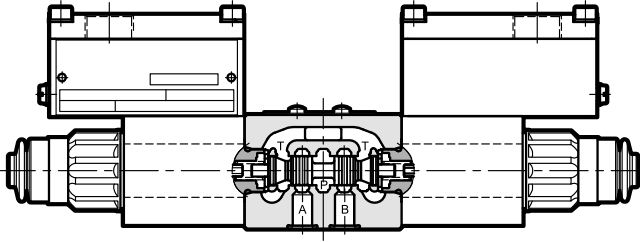


# D\*K\*

## EXPLOSION-PROOF SOLENOID OPERATED DIRECTIONAL CONTROL VALVES ATEX, IECEx, INMETRO, PESO

DS3K*	ISO 4401-03
DL5BK*	ISO 4401-05
DSP5K*	CETOP P05
DSP5RK*	ISO 4401-05
DSP7K*	ISO 4401-07
DSP8K*	ISO 4401-08
DSP10K*	ISO 4401-10

### OPERATING PRINCIPLE



- The direct operated directional valves are available in ISO 4401-03 and ISO 4401-05 size; available pilot operated sizes are: CETOP P05, ISO 4401-05, ISO 4401-07, ISO 4401-08 and ISO 4401-10.
- They are compliant with ATEX, IECEx, INMETRO or PESO requirements and are suitable for use in potentially explosive atmospheres, for surface plants or mines.
- A low temperature version (up to -40 °C) is also available.
- DS3K\* and DL5BK\* valves are supplied with a zinc-nickel finishing surface treatment that ensures a salt spray resistance up to 600 h; for DSP\*K\* valves, this treatment is available upon request.
- Details for classification, operating temperatures and electrical characteristics are in the technical data sheet 02 500 'Explosion proof classification'.

### PERFORMANCES

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

		DS3K*	DL5BK*	DSP5K* DSP5RK*	DSP7K*	DSP8K*	DSP10K*
Maximum operating pressure							
P - A - B ports	bar	350	320	320	350	350	350
T port		210	210	see operating limits at point 7			
Maximum flow from P port to A - B - T	l/min	80	125	150	300	600	1100
Operating temperatures (ambient and fluid)	°C	see data sheet 02 500					
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	kg	1,8	2,7	6,8	8,6	15,5	38,5
double solenoid valve		2,8	3,8	7,8	9,6	16,5	39,5

Архангельск (8182)63-90-72  
Астана (7172)727-132  
Астрахань (8512)99-46-04  
Барнаул (3852)73-04-60  
Белгород (4722)40-23-64  
Брянск (4832)59-03-52  
Владивосток (423)249-28-31  
Волгоград (844)278-03-48  
Вологда (8172)26-41-59  
Воронеж (473)204-51-73  
Екатеринбург (343)384-55-89  
Иваново (4932)77-34-06

Ижевск (3412)26-03-58  
Иркутск (395)279-98-46  
Казань (843)206-01-48  
Калининград (4012)72-03-81  
Калуга (4842)92-23-67  
Кемерово (3842)65-04-62  
Киров (8332)68-02-04  
Краснодар (861)203-40-90  
Красноярск (391)204-63-61  
Курск (4712)77-13-04  
Липецк (4742)52-20-81

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

Пермь (342)205-81-47  
Ростов-на-Дону (863)308-18-15  
Рязань (4912)46-61-64  
Самара (846)206-03-16  
Санкт-Петербург (812)309-46-40  
Саратов (845)249-38-78  
Севастополь (8692)22-31-93  
Симферополь (3652)67-13-56  
Смоленск (4812)29-41-54  
Сочи (862)225-72-31  
Ставрополь (8652)20-65-13

Сургут (3462)77-98-35  
Тверь (4822)63-31-35  
Томск (3822)98-41-53  
Тула (4872)74-02-29  
Тюмень (3452)66-21-18  
Ульяновск (8422)24-23-59  
Уфа (347)229-48-12  
Хабаровск (4212)92-98-04  
Челябинск (351)202-03-61  
Череповец (8202)49-02-64  
Ярославль (4852)69-52-93

Киргизия (996)312-96-26-47

Россия (495)268-04-70

Казахстан (772)734-952-31

<https://diplomatic.nt-rt.ru/> || [dcw@nt-rt.ru](mailto:dcw@nt-rt.ru)

## 1 - IDENTIFICATION OF DIRECT OPERATED SOLENOID VALVES

<b>D</b>			<b>-</b>		<b>/ 10</b>		<b>-</b>		<b>K9</b>		<b>/</b>	
----------	--	--	----------	--	-------------	--	----------	--	-----------	--	----------	--

Direct operated solenoid valve

Size: \_\_\_\_\_  
**S3** = ISO 4401-03  
**L5B** = ISO 4401-05

Explosion-proof certification: \_\_\_\_\_  
**See table 1.1**

Spool type (see par. 1.2) \_\_\_\_\_  
**S\***    **TA**    **TB**    **RK**  
**SA\***   **TA02**   **TB02**  
**SB\***   **TA23**   **TB23**

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)

Option: **/T5**  
 version in T5 temperature class.  
 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  
**CK1** = knob manual override  
 (DC version only)  
**CH** = lever manual override.  
 not available for DL5BK\*, DS3K\*-TB and DS3K\*-TB\*  
 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  
 not available for INMETRO  
**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  
 not available for INMETRO  
**S03** = 1/2" NPT - ANSI B1.20.1 (ex ANSI B2.1)  
**S04** = M16x1.5 - ISO 261

Coil electrical connection: junction box

Power supply:  
 Direct current (DC)  
**D12** = 12 V  
**D24** = 24 V  
**D48** = 48 V  
**D110** = 110 V  
 Alternate current with built-in rectifier bridge (RAC)  
**R120** = 120 V  
**R240** = 240 V

**NOTE:** Valves are supplied with zinc-nickel surface treatment, that is 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).

**Version with monobloc steel coil**  
 Standard coils are made of zinc-nickel steel, with anodized aluminium junction box on it.  
 Monobloc coils **MD24K9S01** completely made of steel are available upon request. They have zinc-nickel treatment, power supply voltage D24 and cable gland connection type S01. Other variants for voltage and cable gland connection are available, always on request.

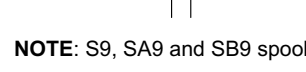
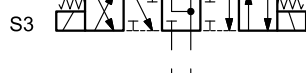
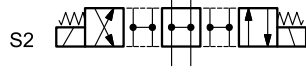
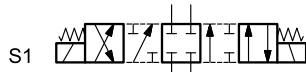
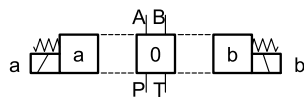
## 1.1 - Names of valves per certification

	ATEX		IECEX		INMETRO		PESO	
for gases for dusts	<b>KD2</b>	II 2GD	<b>KXD2</b>	IECEX Gb IECEX Db	<b>KBD2</b>	INMETRO Gb INMETRO Db	<b>KPD2</b>	PESO Gb not applicable for dust
for mines	<b>KDM2</b>	I M2	<b>KXDM2</b>	IECEX Mb	<b>KBDM2</b>	INMETRO Mb	not applicable for mines	

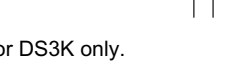
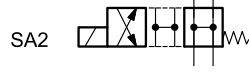
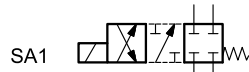
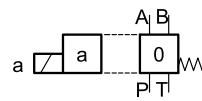
**NOTE:** Refer to the technical data sheet 02 500 for marking, operating temperatures and available versions.

## 1.2 - Available spools

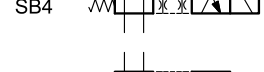
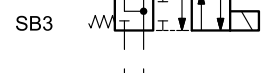
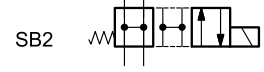
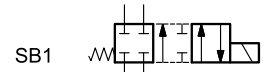
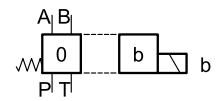
**Version S\*:**  
2 solenoids - 3 positions  
with spring centering



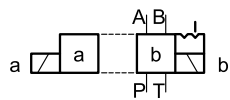
**Version SA\*:**  
1 solenoid side A  
2 positions (central + external)  
with spring centering



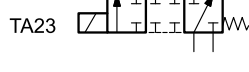
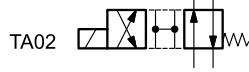
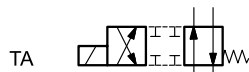
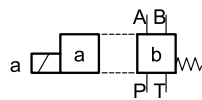
**Version SB\*:**  
1 solenoid side B  
2 positions (central + external)  
with spring centering



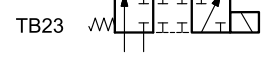
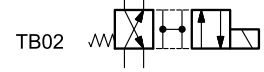
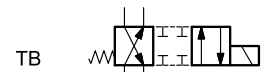
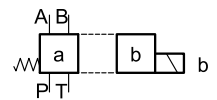
**Version RK:**  
2 solenoids - 2 positions  
with mechanical detent



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



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

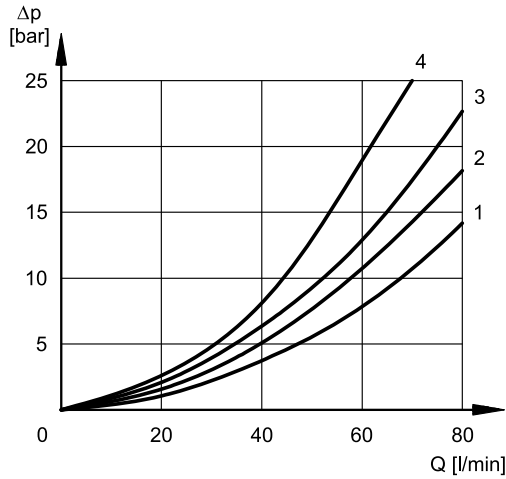


**NOTE:** TA02/TB02  
spools are not available  
for RAC solenoid valves.

## 2 - CHARACTERISTIC CURVES AND PERFORMANCES OF DIRECT OPERATED SOLENOID VALVES

### 2.1 - Pressure drops $\Delta p$ -Q

(values obtained with viscosity 36 cSt at 50 °C)



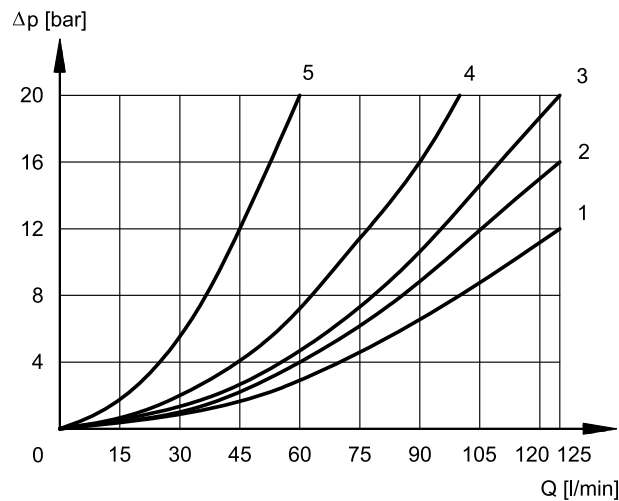
DS3K\*

#### ENERGIZED VALVE

SPOOL	FLOW DIRECTION			
	P→A	P→B	A→T	B→T
	CURVES ON GRAPH			
S1, SA1, SB2	2	2	3	3
S2, SA2, SB2	1	1	3	3
S3, SA3, SB3	3	3	1	1
S4, SA4, SB4	4	4	4	4
S9, SA9, SB9	2	2	3	3
TA, TB	3	3	3	3
TA02, TB02	2	2	2	2
TA23, TB23	3	3	-	-
RK	2	2	2	2

#### DE-ENERGIZED VALVE

SPOOL	FLOW DIRECTION				
	P→A	P→B	A→T	B→T	P→T
	CURVES ON GRAPH				
S2, SA2, SB2	-	-	-	-	2
S3, SA3, SB3	-	-	3	3	-
S4, SA4, SB4	-	-	-	-	3



DL5BK\*

#### ENERGIZED VALVE

SPOOL	FLOW DIRECTIONS			
	P→A	P→B	A→T	B→T
	CURVES ON GRAPHS			
S1	1	1	2	2
S2	1	1	1	1
S3	1	1	1	1
S4	4	4	4	4
RK	2	2	2	2
TA	2	2	3	3
TA02	2	2	1	1
TA23	3	3	-	-

#### DE-ENERGIZED VALVE

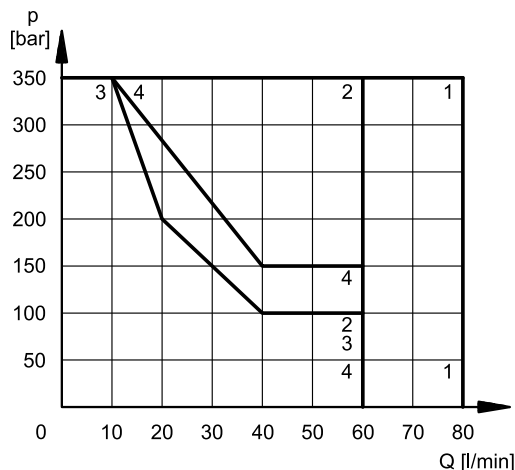
SPOOL	FLOW DIRECTIONS		
	A→T	B→T	P→T
	CURVES ON GRAPHS		
S2	-	-	1
S3	5	5	-
S4	-	-	1

## 2.2 - Performance limits

The curves define the flow rate operating fields according to the valve pressure of the different versions. The values have been obtained according to ISO 6403 norm with solenoids at rated temperature and supplied with voltage equal to 90% of the nominal voltage, with mineral oil with viscosity 36 cSt, temperature 50 °C and filtration according to ISO 4406:1999 class 18/16/13.

