL AND MOUNTING DIMENSIONS



## 15 - DSPE10K\* OVERALL AND MOUNTING DIMENSIONS



## 16 - DSPE\*K\*-\*K9S\* (SIDE CONNECTION) OVERALL AND MOUNTING DIMENSIONS

**DSPE5K\*-\*K9S\***  
**DSPE5RK\*-\*K9S\***

Side port type	Dimension A
<b>S01, S04</b>	150.5
<b>S02, S03</b>	150

**DSPE7K\*-\*K9S\***

Side port type	Dimension A
<b>S01, S04</b>	157.5
<b>S02, S03</b>	157

**DSPE8K\*-\*K9S\***

Side port type	Dimension A
<b>S01, S04</b>	186.5
<b>S02, S03</b>	186

**DSPE10K\*-\*K9S\***

Side port type	Dimension A
<b>S01, S04</b>	242.5
<b>S02, S03</b>	242

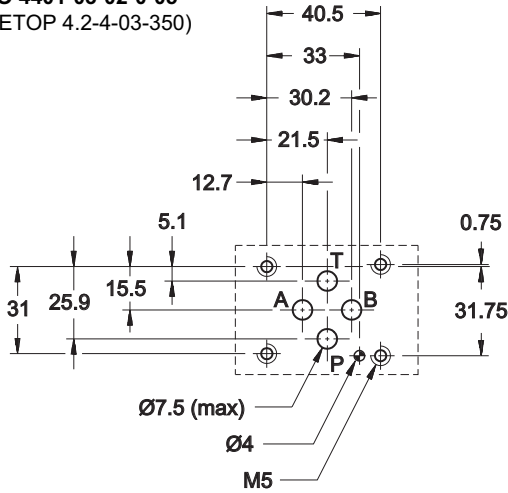
dimensions in mm

8	Side port for cable gland
9	Cable gland. To be ordered separately, see par. 19

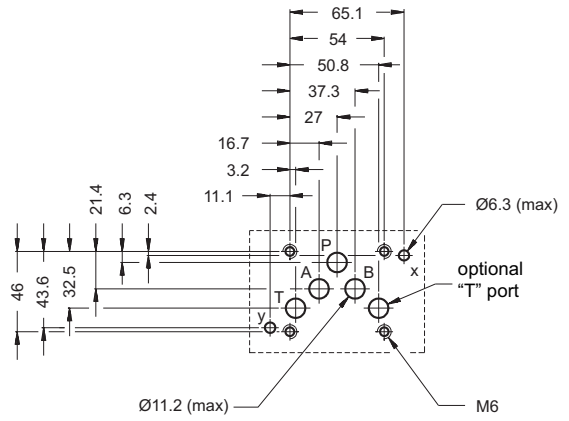


## 17 - MOUNTING SURFACES

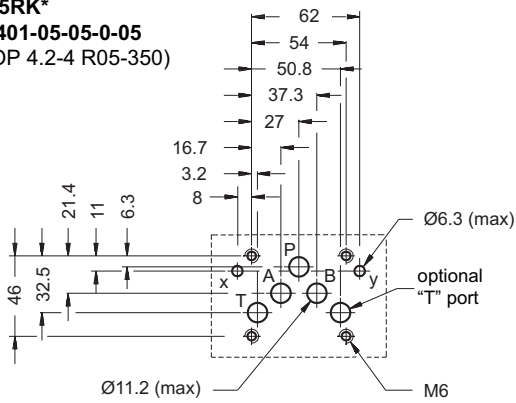
**DSE3K\***  
ISO 4401-03-02-0-05  
(CETOP 4.2-4-03-350)



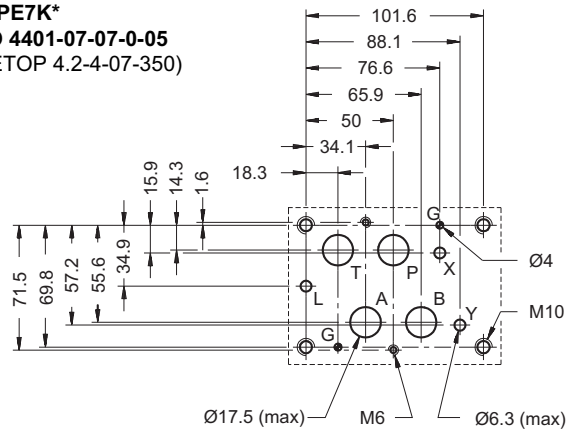
**DSPE5K\***  
CETOP 4.2-4 P05-350



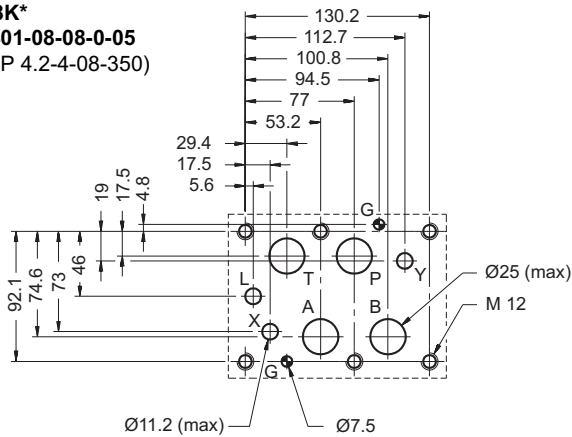
**DSPE5RK\***  
ISO 4401-05-05-0-05  
(CETOP 4.2-4 R05-350)



