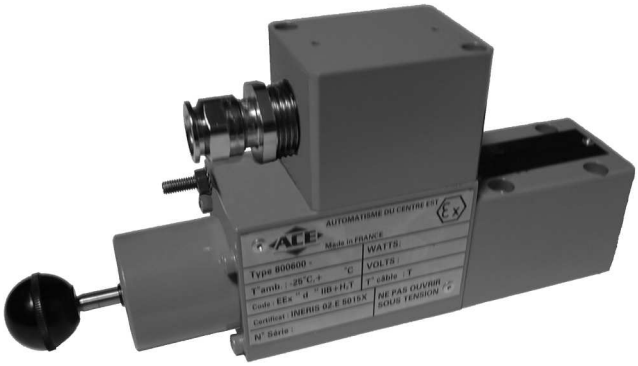
EXPLOSION PROOF DIRECTIONAL CONTROL VALVE TYPE ED6 SERIE 6X ATEX DIRECTIVE

NOT/E
10-420/11-04

CARACTERISTICS

Hydraulic :
Cetop 3.
Maximum pressure in service : 315 Bar.
Nominal flow. : 60 l/mn.
37 hydraulic symbols.

Electric :
Protection index : IP 66.
CENELEC Standard & ATEX Directive
Non-Mining : II 2 GD EExd or EExde, Group I or IIB+H2.
Temperature range : T6, T5, T4.
Mining : **EEx"d" ou EEx"de", I M2.**
Connections on terminal box or taped flange.



Type 4 ED6 D6X/EX700 24-DC-T6 PA H1d

DESCRIPTION OF FONCTION

Directional control valves type ED 6 are solenoid operated directional spool valves.
They control start, stop and direction of an oil flow.

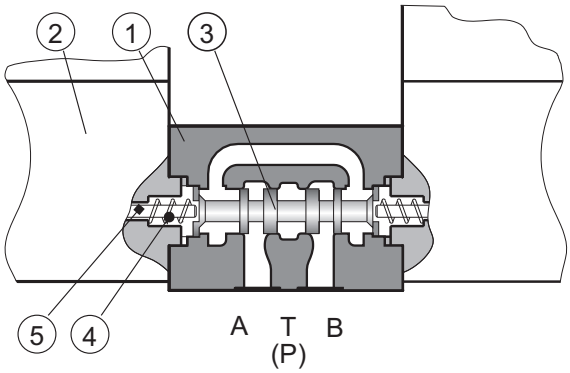
These valves basically consist of the housing (1), one or two solenoids (2), the control spool (3), and return springs (4).

In unoperated condition the control spool (3) is held in the neutral or starting position by the return springs (4) (except for type O and OF).

The operation of the control spool is by means of oil immersed solenoids (2).

The force of the solenoid (2) acts via the plunger (5) on the control spool (3) and pushes it from its rest position into the required end position.

When the solenoid is de-energised (2), the control spool (3) is returned to its original by the return springs (4).VV

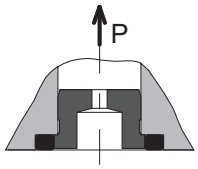


An hand emergency button, allows movement of the control spool (3) without solenoid energisation.

Type : ED6 C or D 6X/O
these are directional valves with 2 switching positions and 2 solenoids without locking.
When the solenoid is energised there is no median p*osition (without return springs).*

Type : ED6 C or D 6X/OF
these are directional valves with 2 switching positions and 2 solenoids with locking in position.

Cardridge Throttle
Use of the cardridge throttle is necessary when, because of the given operating conditions, flow larger than that allowed by the valve operating limits arise during spool cross-over.



.. ED6 ...5X ...B0..

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F-21067 DIJON Cedex
Tél : 03 80 59 60 00 - Fax : 03 80 51 40 89
E-mail: ace.dijon@acefrance.com

GENERALITY OF FONCTION

Oil immersed direct curent solenoid (1) impervious to 100 bar maximum pressure, its mechanical impact strength is approved by the CENELEC for explosion proof equipment.

Insulation to IP 66, it can work in tropical climates.