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.

### DS3K\*



#### DC SOLENOID VALVE

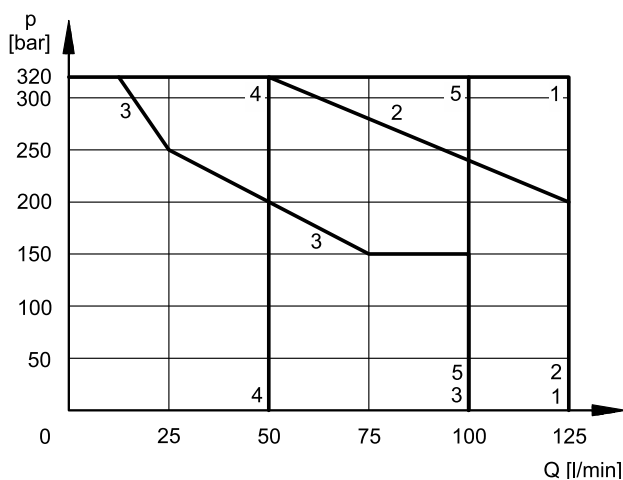
SPOOL	CURVE	
	P→A	P→B
S1, SA1, SB1	1	1
S2, SA2, SB2	2	2
S3, SA3, SB3	3	3
S4, SA4, SB4	2	2
S9, SA9, SB9	1	1
TA, TB	1	1
TA02, TB02	4	4
TA23, TB23	4	4
RK	1	1

#### RAC SOLENOID VALVE

SPOOL	CURVE	
	P→A	P→B
S1, SA1, SB1	1	1
S2, SA2, SB2	2	2
S3, SA3, SB3	3	3
S4, SA4, SB4	4	4
S9, SA9, SB9	1	1
TA, TB	1	1
TA02 *, TB02 *		
TA23, TB23	4	4
RK	1	1

\* not available

### DL5BK\*



SPOOL	CURVE
S1, S2, RK	1
TA02	2
S3	3
S4	4
TA, TA23	5

## 2.3 - Switching times

The indicated values are obtained according to ISO 6403 standard, with mineral oil viscosity 36 cSt at 50°C.

TIMES [ms]	DS3K*		DL5BK*	
	ENERGIZING	DE-ENERGIZING	ENERGIZING	DE-ENERGIZING
DC	60	40	70 ÷ 100	15 ÷ 20
RAC	60	140	70 ÷ 100	140

### 3 - ELECTRICAL CHARACTERISTICS

(values  $\pm 5\%$ )

Coil type	Nominal voltage [V]	Resistance at 20°C [Ω]	Current consumpt. [A]	Power consumpt. [W]
<b>D12</b>	12	7,2	1,7	20
<b>D24</b>	24	28,7	0,83	20
<b>D48</b>	48	115	0,42	20
<b>D110</b>	110	549	0,2	22

Coil type (NOTE)	Nominal voltage [V]	Freq. [Hz]	Resistance at 20°C [Ω]	Current consumpt. [A]	Power consumpt. [VA]
<b>R120</b>	110V-50Hz 120V-60Hz	50/60	489,6	0,19	21
				0,21	25
<b>R240</b>	230V-50Hz 240V-60Hz	50/60	2067,7	0,098	22,5
				0,1	24

<b>VOLTAGE SUPPLY FLUCTUATION</b> (ripple included)	$\pm 10\% V_{nom}$
<b>MAX SWITCH ON FREQUENCY</b> DS3K*, DL5BK* DSP5K*, DSP5RK* DSP7K* DSP8K* DSP10K*	8.000 ins/hr 6.000 ins/hr 6.000 ins/hr 4.000 ins/hr 3.000 ins/hr
<b>DUTY CYCLE</b>	100%
<b>ELECTROMAGNETIC COMPATIBILITY (EMC)</b>	According to 2014/30/EU
<b>CLASS OF PROTECTION:</b> Atmospheric agents Coil insulation (VDE 0580)	IP66 / IP68 class H

**NOTE:** type R\* coils are for alternating current supply for both 50 or 60 Hz. For R\* coils the resistance can not be measured in the usual way because of the presence of diodes bridge inside the coil.

#### 3.1 - 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.

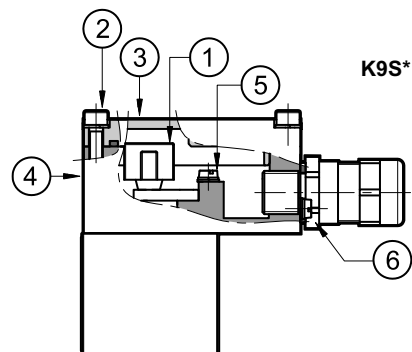
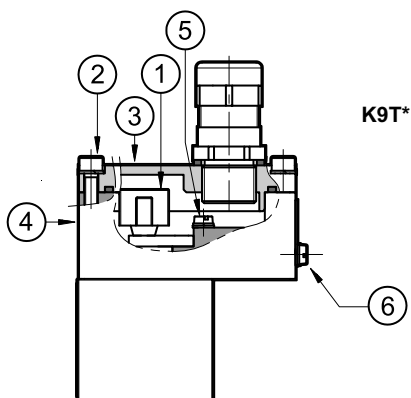
**The electrical connection is polarity-independent.**

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 in compliance with standards about protection against explosion hazards.



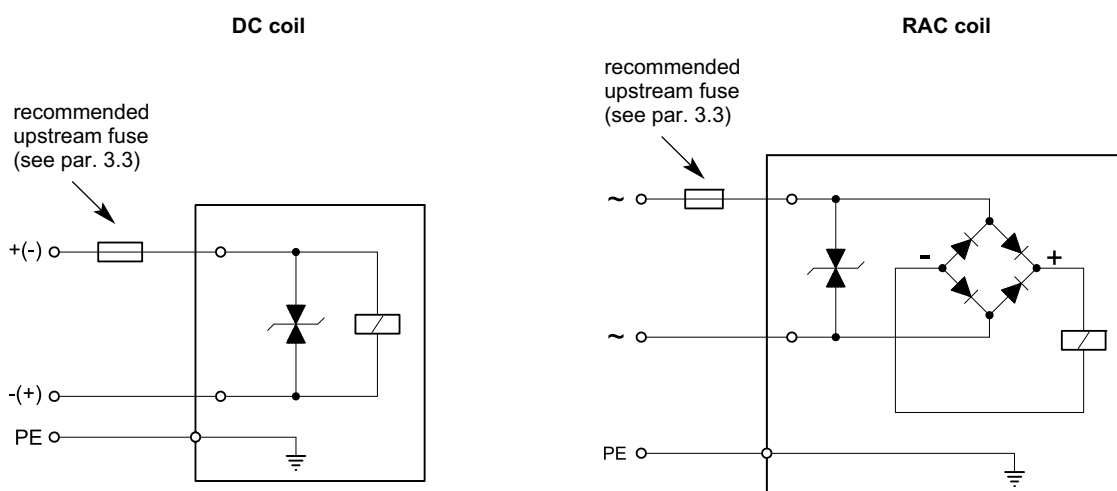
Characteristics of the cables connectable for wiring are indicated in the table below:

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 point 19) allow to use cables with external diameter between 8 and 10 mm.

### 3.2 - Electrical diagrams



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

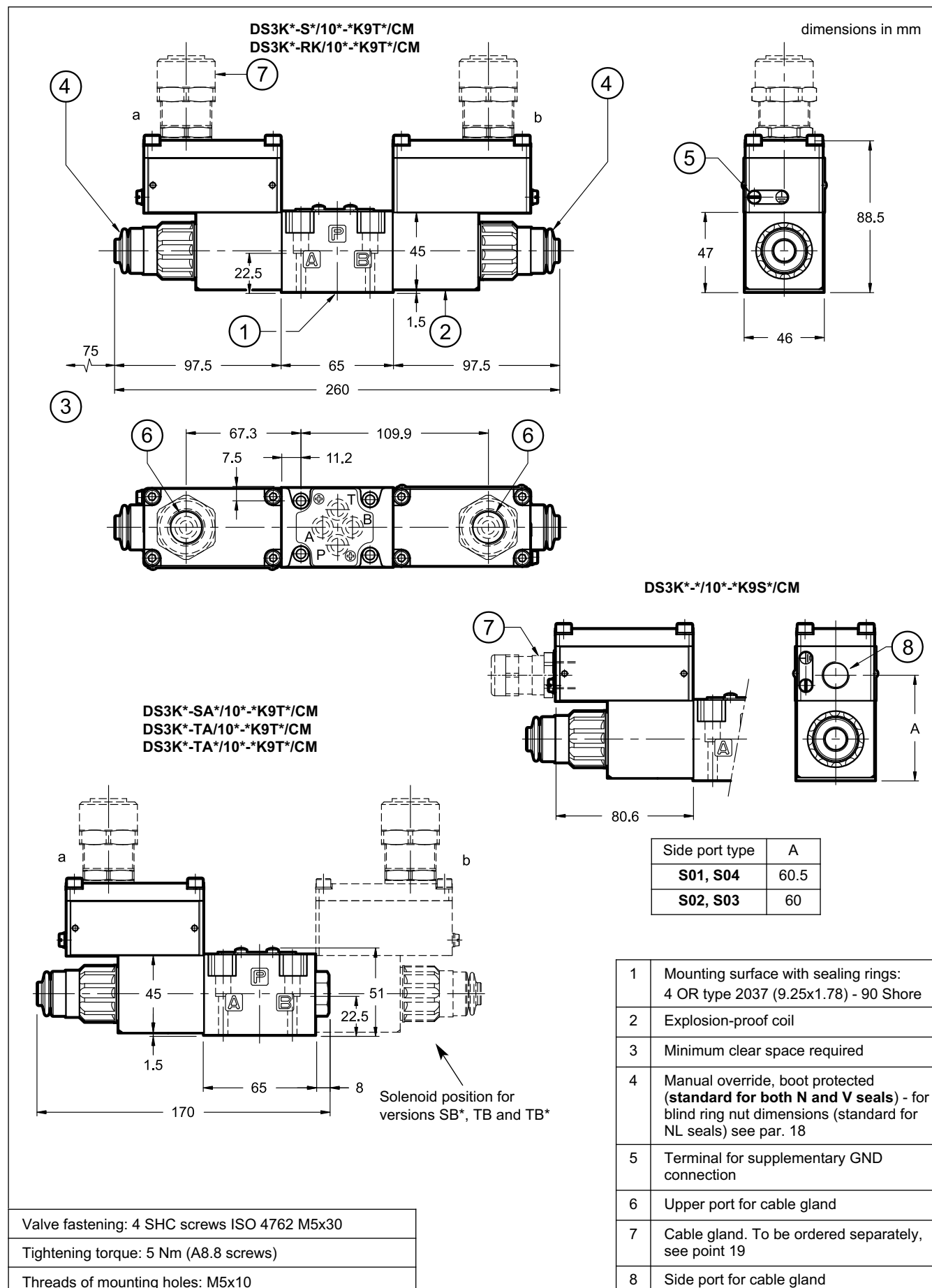
Upstream of each valve, an appropriate fuse (max 3 x I<sub>n</sub> according to IEC 60127) or a protective motor switch with short-circuit and thermal instantaneous tripping, as short-circuit protection, must be connected. The cut-off power of the fuse must correspond or exceed the short circuit current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