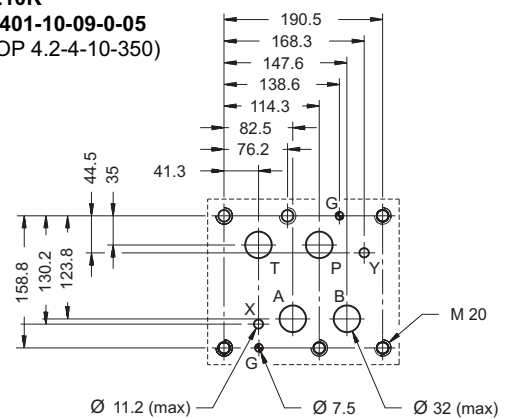
**DSPE7K\***  
ISO 4401-07-07-0-05  
(CETOP 4.2-4-07-350)



**DSPE8K\***  
ISO 4401-08-08-0-05  
(CETOP 4.2-4-08-350)



**DSPE10K\***  
ISO 4401-10-09-0-05  
(CETOP 4.2-4-10-350)



## 18 - MANUAL OVERRIDES

### 18.1 - CB - Blind ring nut

The metal ring nut protects the solenoid tube from atmospheric agents and isolates the manual override from accidental operations. The ring nut is tightened on a threaded fastener that keeps the coil in its position even without the ring nut.

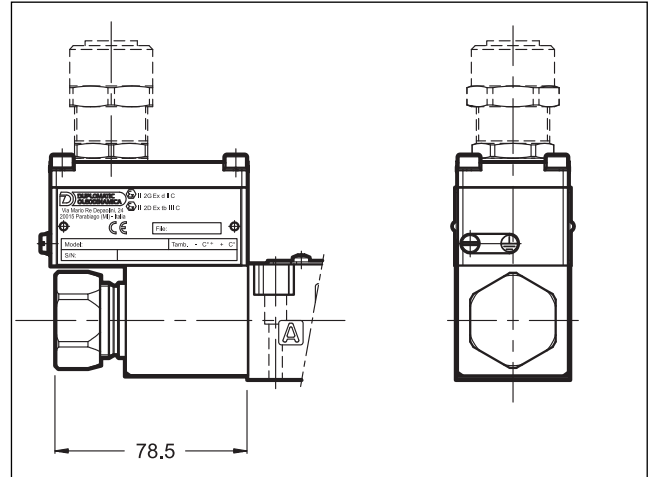
To access the manual override loose the ring nut and remove it; then reassemble hand tightening, until it stops.

**Activate the manual override always and only with non-sparking tools suitable for use in ATEX areas classified.**

More information on safe use of ATEX classified components are provided in the instruction manual, always supplied with the valve.

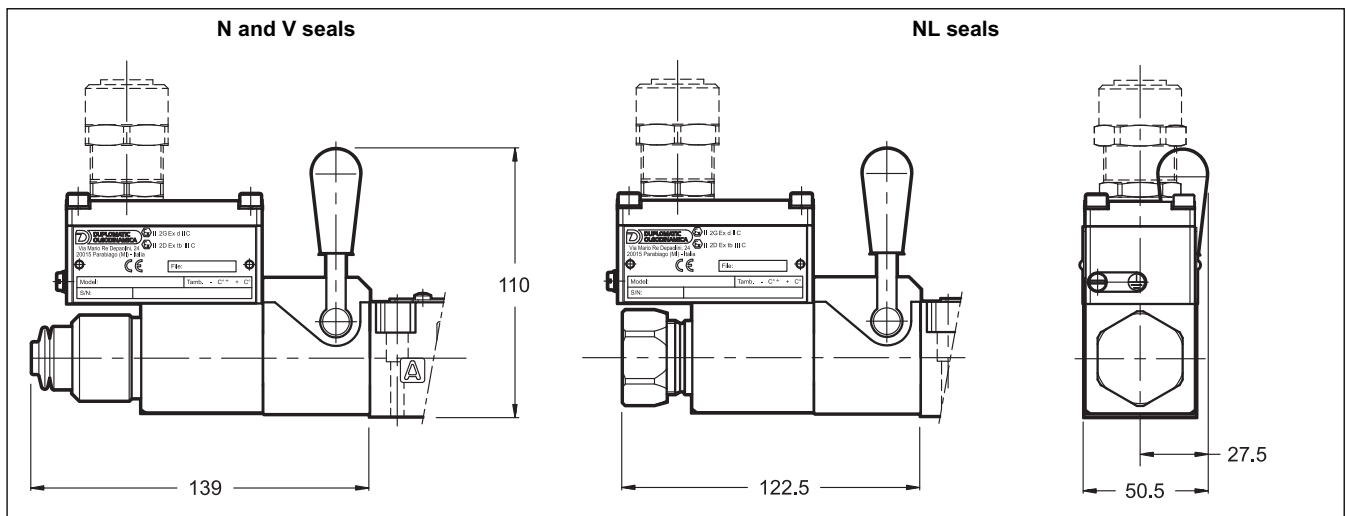


**CAUTION!** The manual override doesn't allow any proportional regulation; indeed using this kind of override, the main stage spool will open completely and the whole inlet pressure will pass through A or B line.