The plunger operate in oil to reduce friction, dissipate head and cushions and drives control spool.

Direct curent solenoid has the advantages of :

- slow movement of the control spool.
- energized maintenance of the control valve in intermediary position, is not detrimental to the solenoid.

ELECTRIC CONNECTION

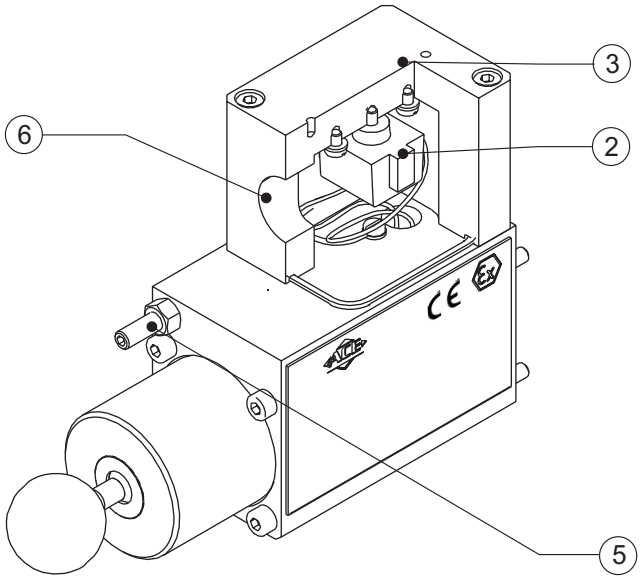
Junction in box for group I and IIB+H2

The terminal box (3) can be oriented in steps of 45° on the solenoid housing (1).

The electrical connector on the outlet terminal box (6) can be arranged horizontally (on terminal box 3)suitable for cable gland.

One earth connection (5) is available inside or outside the terminal box .

Model H1, H2, ... (Box)
Horizontal connection.



2 differents protection modes.

1) Protection EEx "d"
On terminal strip (2A) inside the explosion proof terminal (3A) box suitable for 0.5 to 1.5 mm² with cable gland EEx "d".

2) Protection EEx "e"
On terminal strip (2B) inside the increased safety terminal box (3B) suitable for 0.5 to 2.5 mm² with cable gland EEx "e".

The terminal box is produced in aluminium as standard, but production in STEEL possible on request.

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E-mail: ace.dijon@acefrance.com

ELECTRIC CONNECTION

Junction On Female Taped Flange
For Group Ii Only.

Connection with threaded rigid conduit approved in group II only.
Seal integrated in the housing.

It is produced according to the "d" protection mode using a certified type of rigid conduit (threaded tube).

Seal integrated in the housing.

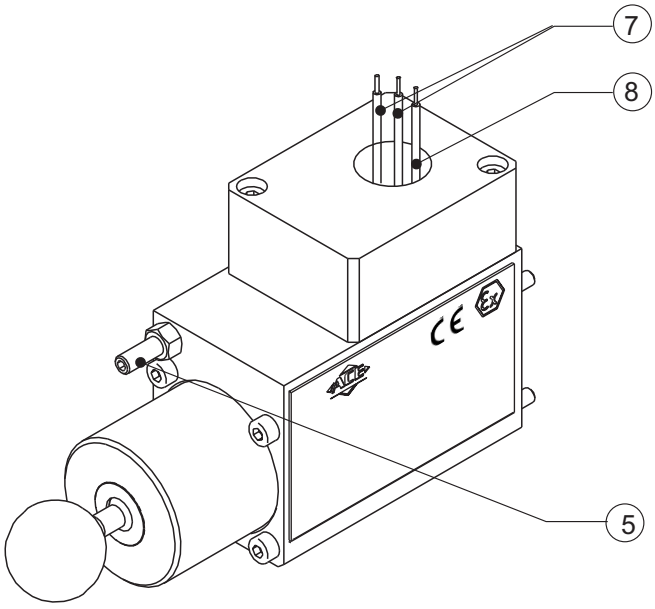
Available with either a horizontal (BH) or vertical (BI) electrical output .