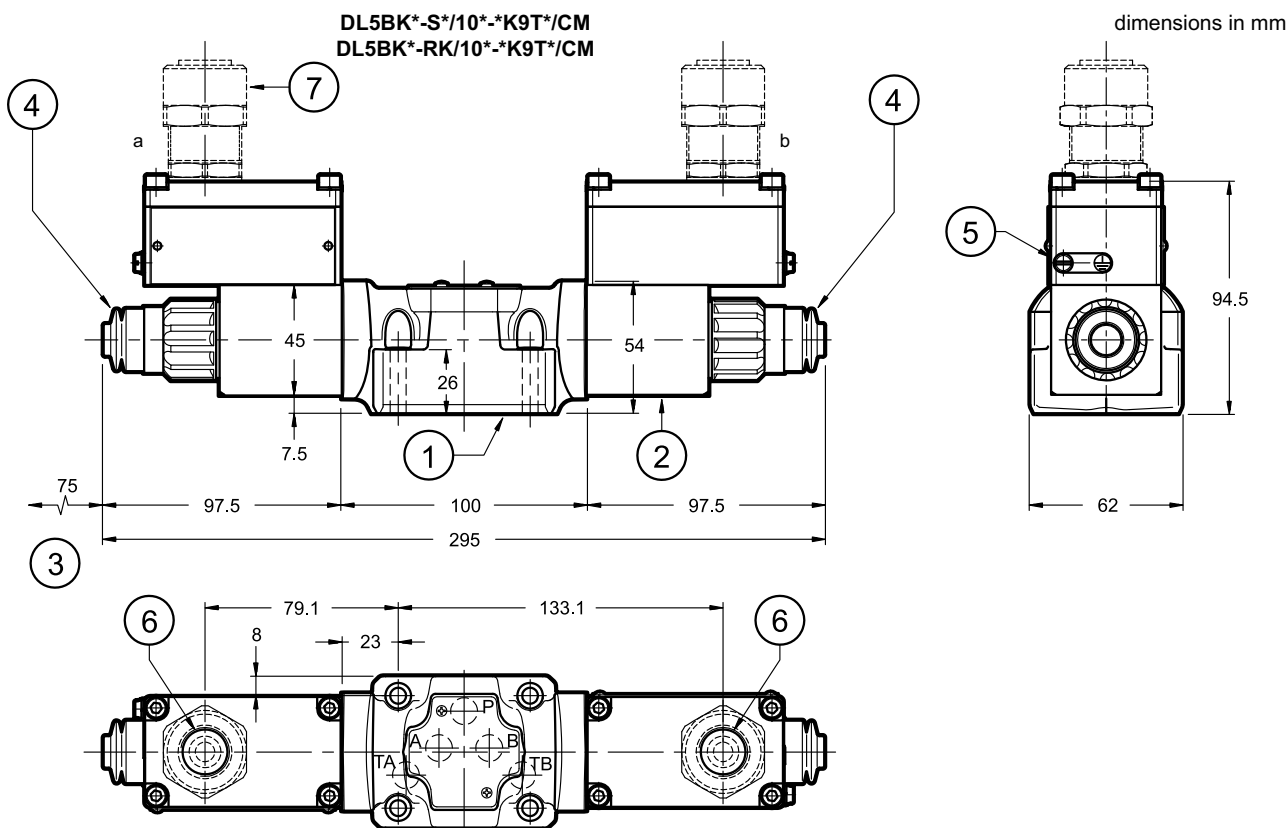
The table shows the type of fuse recommended according to the nominal voltage of the valve and to the value of the voltage peaks reduction.

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
<b>D12</b>	12	1,7	2,5	- 49	Transient voltage suppressor bidirectional
<b>D24</b>	24	0,83	1,25	- 49	
<b>D48</b>	48	0,42	0,6	- 81	
<b>D110</b>	110	0,2	0,3	- 309	
<b>R120</b>	120	0,21	0,3	- 3	
<b>R240</b>	240	0,1	0,15	- 3	

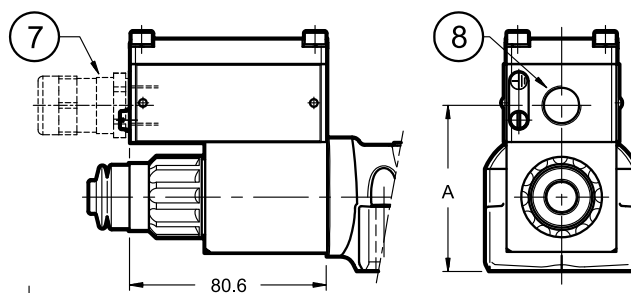
## 4 - OVERALL AND MOUNTING DIMENSIONS OF DIRECT OPERATED VALVES





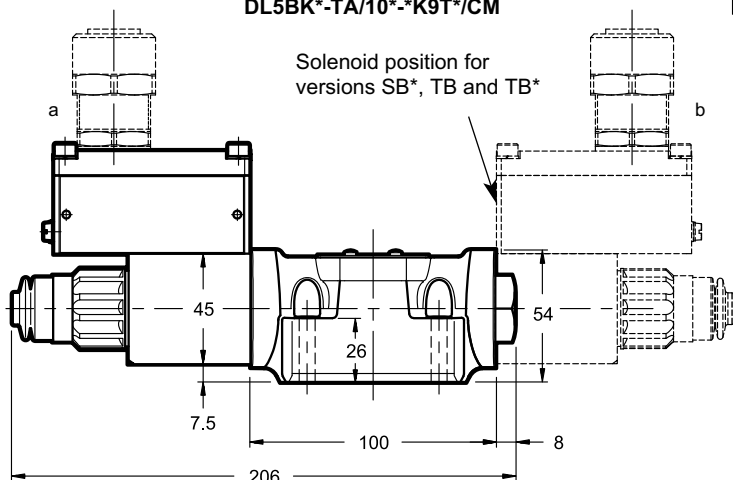


DL5BK\*-/10\*-\*K9S\*/CM



DL5BK\*-SA\*/10\*-\*K9T\*/CM  
DL5BK\*-TA/10\*-\*K9T\*/CM

Solenoid position for  
versions SB\*, TB and TB\*



Side port type	Dimension A
<b>S01, S04</b>	66.5
<b>S02, S03</b>	66

Valve fastening: 4 SHC screws ISO 4762 M6x35
Tightening torque: 8 Nm (A8.8 screws)
Threads of mounting holes: M6x10

1	Mounting surface with sealing rings: 5 OR type 2050 (12.42x1.78) - 90 Shore
2	Explosion-proof coil
3	Minimum clear space required
4	Manual override, boot protected <b>(standard for both N and V seals)</b> - for blind ring nut dimensions (standard for NL seals) see par. 18
5	Terminal for supplementary GND connection
6	Upper port for cable gland
7	Cable gland. To be ordered separately, see point 19
8	Side port for cable gland

**5 - IDENTIFICATION OF PILOT OPERATED SOLENOID VALVES**

<b>DSP</b>			-		/	10		-		/		/		K9		/			
------------	--	--	---	--	---	----	--	---	--	---	--	---	--	----	--	---	--	--	--

Pilot operated directional valve

Size: \_\_\_\_\_

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

Explosion-proof certification:  
**See table 1.1**

Spool type (see par. 5.1) \_\_\_\_\_

**S\***    **TA**    **TB**    **RK**  
**SA\***   **TA02**   **TB02**  
**SB\***

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 (not available for spools S2, S4, TA02, TB02, S\*2 and S\*4. If internal piloting should be necessary, choose piloting type C)  
**E** = external  
**C** = internal piloting with backpressure valve (available on DSP7 and DSP8)  
**Z** = internal piloting with 30 bar fixed adjustment pressure reducing valve

Drainage: \_\_\_\_\_

**I** = Internal  
**E** = External

Options: \_\_\_\_\_

**C** = main spool stroke control  
**D** = main spool shifting speed control  
**P08** = Subplate with restrictor Ø0,8 on port P placed under the solenoid valve - for valves DSP5 - DSP5R - DSP7 - DSP8  
**P15** = subplate with restrictor Ø1,5 on port P placed under the solenoid valve - only for valves DSP10

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

Option: **/T5** version in T5 temperature class. 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 point 16

Connection type for cable gland upper connection:  
**T01** = M20x1.5 - ISO 261  
**T02** = Gk 1/2 - UNI EN 10226-2 not available for INMETRO  
**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 not available for INMETRO  
**S03** = 1/2" NPT - ANSI B1.20.1 (ex ANSI B2.1)  
**S04** = M16x1.5 - ISO 261

Coil electrical connection: junction box

Power supply:  
 Direct current (DC)  
**D12** = 12 V  
**D24** = 24 V  
**D48** = 48 V  
**D110** = 110 V  
 Alternate current with built-in rectifier bridge (RAC)  
**R120** = 120 V  
**R240** = 240 V

A version suitable for an operating pressure value of **420 bar** on ports P - A - B is available upon request, except for DSP5K\*-S4, DSP5RK\* and DSP10K\* valves. On this version, the maximum pressure value on port T with external drain and the pilot pressure are equal to 350 bar. The maximum pressure on port T with internal drainage is 210 bar.

Add the letter **H** to request this version (ex. DSP7HK\*).

**NOTE:** Valves are supplied with standard surface treatment of phosphating black for the main body and zinc-nickel for the pilot body.

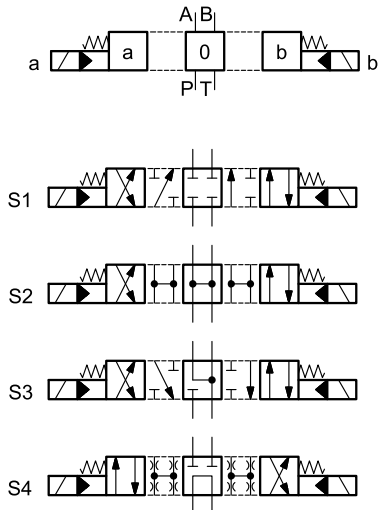
The full zinc-nickel surface treatment is available upon request. It is suitable to ensure a salt spray resistance up to 600 h (test operated according to UNI EN ISO 9227 standards and test evaluation operated according to UNI EN ISO 10289 standards).

For full zinc-nickel surface treatment add the suffix **/W7** at the end of the identification code.

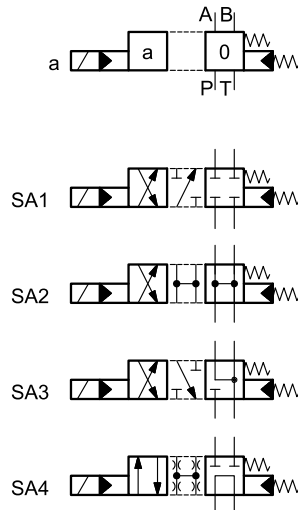
A version with monobloc coils made of steel is available. Please refer to details in page 2.

**5.1 - Spool types**

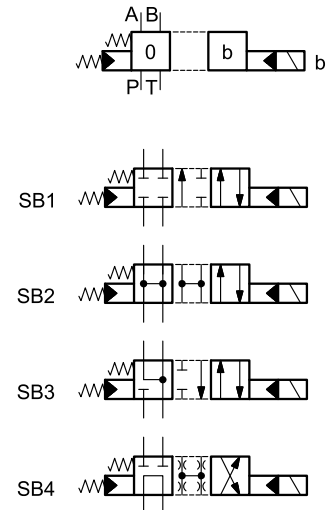
**Version S\*:**  
2 solenoids - 3 positions  
with spring centering



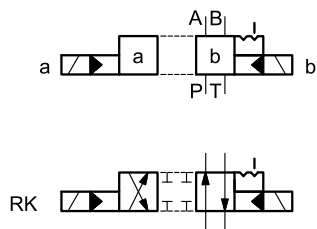
**Version SA\*:**  
1 solenoid side A  
2 positions (central + external)  
with spring centering



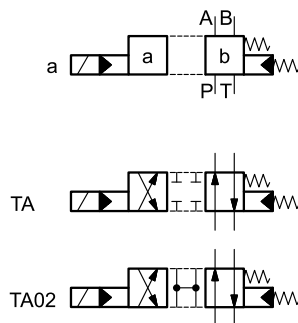
**Version SB\*:**  
1 solenoid side B  
2 positions (central + external)  
with spring centering



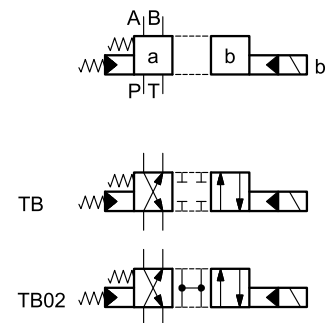
**Version RK:**  
2 solenoids - 2 positions  
with mechanical retention



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



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



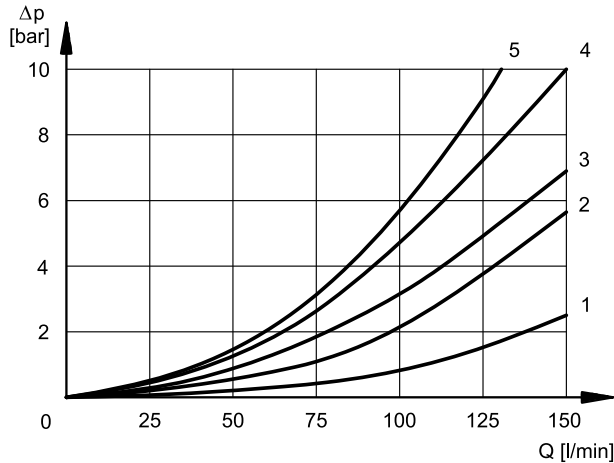


## 6 - CHARACTERISTIC CURVES AND PERFORMANCES OF PILOT OPERATED SOLENOID VALVES

### 6.1 - Pressure drops $\Delta p$ -Q

(values obtained with viscosity 36 cSt at 50 °C)