### 18.2 - CH - Lever manual override

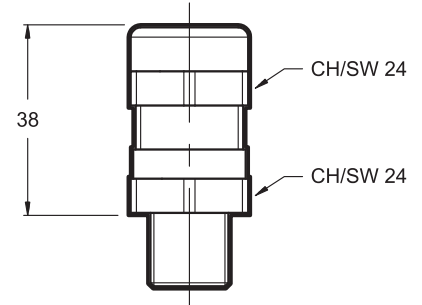
The seals choice leads the type of the standard ring nut to be mounted.



## 19 - CABLE GLANDS

Cable glands must be ordered separately; Diplomatic offers some types of cable glands with the following features:

- version for non-armoured cable, external seal on the cable (suitable for  $\varnothing 8+10$  mm cables);
- ATEX II 2GD and I M2 certified
- cable gland material: nickel brass
- rubber tip material: silicone
- ambient temperature range:  $-70^{\circ}\text{C} + +220^{\circ}\text{C}$
- protection degree: IP66/IP68
- Tightening torque: 15 Nm



To order, list the description and the code of the version chosen from among those listed below:

**Description: CGK2/NB-01/10**

**Code: 3908108001**

M20x1.5 - ISO 261 male thread, suitable for coils with T01 and S01 connections. It is supplied equipped with silicone seal, that must be assembled between the cable gland and the coil, so as to ensure IP66/IP68 protection degree.

**Description: CGK2/NB-03/10**

**Code: 3908108003**

1/2" NPT - ANSI B1.20.1 (ex ANSI B2.1), suitable for coils with T03 and S03 connections. The customer must apply LOCTITE® 243™ threadlocker or similar between the cable gland connection thread and the coil in order to ensure IP66/IP68 protection degree.

**Description: CGK2/NB-02/10**

**Code: 3908108002**

Gk 1/2 - UNI EN 10226-2 male thread, suitable for coils with T02 and S02 connections. The customer must apply LOCTITE® 243™ threadlocker or similar between the cable gland connection thread and the coil in order to ensure IP66/IP68 protection degree.

**Description: CGK2/NB-04/10**

**Code: 3908108004**

M16x1.5 - ISO 261 male thread, suitable for coils with S04 connection. It is supplied equipped with silicone seal, that must be assembled between the cable gland and the coil, so as to ensure IP66/IP68 protection degree.

## 20 - 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.

## 21 - INSTALLATION

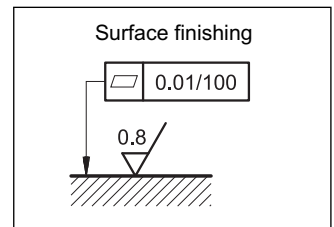


**Installation must adhere to instructions reported in the *Use and Maintenance* manual, always attached to the valve. Unauthorized interventions can be harmful to people and goods because of the explosion hazards present in ATEX classified areas .**

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.





## 22 - SUBPLATES

(see catalogue 51 000)

	DS3K*	DSP5K*	DSP7K*	DSP8K*
Type with rear ports	PMMD-AI3G	PME4-AI5G	PME07-AI6G	-
Type with side ports	PMMD-AL3G	PME4-AL5G	PME07-AL6G	PME5-AL8G
P, T, A, B ports dimensions	3/8" BSP	3/4" BSP	1" BSP	1 1/2" BSP
X, Y ports dimensions	-	1/4" BSP	1/4" BSP	1/4" BSP

**NOTE:** Subplates (to be ordered separately) do not contain neither aluminium nor magnesium at a higher rate than the value allowed by norms according to ATEX directive for categories II 2GD and I M2 .

The user must take care and make a complete assessment of the ignition risk, that can occur from the relative use in potentially explosive environments.

## 23 - ELECTRONIC CONTROL UNITS

### DSE3K\* - \*\* SA

### DSE3K\* - \*\* SB

EDM-M112	for solenoid 24V DC	DIN EN 50022 rail mounting	see cat. 89 250
EDM-M142	for solenoid 12V DC		

**NOTE:** electronic control units offered are not certified according to ATEX 94/9/EC Directive; therefore, they must be installed outside the classified area.

### DSE3K\* - A\*

### DSE3K\* - C\*

EDM-M212	for solenoid 24V DC	DIN EN 50022 rail mounting	see cat. 89 250
EDM-M242	for solenoid 12V DC		

### DSPE\*K\* - \*\* SA

### DSPE\*K\* - \*\* SB

EDM-M111	for solenoid 24V DC	DIN EN 50022 rail mounting	see cat. 89 250
EDM-M141	for solenoid 12V DC		

### DSPE\*K\* - A\*

### DSPE\*K\* - C\*

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



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