Earth connexion (5).

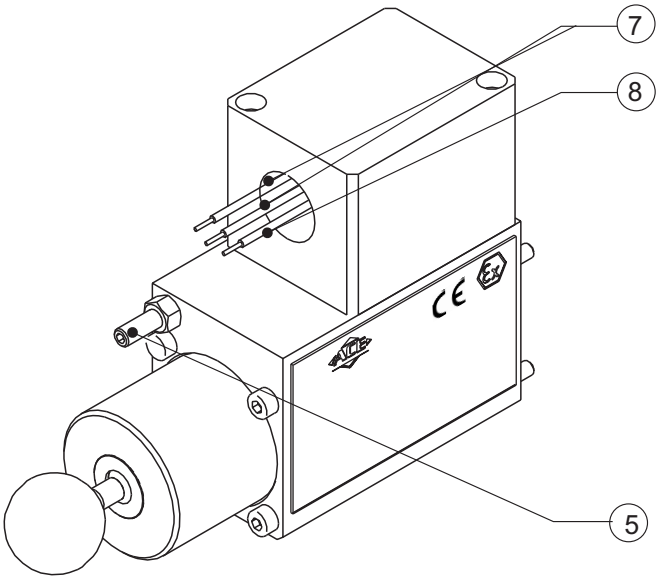
The lead wire length normally supplied is 1.5 meter.
Active lead wires (7).
Earth lead wire (8).

Other lengths to order.

Model "BI" (Flange)



Model "BH" (Flange)



Cable Gland Recognized

PE option (see page 5)

Cable gland for unarmored cable EEx"d" IIC recognized in 1/2" NPT and with a diameter of Ø6 to Ø9 mm over a sealing shield.

Also available in EEx"d", EEx"e" group I or group IIC for armoured, unamored or mineral cable : Consult us.

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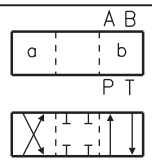
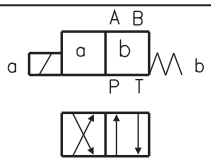
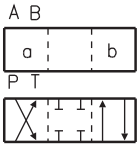
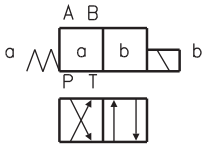
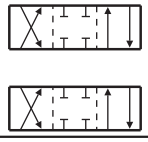
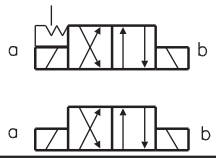
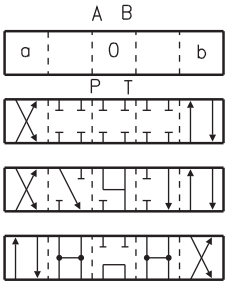
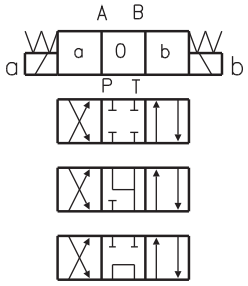
E-mail: ace.dijon@acefrance.com

HYDRAULIC CODE

ED6 6X

3 service ports	3
4 service ports	4

		D
		Y
	 OF	D
	O	D
 Middle position	 Normal position	E J G

Hydraulic housing series number.	6X

The above refer to symbols D, Y only.

Without return spring, with locking control spool.	OF
Without return spring.	O
With return springs — No	

The above refer to E, J, G, ... Ect.

With one solenoid side A.	A
With one solenoid side B.	B
With one solenoid side A and side B.: — No code	

For use when the flow is greater than the valve capacity, fitted in P line.