#### DSP5K\* - DSP5RK\*



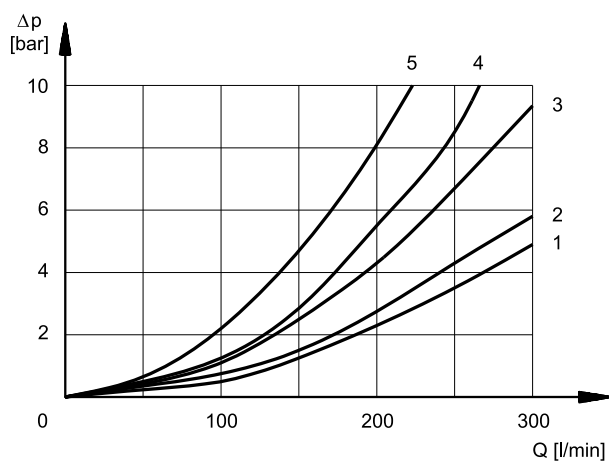
#### ENERGIZED POSITION

SPOOL	FLOW DIRECTION			
	P→A	P→B	A→T	B→T
	CURVES ON GRAPH			
S1, SA1, SB1	4	4	1	1
S2, SA2, SB2	3	3	1	2
S3, SA3, SB3	4	4	1	1
S4, SA4, SB4	5	5	2	3
TA, TB	4	4	1	1
TA02, TB02	3	3	1	1
RK	4	4	1	1

#### DE-ENERGIZED POSITION

SPOOL	FLOW DIRECTION				
	P→A	P→B	A→T	B→T	P→T
	CURVES ON GRAPH				
S2, SA2, SB2	-	-	-	-	5
S3, SA3, SB3	-	-	4	4	-
S4, SA4, SB4	-	-	-	-	5

#### DSP7K\*



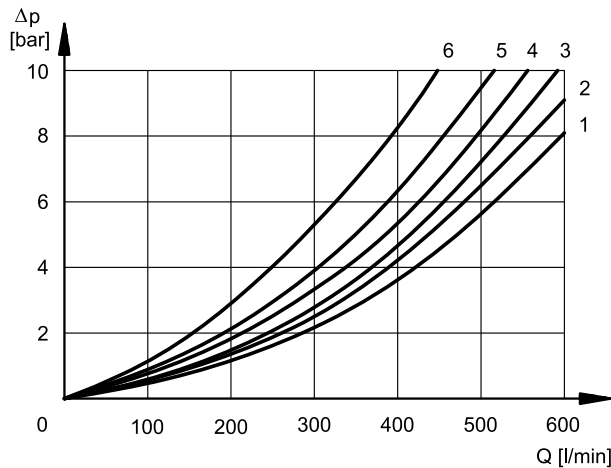
#### ENERGIZED POSITION

SPOOL	FLOW DIRECTION			
	P→A	P→B	A→T	B→T
	CURVES ON GRAPH			
S1, SA1, SB1	1	1	3	4
S2, SA2, SB2	1	1	4	4
S3, SA3, SB3	1	1	4	4
S4, SA4, SB4	2	2	4	5
TA, TB	1	1	3	4
TA02, TB02	1	1	4	4
RK	1	1	3	4

#### DE-ENERGIZED POSITION

SPOOL	FLOW DIRECTION				
	P→A	P→B	A→T	B→T	P→T
	CURVES ON GRAPH				
S2, SA2, SB2	-	-	-	-	2
S3, SA3, SB3	-	-	4	4	-
S4, SA4, SB4	-	-	-	-	4

## DSP8K\*



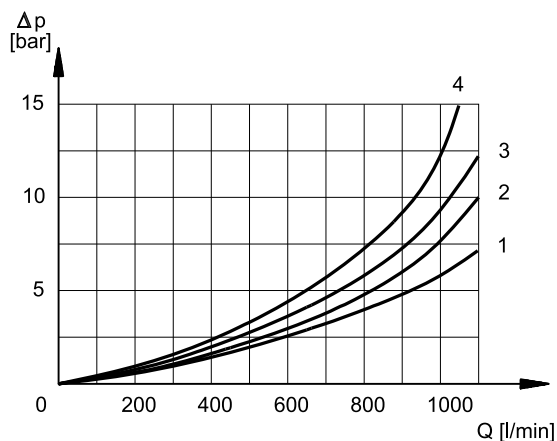
### ENERGIZED POSITION

SPOOL	FLOW DIRECTION			
	P→A	P→B	A→T	B→T
	CURVES ON GRAPH			
S1, SA1, SB1	2	2	3	3
S2, SA2, SB2	1	1	2	1
S3, SA3, SB3	2	2	2	1
S4, SA4, SB4	4	4	3	5
TA, TB	2	2	3	3
TA02, TB02	2	2	3	3
RK	2	2	3	3

### DE-ENERGIZED POSITION

SPOOL	FLOW DIRECTION				
	P→A	P→B	A→T	B→T	P→T
	CURVES ON GRAPH				
S2, SA2, SB2	-	-	-	-	4
S3, SA3, SB3	-	-	4	4	-
S4, SA4, SB4	-	-	-	-	6

## DSP10K\*



### ENERGIZED POSITION

SPOOL	FLOW DIRECTION			
	P→A	P→B	A→T	B→T
	CURVES ON GRAPH			
S1, SA1, SB1	1	1	1	1
S2, SA2, SB2	2	2	2	2
S3, SA3, SB3	1	1	4	4
S4, SA4, SB4	2	2	2	2
TA, TB	1	1	1	1
TA02, TB02	1	1	1	1
RK	1	1	1	1

### DE-ENERGIZED POSITION

SPOOL	FLOW DIRECTION				
	P→A	P→B	A→T	B→T	P→T
	CURVES ON GRAPH				
S2, SA2, SB2	-	-	-	-	3
S3, SA3, SB3	-	-	4	4	-
S4, SA4, SB4	-	-	-	-	4

## 6.2 - Switching times

The values indicated refer to a solenoid valve working with piloting pressure of 100 bar, with mineral oil at a temperature of 50°C, at viscosity of 36 cSt and with PA and BT connections.

The energizing and de-energizing times are obtained at the pressure variation which occurs on the lines.

TIMES (± 10%) [ms]	ENERGIZING	DE- ENERGIZING	
	DC - RAC	DC	RAC
DSP5K* - DSP5RK*	70	60	160
DSP7K*	80	70	170
DSP8K*	90	70	170
DSP10K*	120	90	190

## 7 - HYDRAULIC CHARACTERISTICS

PRESSURES (bar)	DSP5K* DSP5RK*	DSP7K*	DSP8K*	DSP10K*
Max pressure in P, A, B ports	320	350	350	350
Max pressure in T line with external drainage	210	250	210	210
Max pressure in T line with internal drainage	210	210	210	210
Max pressure in Y line with external drainage	210	210	210	210
Min piloting pressure <b>NOTE 1</b>	5 ÷ 12			6 ÷ 12
Max piloting pressure <b>NOTE 2</b>	210	210	210	280

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

**NOTE 2:** if the valve operates 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. 5). Consider that, by adding the pressure reducing valve, the overall dimensions increase 40 mm in height.

MAXIMUM FLOW RATES		DSP5K* DSP5RK*		DSP7K*		DSP8K*		DSP10K*	
Spool type	[l/min]	PRESSURES							
		at 210 bar	at 320 bar	at 210 bar	at 350 bar	at 210 bar	at 350 bar	at 210 bar	at 350 bar
S4 - SA4 - SB4		120	100	200	150	500	450	750 (NOTE)	600 (NOTE)
Other spools		150	120	300	300	600	500	900	700

**NOTE:** for the DSP10K\* valve these values are the same even for S2 - SA2 - SB2 spools.



**8 - PILOT AND DRAIN**

DSP\*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.

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

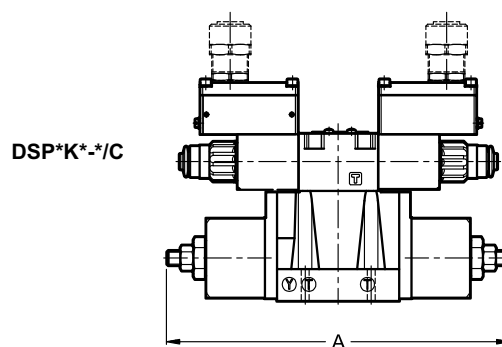
### 9 - OPTIONS

#### 9.1 - Control of the main spool stroke: C

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

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

Add the letter **C** to the identification code to request this device (see point 5).



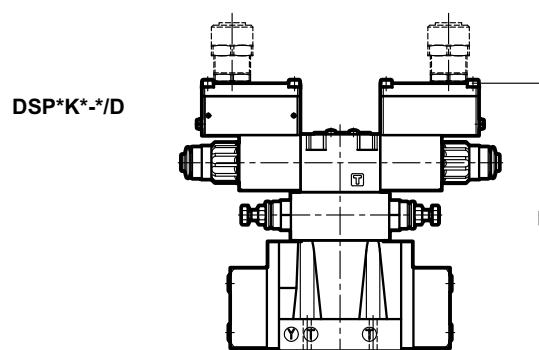
dimensions in mm

	DSP5K* DSP5RK*	DSP7K*	DSP8K*	DSP10K*
A	280	319	401.5	520

#### 9.2 - Control of the main spool shifting speed: D

By placing a MERS type double flow control valve between the pilot solenoid valve and the main distributor, the piloted flow rate can be controlled and therefore the changeover smoothness can be varied.

Add the letter **D** to the identification code to request this device (see point 5).



dimensions in mm

	DSP5K* DSP5RK*	DSP7K*	DSP8K*	DSP10K*
B	218.5	225.5	254.5	310.5

#### 9.3 - Subplate with throttle on line P

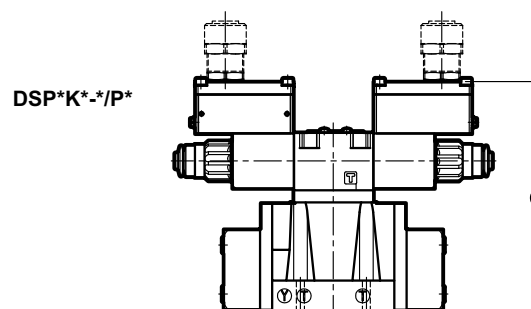
It is possible to introduce a subplate with a restrictor on line P between the pilot solenoid valve and the main distributor.

restrictor Ø0.8 for DSP5K\*, DSP5RK\*, DSP7K\* and DSP8K\*  
restrictor Ø1.5 for DSP10K\*:

To request include in the code (par. 5):

**P08** for DSP5K\*, DSP5RK\*, DSP7K\* and DSP8K\*

**P15** for DSP10K\*

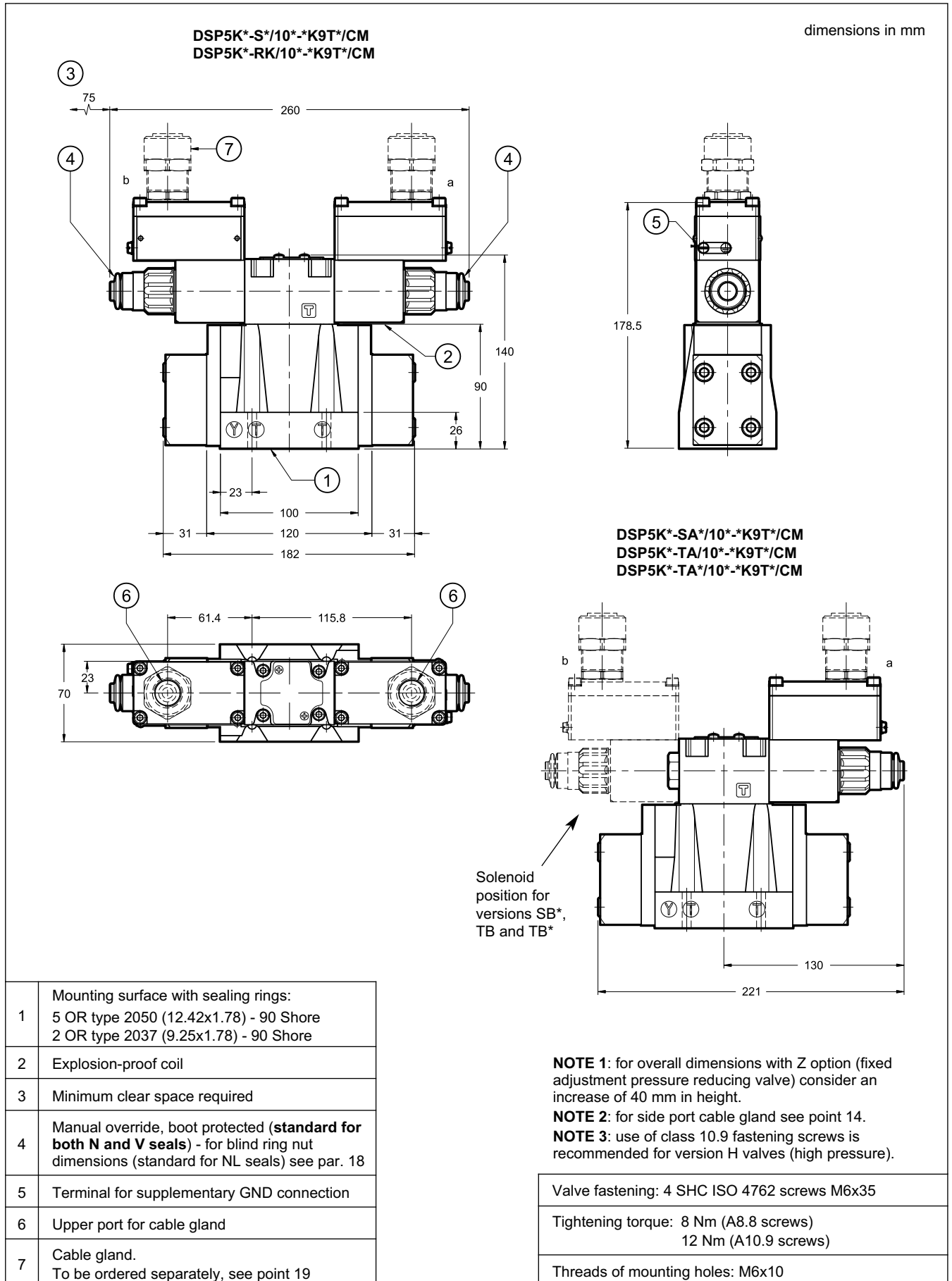


dimensions in mm

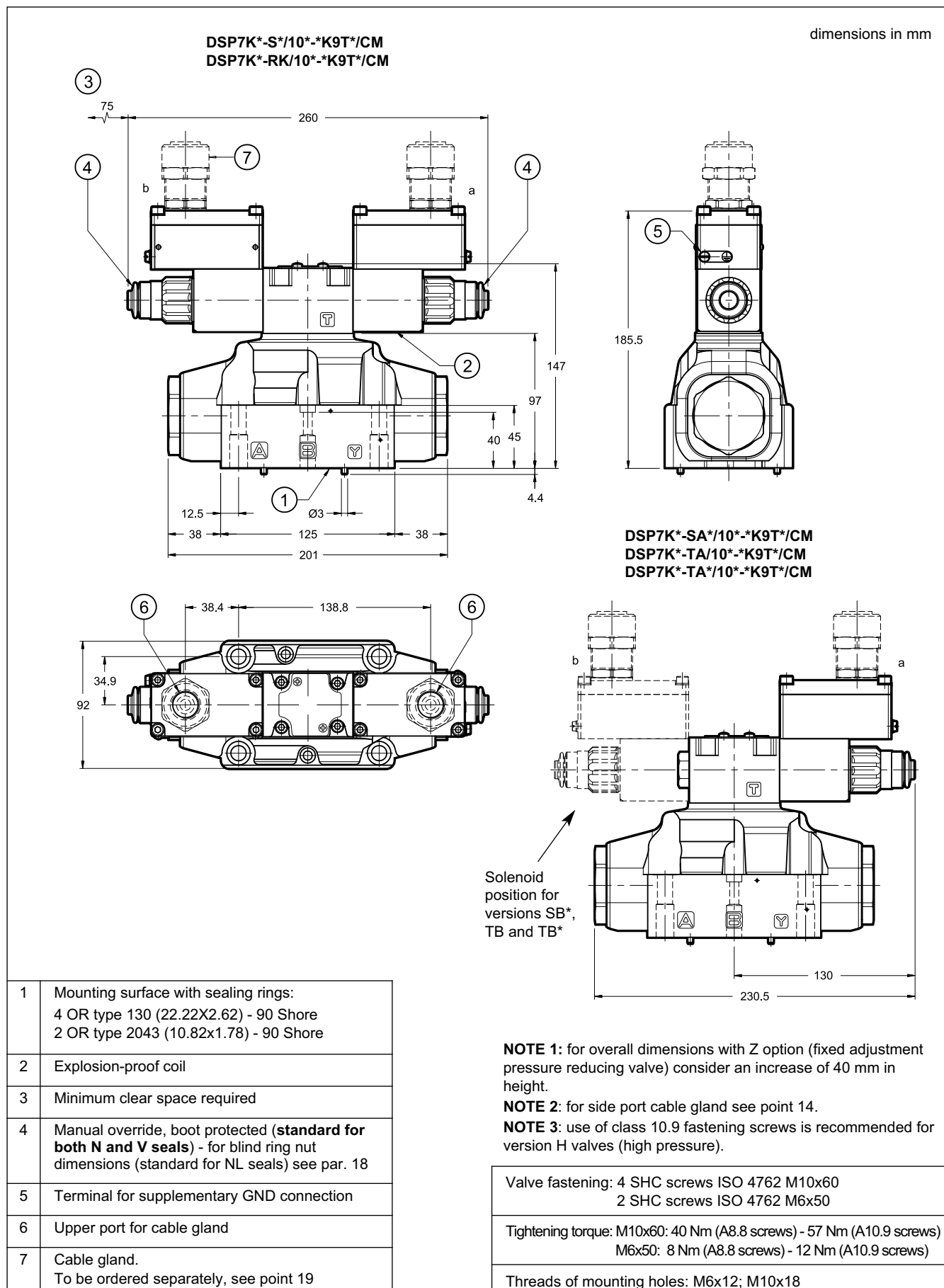
	DSP5K* DSP5RK*	DSP7K*	DSP8K*	DSP10K*
C	188.5	195.5	224.5	280.5

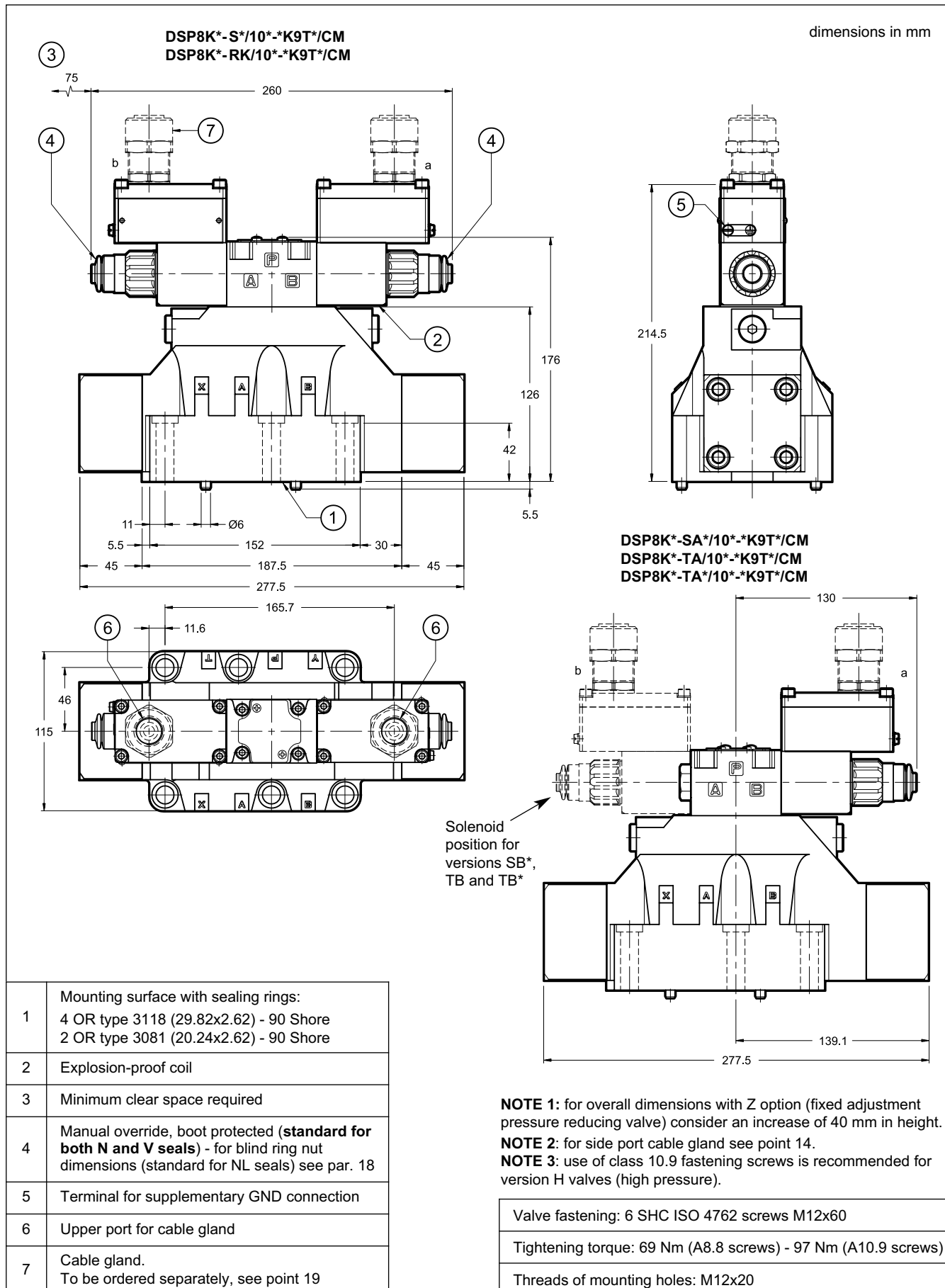


**10 - DSP5K\* AND DSP5RK\* WITH UPPER CONNECTION - OVERALL AND MOUNTING DIMENSIONS**

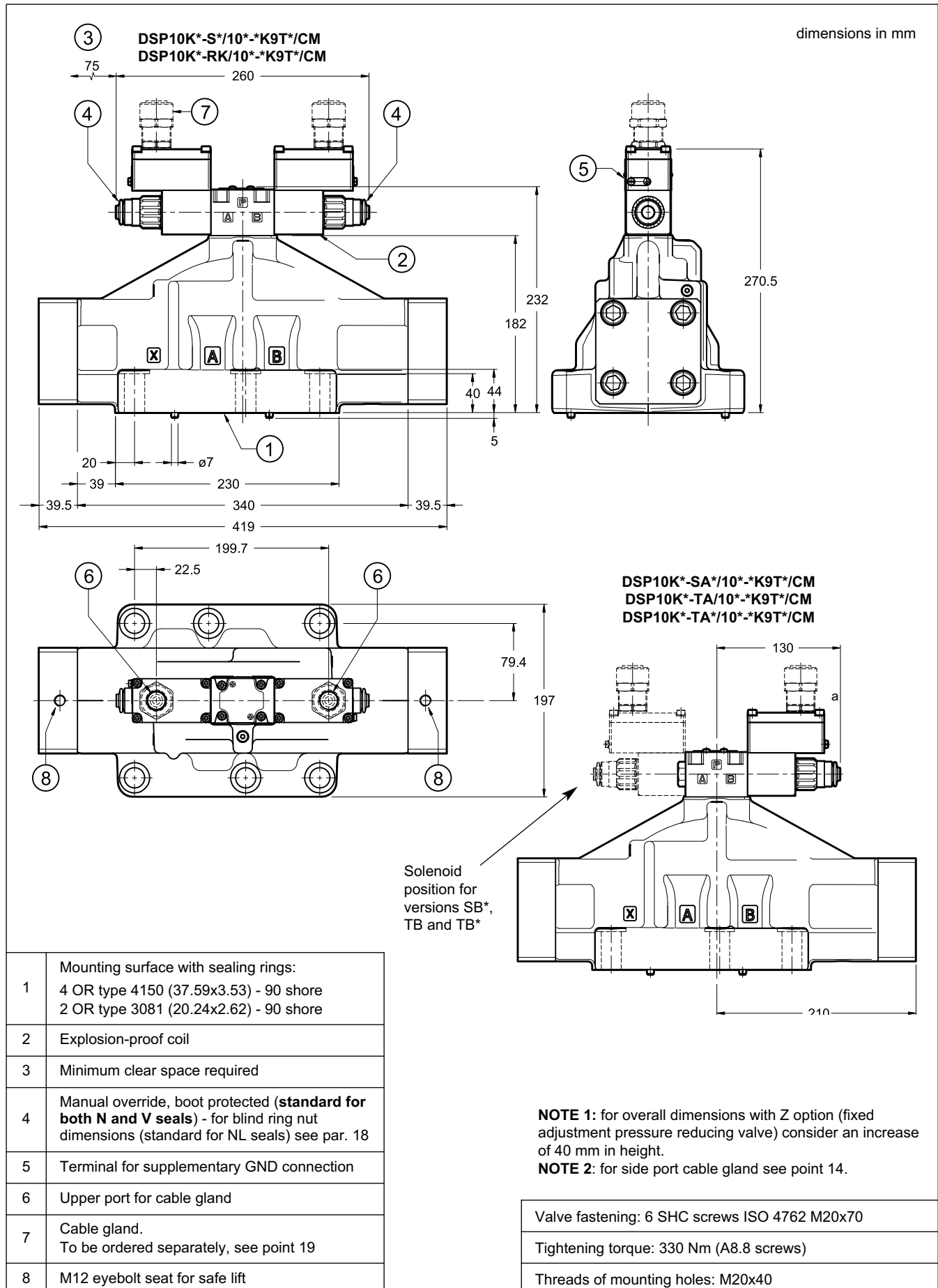


## 11 - DSP7K\* WITH UPPER CONNECTION - OVERALL AND MOUNTING DIMENSIONS



**12 - DSP8K\* WITH UPPER CONNECTION - OVERALL AND MOUNTING DIMENSIONS**


## 13 - DSP10K\* WITH UPPER CONNECTION - OVERALL AND MOUNTING DIMENSIONS

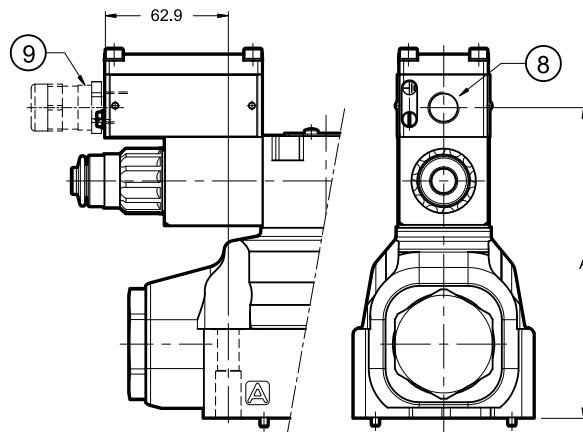
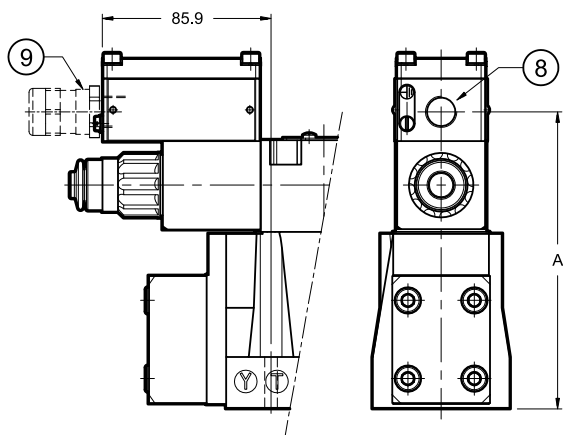