Throttle Ø 0.8 MM :	B08
Throttle Ø 1,0 MM :	B10
Throttle Ø 1,2 MM :	B12
Without throttle : No code	

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Tél : 03 80 59 60 00 - Fax : 03 80 51 40 89
E-mail: ace.dijon@acefrance.com

ELECTRIC CODE

EX700 - -

*	Other cable gland, consult us.
PE	With standard cable gland.
d	With EEx"d" box .
e	With EEx"e" box.
	No code. : For EEx"d" taped flange
1	: 1/2" NPT
2	: PG 11
3	: PG 13.5
4	: PG 16
5	: M 16 x 1.50
6	: M 20 x 1.50
7	: M 22 x 1.50
H	Horizontal connection on the box.
BI	For taped flange, Group II only (Vertical).
BH	For taped flange, Group II only (Horizontal).
PB	**Side B of Valve.**
	Control pushbutton .
	No code : Without control pushbutton.
PA	**Side A of Valve.**
	Control pushbutton .
	No code : Without control pushbutton.
T...	Temperature range see table on page 6 (For group II only).
DC	Solenoid energized in direct current.
AC	Solenoid energized in alternating current. (Only for version H d)
12 . 220	Solenoid power supply in Volt. 12, 48, 96, 110, 200, 220 ... See table on page 6 for correspondance with the temperature range T4, T5, T6.
EX700	Explosion proof European standards CENELEC and ATEX Directive. CE SERIES 800700
M	Solenoid for use in mining (Group I).
	No code : Solenoid for use in explosive atmosphere (Group II).

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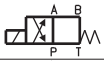
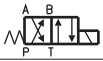
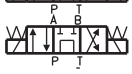
CARACTERISTICS

GENERALITY

Mounthing position		Optional - Horizontal prefered
Weight	- valve with 1 solenoid (Kg)	2.7
	- valve with 2 solenoids (Kg)	4.5

HYDRAULIC

Maximum operating pressure : Ports A, B, P.	bar	Up to ...315
	bar	Up to ...100
With spool type A and B, port T must be used as a drain port, if the operating pressure lies above 100 Bar.		
Pressure drop	mm²/s	see operating curves of pressure drop
Hydraulic fluid	(°C)	Mineral oils
Fluid temperature range	°C	-30°.....+70
Viscosity range	mm^2/s	2,8 380
Degree of pollution		Class 9 under NAS 1638
Standard symbol	2 positions	 D  Y
	3 positions	 E  J
		 G
32 others symbols (see page 6)		

ELECTRICAL

Continous voltages available	V/DC	12	22	24	24	48	96	110	200	220
Alternative voltages available*	V/AC	----	24	24	----	----	110	----	220	----
Temperature range with ambiente 40°C		T6	T6	T5	T6	T6	T6	T6	T6	T6
Temperature range with ambiente 50°C		T5	T5	T4	T5	T5	T5	T5	T5	T5
Power requirement	VA	13.6	13.6	16.4	13.7	13.2	13.6	13.8	13.6	13.6
Protection index		IP66								
Duty cycle		100%								
Maximum coil temperature		130°C								
Outlet connection on terminal box or taped flange		1/2"NPT-PG11-PG13.5-PG16-M16x1.5-M20x1.5-M22x1.5								

*A.C. voltages are only supplied in the EEx"d" version

CERTIFICATE OF CONFORMITY

European classification code	Group IIB+H2	Group I
Explosion proof	EEx"d" IIB+H2	EEx"d" I.
Increased safety	EEx"de" IIB+H2	EEx"de" I.
Approval number INERIS	02 ATEX 0024 X	02 ATEX 0024 X

STANDARD

Conformity to European Standards from 94/9/CE.	Europe
	EN 50 014 -JUNE 1997 + AMENDMENT 1 ET 2
	EN 50 018 -NOVEMBER
	EN 50 019 -JULY
	EN 50 50281-1-1 -SEPTEMBER

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F-21067 DIJON Cedex
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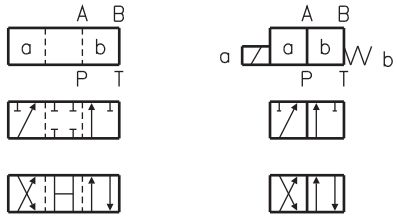
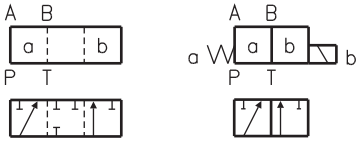
HYDRAULIC VARIATION SYMBOLS



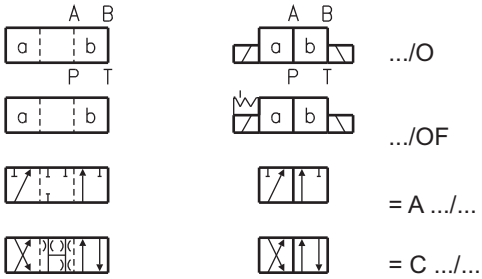
2 positions with one solenoid side A.