## 14 - DSP\*K\* WITH SIDE CONNECTION - OVERALL AND MOUNTING DIMENSIONS

DSP5K\*-/10\*-\*K9S\*/  
DSP5RK\*-/10\*-\*K9S\*/

DSP7K\*-/10\*-\*K9S\*/

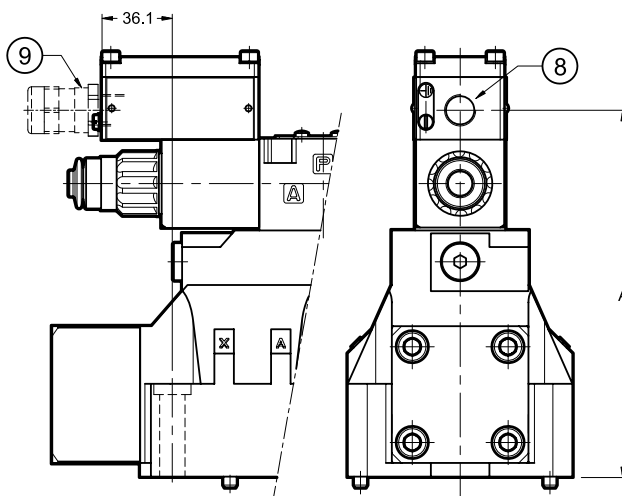
dimensions in mm



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

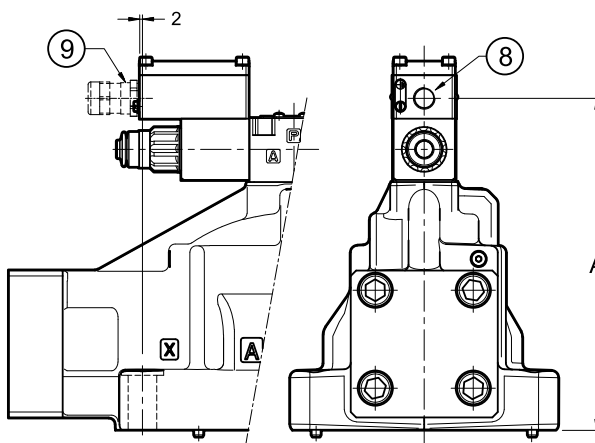
Side port type	A
<b>S01, S04</b>	157.5
<b>S02, S03</b>	157

DSP8K\*-/10\*-\*K9S\*/



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

DSP10K\*-/10\*-\*K9S\*/



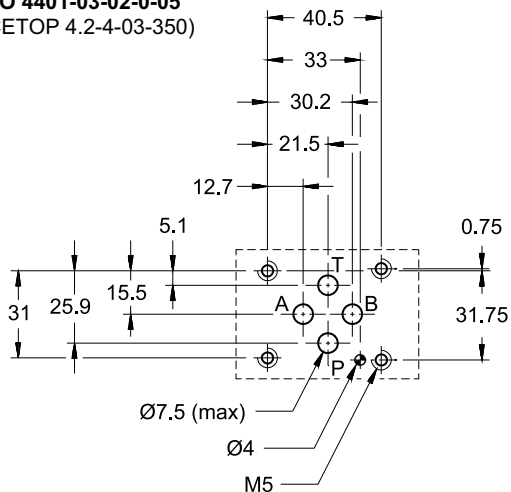
Side port type	A
<b>S01, S04</b>	242.5
<b>S02, S03</b>	242

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

## 15 - MOUNTING SURFACES

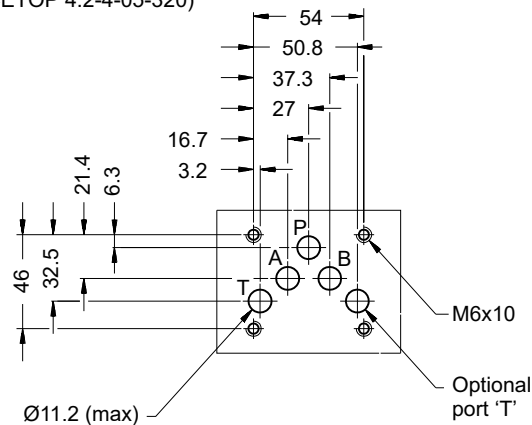
### DS3K\*

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



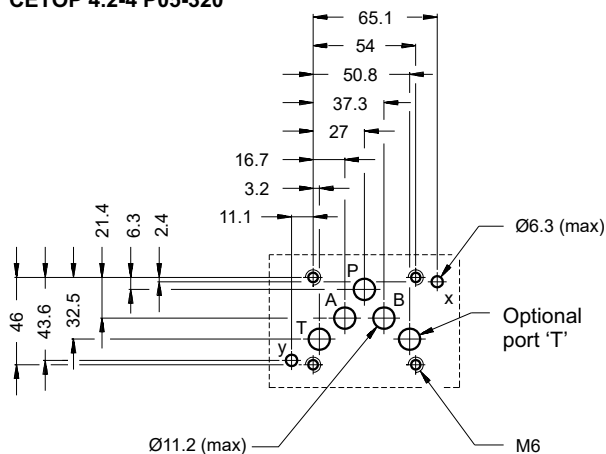
### DL5BK\*

ISO 4401-05-04-0-05  
(CETOP 4.2-4-05-320)



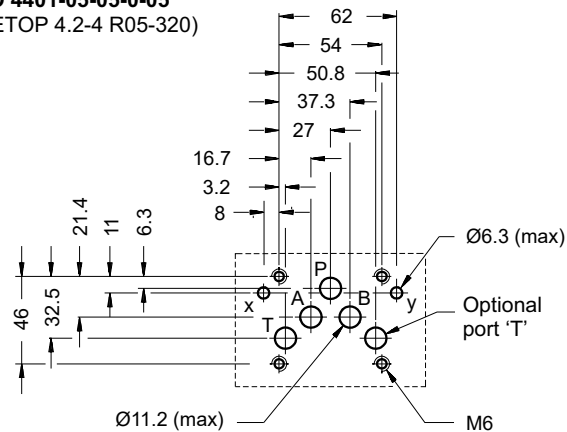
### DSP5K\*

CETOP 4.2-4 P05-320



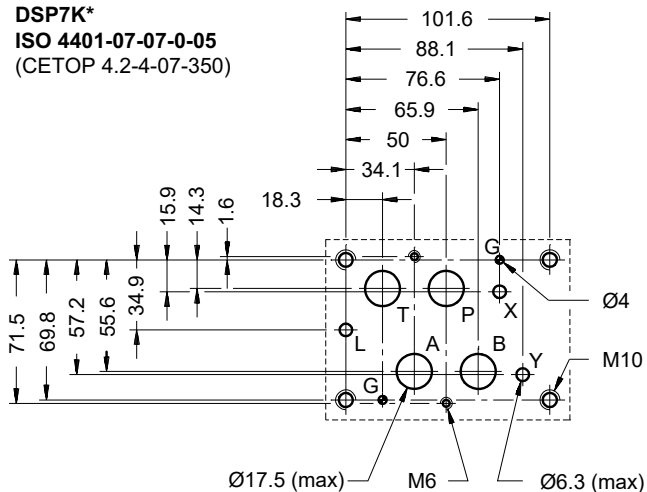
### DSP5RK\*

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



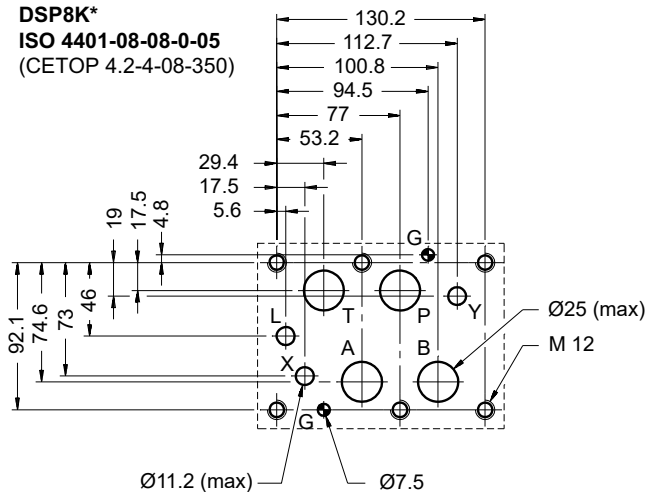
### DSP7K\*

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

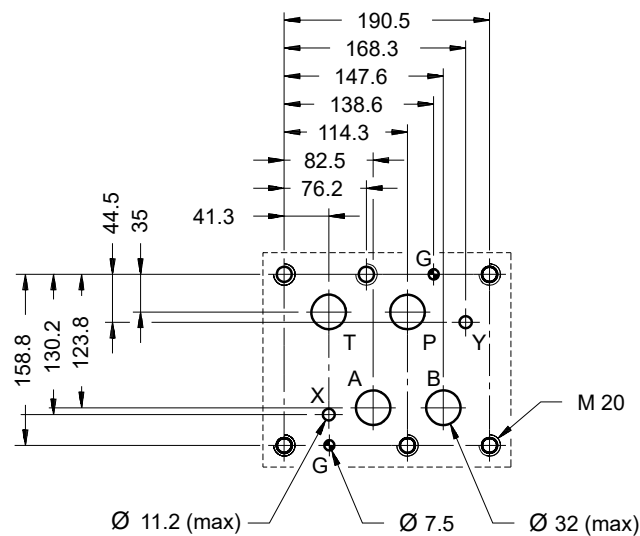


### DSP8K\*

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



**DSP10K\***  
**ISO 4401-10-09-0-05**  
 (CETOP 4.2-4-10-350)



## 16 - 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.

## 17 - INSTALLATION

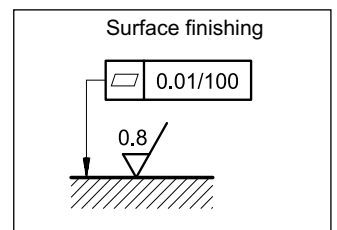


**Installation must adhere to instructions reported in the *Use and Maintenance manual*, always attached to the valve. Unauthorized interventions can be harmful to people and goods because of the explosion hazards present in potentially explosive atmospheres.**

Configurations with centering and recall springs can be mounted in any position; The RK versions, without springs and with mechanical detent, must be mounted with the longitudinal axis horizontal.

Valve fastening takes place by means of screws or tie rods, laying the valve on a lapped surface, with values of planarity and smoothness that are equal to or better than those indicated in the drawing.

If the minimum values of planarity or smoothness are not met, fluid leakages between valve and mounting surface can easily occur.



## 18 - MANUAL OVERRIDES

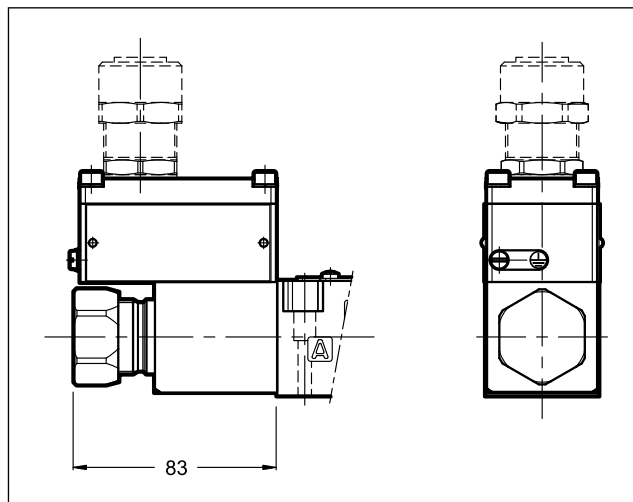
### 18.1 - CB - Blind ring nut

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 loosen the ring nut and remove it; then reassemble hand tightening, until it stops.