With return spring.



2 positions with one solenoid side B.

With return spring.

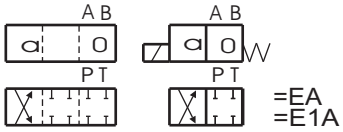


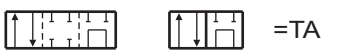
2 positions with solenoid side A and side B.

Without return spring.

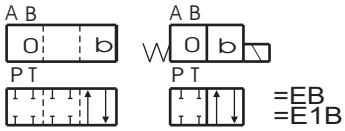
With locking control spool.

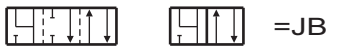
2 positions with one solenoid side A.

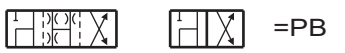


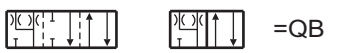


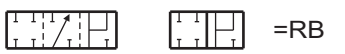
2 positions with one solenoid side B.

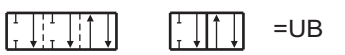




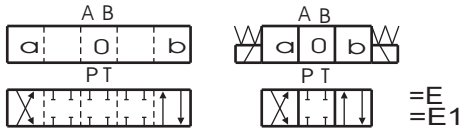








3 positions with one solenoid side A & B.



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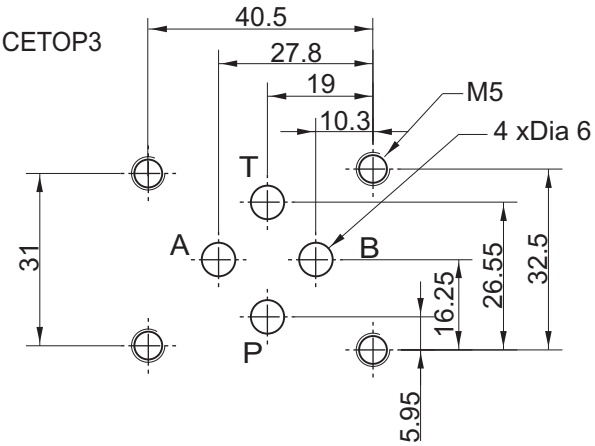
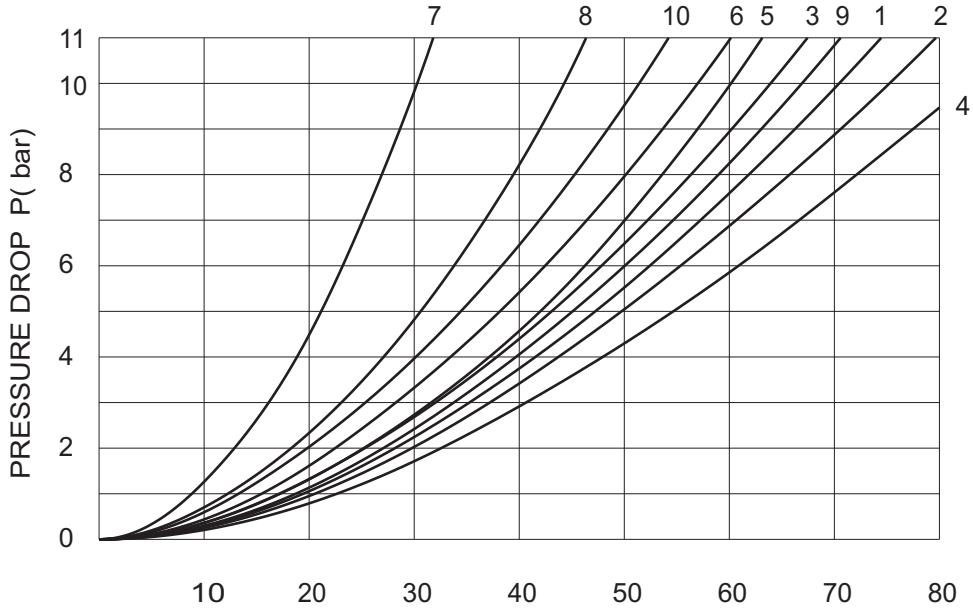
HYDRAULIC VALVE CONNECTION