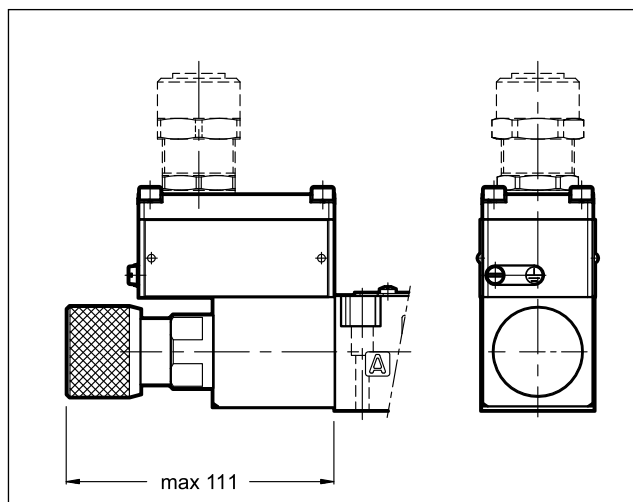
**Activate the manual override always and only with non-sparking tools suitable for use in potentially explosive atmospheres.**

More information on safe use of explosion-proof components are provided in the instruction manual, always supplied with the valve.



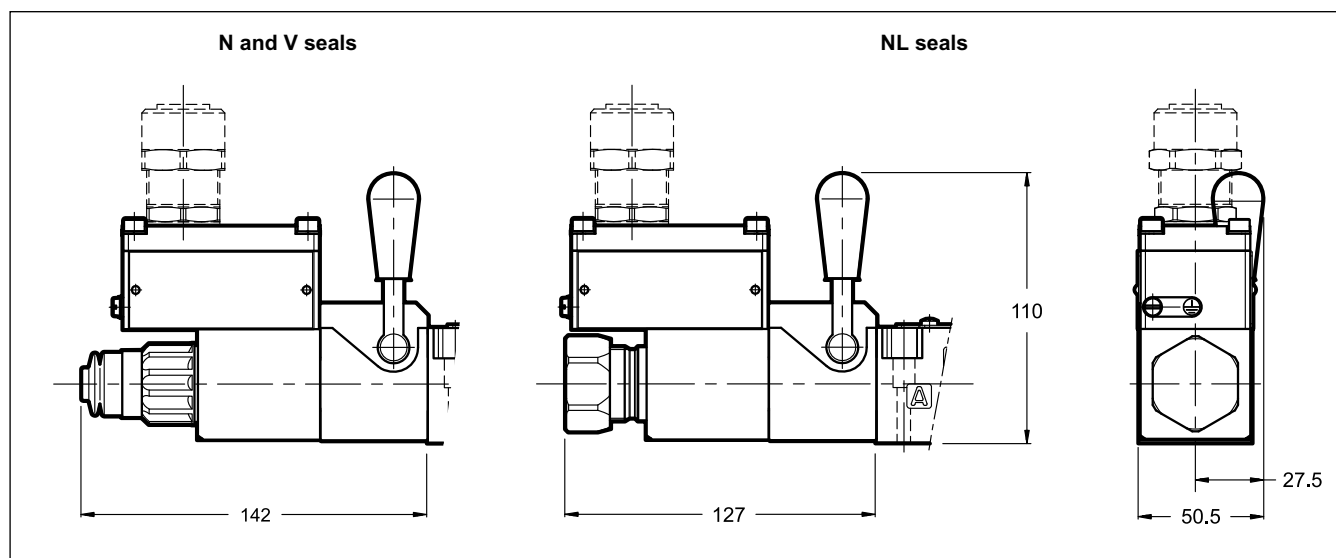
### 18.2 - CK1 - Knob manual override

This turning knob is available for DC valves only.



### 18.3 - CH - Lever manual override

The lever manual override is available for DS3K only. The seals choice leads the type of the standard ring nut to be mounted. The boot isn't a redundant manual override, instead acts as protection for the tube. The lever device is always placed at side A.

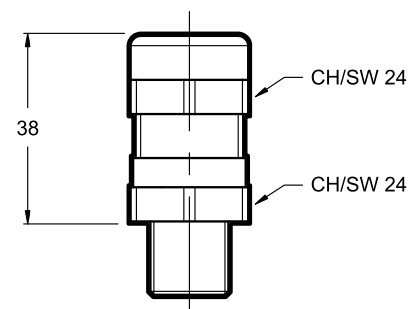




## 19 - CABLE GLANDS

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

- version for non-armoured cable, external seal on the cable (suitable for Ø 8÷10 mm cables);
- ATEX II 2GD, I M2; IECEx Gb, Db, Mb certified
- cable gland material: nickel brass
- inner rubber tip material: silicone
- ambient temperature range: -65 °C ÷ +220 °C
- protection degree: IP66/IP68



To order the desired cable glands, specify description, code and quantity.

**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 copper washer, that must be assembled between the cable gland and the coil, so as to ensure IP66/IP68 protection degree.

Tightening torque: 45 ÷ 50 Nm

**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.

Tightening torque: 20 ÷ 25 Nm

**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.

Tightening torque: 20 ÷ 25 Nm

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

**Code: 3908108004**

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

Tightening torque: 45 ÷ 50 Nm

## 20 - SUBPLATES

(see catalogue 51 000)

	DS3K*	DL5BK*		DSP5K*	DSP7K*	DSP8K*
Type with rear ports	PMMD-AI3G	PMD4-AI4G	-	PME4-AI5G	PME07-AI6G	-
Type with side ports	PMMD-AL3G	-	PMD4-AL4G	PME4-AL5G	PME07-AL6G	PME5-AL8G
P, T, A, B ports dimensions	3/8" BSP	3/4" BSP	1/2" 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 rate higher than the value allowed by norms according to ATEX directive for category II 2GD and I M2.

The user will bear to do the complete assessment of the ignition risk that can occur from the relative use in potentially explosive environments.



**D\*K\***  
**SERIES 10**

**DUPLOMATIC**  
MOTION SOLUTIONS

**DUPLOMATIC MS S.p.A.**

via M. Re Depaolini 24 • 20015 PARABIAGO (MI) • ITALY  
tel. +39 0331.895.111 • [www.duplomatic.com](http://www.duplomatic.com) • e-mail: [sales.exp@duplomatic.com](mailto:sales.exp@duplomatic.com)

# EXPLOSION-PROOF CLASSIFICATION

## for

### SOLENOID AND PROPORTIONAL VALVES

ref. catalogues:

#### pressure control valves

<b>RQM*K*-P</b>	<b>21 515</b>
<b>P*E*K*</b>	<b>81 316</b>
<b>ZDE3K*</b>	<b>81 515</b>
<b>DZCE*K*</b>	<b>81 606</b>

#### flow control valves

<b>QDE3K*</b>	<b>82 225</b>
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#### directional valves

<b>D*K*</b>	<b>41 515</b>
<b>DT3K*</b>	<b>42 215</b>
<b>DS(P)E*K*</b>	<b>83 510</b>

#### GENERAL INFO

This informative technical datasheet displays information about **classification and marking** of Duplomatic explosion-proof valves range.

Duplomatic MS offers valves with the following certifications:

<b>ATEX</b>	<b>II 2G</b>	<b>II 2D</b>	<b>I M2</b>
<b>IECEX</b>	<b>Gb</b>	<b>Db</b>	<b>Mb</b>
<b>INMETRO</b>	<b>Gb</b>	<b>Db</b>	<b>Mb</b>
<b>PESO</b>	<b>Gb</b>		

Instructions for use and maintenance can be found in the related manuals, always supplied together with valves.



## 1 - ATEX CLASSIFICATION AND TEMPERATURES

Diplomatic certifies the combination valve-coil for the valves suitable for application and installation in potentially explosive atmospheres, according to ATEX directive; 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.

### 1.1 - ATEX classification for valves

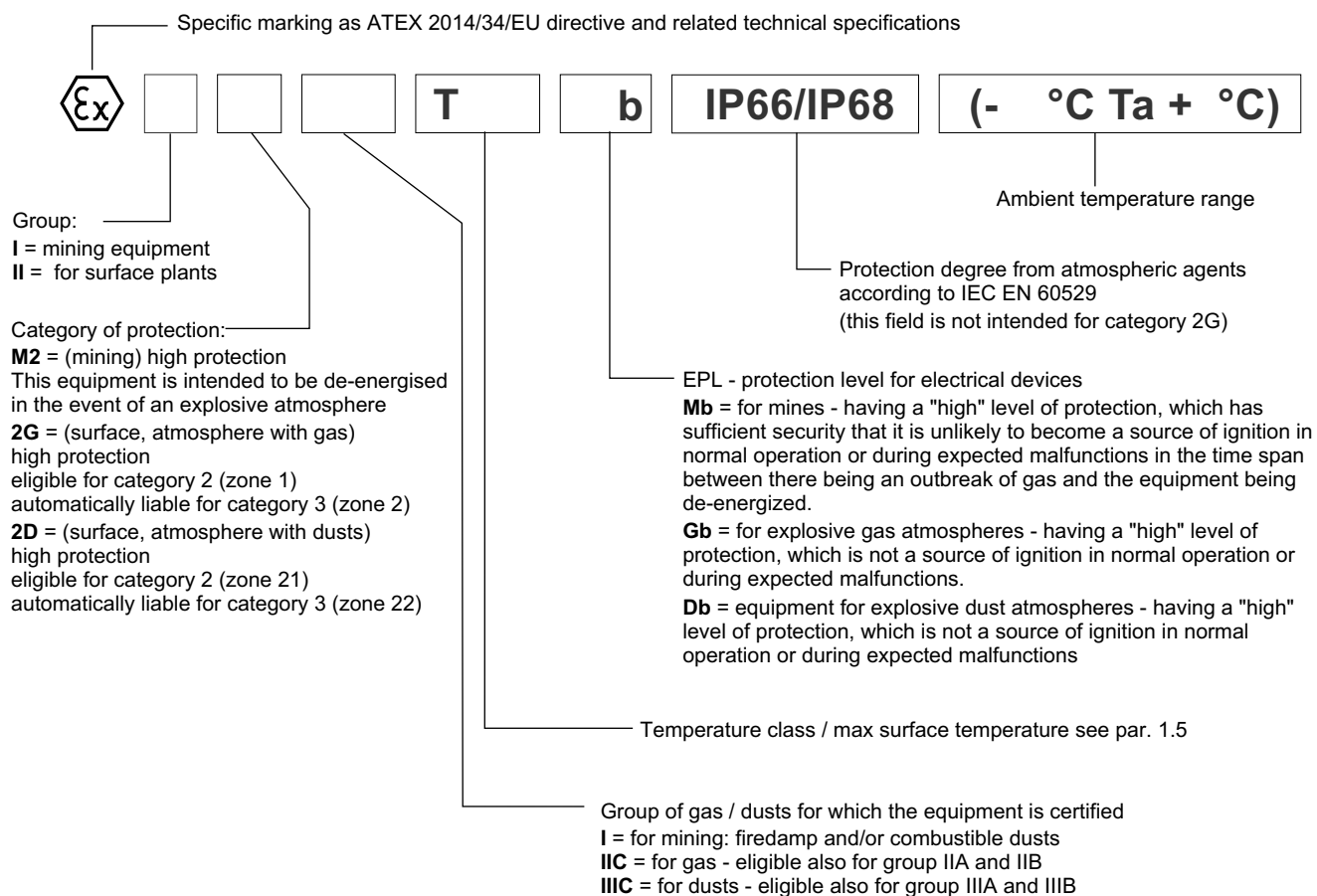
Type examination certificate: AR18ATEX055

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

ATEX II 2G ATEX II 2D	<b>*KD2</b>	equipment intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur occasionally. The means of protection relating to equipment in this category ensure the requisite level of protection, even in the event of frequently occurring disturbances or equipment faults which normally have to be taken into account.
ATEX I M2	<b>*KDM2</b>	equipment 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.

### 1.2 - ATEX marking for valves

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







## 2 - IECEX CLASSIFICATION AND TEMPERATURES

The IECEX certification requires the classification of the electrical equipment only.

Diplomatic supplies valves with IECEX certified coils, suitable for application and installation in potentially explosive atmospheres. 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 db" type protection (explosion-proof coil).

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

The supply always includes the operating and maintenance manual, that contains all the information needed for a correct use of the valve in potentially explosive environment.

### 2.1 - IECEX classification

Certificate of conformity (CoC): IECEX TUN 15.0028X

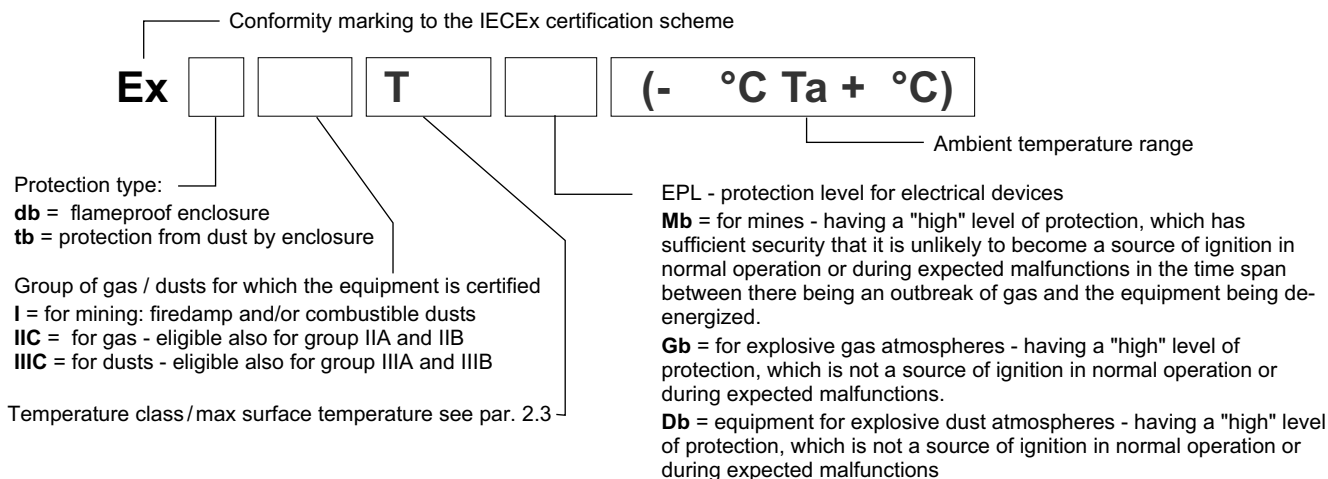
The valves are suitable for applications and installations in potentially explosive atmospheres that fall within:

IECEX Gb IECEX Db	<b>*KXD2</b>	equipment intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur occasionally. The means of protection relating to equipment in this category ensure the requisite level of protection, even in the event of frequently occurring disturbances or equipment faults which normally have to be taken into account.
IECEX Mb	<b>*KXDM2</b>	equipment 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.

### 2.2 - IECEX marking

There is a plate with the IECEX mark on each coil.

<b>*KXD2</b> valves	for gas	Ex db IIC T4 Gb (-40°C Ta +80°C)
	for dusts	Ex tb IIIC T135°C Db (-40°C Ta +80°C)
<b>*KXD2 /T5</b> valves	for gas	Ex db IIC T5 Gb (-40°C Ta +55°C)
	for dusts	Ex tb IIIC T100°C Db (-40°C Ta +55°C)
<b>*KDM2</b> valves	mining	Ex db I Mb (-40°C Ta +80°C)



### 2.3 - 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.

Valves for surface plants can also be used for less limiting temperature classes (higher surface temperature allowed).

		temperature range	N and V seals	NL seals	Temperature class	eligible also for
IECEX Gb IECEX Db	<b>*KXD2</b>	of ambient	-20 / +80 °C	-40 / +80 °C	T4 (gas) T135°C (dusts)	T3, T2, T1 T200°C and higher
		of fluid				
	<b>*KXD2 /T5</b>	of ambient	-20 / +55 °C	-40 / +55 °C	T5 (gas) T100°C (dusts)	T4, T3, T2, T1 T135°C and higher
		of fluid				
IECEX Mb	<b>*KXDM2</b>	of ambient	-20 / +80 °C	-40 / +80 °C	-	-
		of fluid				



### 3 - INMETRO CLASSIFICATION AND TEMPERATURES

The INMETRO certification requires the classification of the electrical equipment only.

Duplomatic supplies valves with INMETRO certified coils, suitable for application and installation in potentially explosive atmospheres. 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 db" type protection (explosion-proof coil).

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

The supply always includes the operating and maintenance manual, that contains all the information needed for a correct use of the valve in potentially explosive environment.

#### 3.1 - INMETRO classification

Certificate of conformity: DNV 15.0094 X

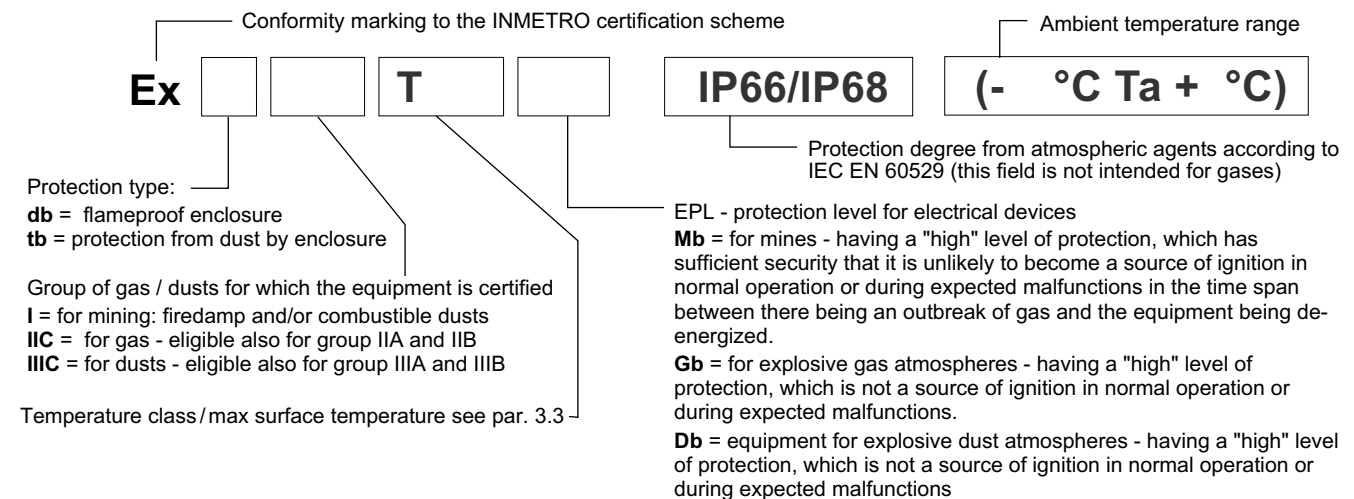
The valves are suitable for applications and installations in potentially explosive atmospheres that fall within:

INMETRO Gb INMETRO Db	<b>*KBD2</b>	equipment intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur occasionally. The means of protection relating to equipment in this category ensure the requisite level of protection, even in the event of frequently occurring disturbances or equipment faults which normally have to be taken into account.
INMETRO Mb	<b>*KBDM2</b>	equipment 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.

#### 3.2 - INMETRO marking

There is a plate with the INMETRO mark on each coil.

<b>*KBD2</b> valves	for gas for dusts	Ex db IIC T4 Gb (-40°C Ta +80°C) Ex tb IIIC T154°C Db IP66/IP68 (-40°C Ta +80°C)
<b>*KBD2 /T5</b> valves	for gas for dusts	Ex db IIC T5 Gb (-40°C Ta +55°C) Ex tb IIIC T129°C Db IP66/IP68 (-40°C Ta +55°C)
<b>*KBDM2</b> valves	mining	Ex db I T150° Mb IP66/IP68 (-40°C Ta +75°C)



#### 3.3 - 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.

Valves for surface plants can also be used for less limiting temperature classes (higher surface temperature allowed).

		temperature range	N and V seals	NL seals	Temperature class	eligible also for
INMETRO Gb INMETRO Db	<b>*KBD2</b>	of ambient	-20 / +80 °C	-40 / +80 °C	T4 (gas) T154°C (dusts)	T3, T2, T1 T200°C and higher
		of fluid				
	<b>*KBD2 /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				
INMETRO Mb	<b>*KBDM2</b>	of ambient	-20 / +75 °C	-40 / +75 °C	T150°C	-
		of fluid				

4 - PESO CLASSIFICATION AND TEMPERATURES

The PESO certification requires the classification of the electrical equipment only.

Duplomatic supplies valves with PESO certified coils, suitable for application and installation in potentially explosive atmospheres. 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 db" type protection (explosion-proof coil).

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

The supply always includes the operating and maintenance manual, that contains all the information needed for a correct use of the valve in potentially explosive environment.

4.1 - PESO classification

Certificate of conformity: P480801

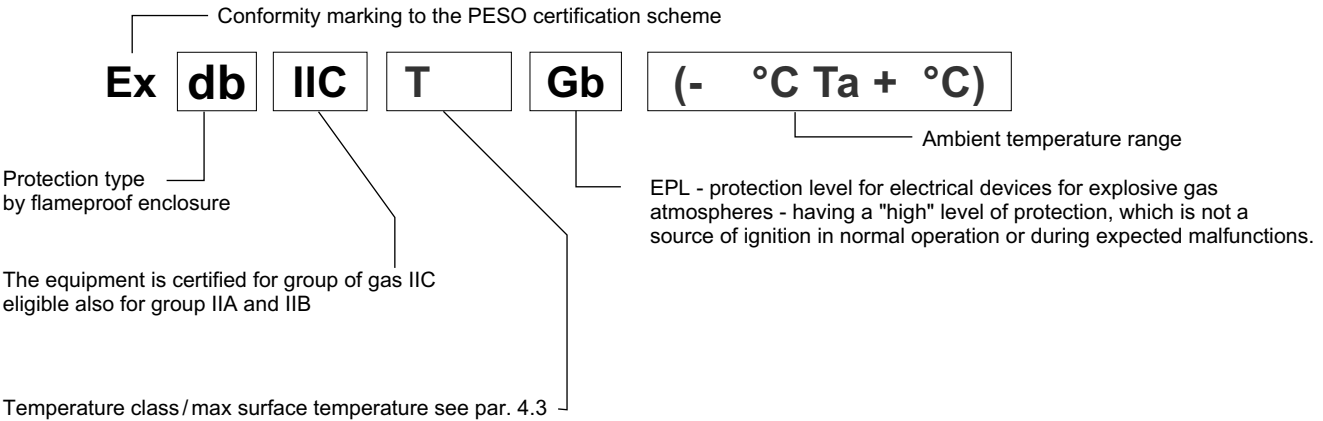
The valves are suitable for applications and installations in potentially explosive atmospheres that fall within:

PESO Gb	*KPD2	equipment intended for use in areas in which explosive atmospheres caused by gases, vapours, mists are likely to occur occasionally. The means of protection relating to equipment in this category ensure the requisite level of protection, even in the event of frequently occurring disturbances or equipment faults which normally have to be taken into account.
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4.2 - PESO marking

There is a plate with the PESO mark on each coil.

*KPD2 valves	for gas	Ex db IIC T4 Gb (-40°C Ta +80°C)
*KPD2 /T5 valves	for gas	Ex db IIC T5 Gb (-40°C Ta +55°C)



4.3 - 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.

Valves for surface plants can also be used for less limiting temperature classes (higher surface temperature allowed).

		temperature range	N and V seals	NL seals	Temperature class	eligible also for
PESO Gb	*KPD2	of ambient	-20 / +80 °C	-40 / +80 °C	T4 (gas)	T3, T2, T1
		of fluid				
	*KPD2 /T5	of ambient	-20 / +55 °C	-40 / +55 °C	T5 (gas)	T4, T3, T2, T1
		of fluid				

Архангельск (8182)63-90-72	Ижевск (3412)26-03-58	Магнитогорск (3519)55-03-13	Пермь (342)205-81-47	Сургут (3462)77-98-35
Астана (7172)727-132	Иркутск (395)279-98-46	Москва (495)268-04-70	Ростов-на-Дону (863)308-18-15	Тверь (4822)63-31-35
Астрахань (8512)99-46-04	Казань (843)206-01-48	Мурманск (8152)59-64-93	Рязань (4912)46-61-64	Томск (3822)98-41-53
Барнаул (3852)73-04-60	Калининград (4012)72-03-81	Набережные Челны (8552)20-53-41	Самара (846)206-03-16	Тула (4872)74-02-29
Белгород (4722)40-23-64	Калуга (4842)92-23-67	Нижний Новгород (831)429-08-12	Санкт-Петербург (812)309-46-40	Тюмень (3452)66-21-18
Брянск (4832)59-03-52	Кемерово (3842)65-04-62	Новокузнецк (3843)20-46-81	Саратов (845)249-38-78	Ульяновск (8422)24-23-59
Владивосток (423)249-28-31	Киров (8332)68-02-04	Новосибирск (383)227-86-73	Севастополь (8692)22-31-93	Уфа (347)229-48-12
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Вологда (8172)26-41-59	Красноярск (391)204-63-61	Орел (4862)44-53-42	Смоленск (4812)29-41-54	Челябинск (351)202-03-61
Воронеж (473)204-51-73	Курск (4712)77-13-04	Оренбург (3532)37-68-04	Сочи (862)225-72-31	Череповец (8202)49-02-64
Екатеринбург (343)384-55-89	Липецк (4742)52-20-81	Пенза (8412)22-31-16	Ставрополь (8652)20-65-13	Ярославль (4852)69-52-93
Иваново (4932)77-34-06				
Киргизия (996)312-96-26-47		Россия (495)268-04-70		Казахстан (772)734-952-31