HYDRAULIC VALVE CONNECTION CETOP3



CURVES OF PRESSURE DROP

CURVE 7 : SYMBOL "R" IN SWITCHING POSITION : B - A
CURVE 8 : SYMBOL "G" IN NEUTAL POSITION : P - T



FLOW Q(L/mn)

Mesured at V : 36 mm ² /S , t : 50°C

	FLOW DIRECTION			
SYMBOL	P->A	P->B	A->T	B->T
A	3	3	-	-
B	3	3	-	-
C	1	1	3	1
D	5	5	3	3
E	3	3	1	1
F	1	3	1	1
G	6	6	9	9
H	2	4	2	2
J	1	1	2	1
L	3	3	4	9
M	2	4	3	3
P	3	1	1	1
Q	1	1	2	1
R	5	5	4	-
T	10	10	9	9
U	3	3	9	4
V	1	2	1	1
W	1	1	2	2
Y	5	5	3	3

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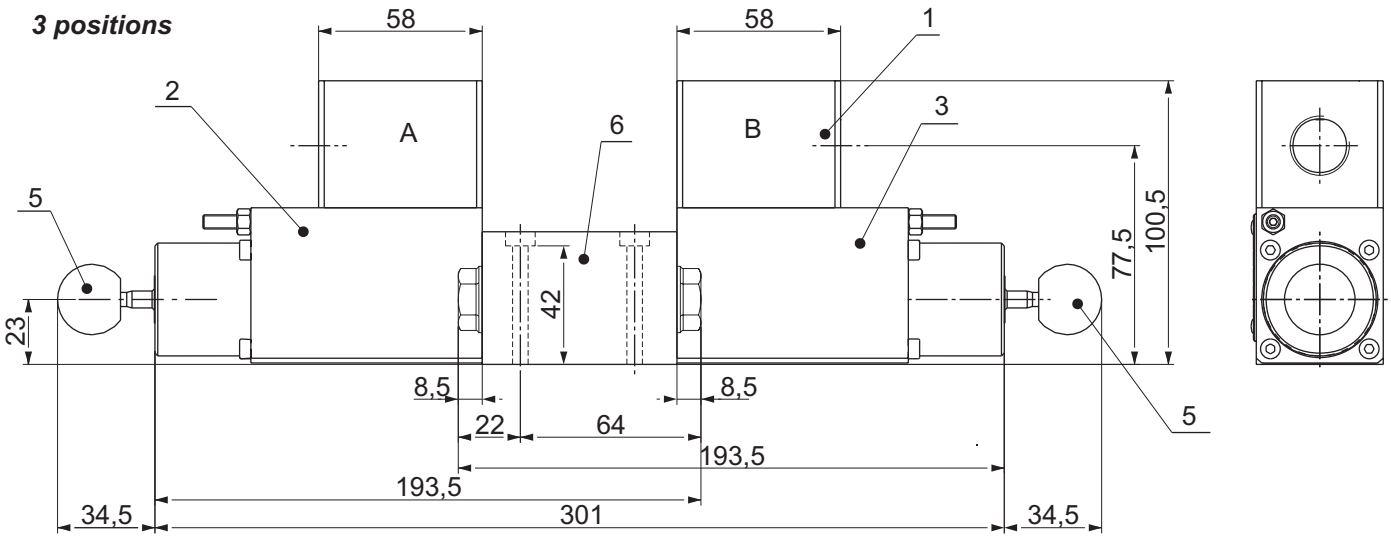
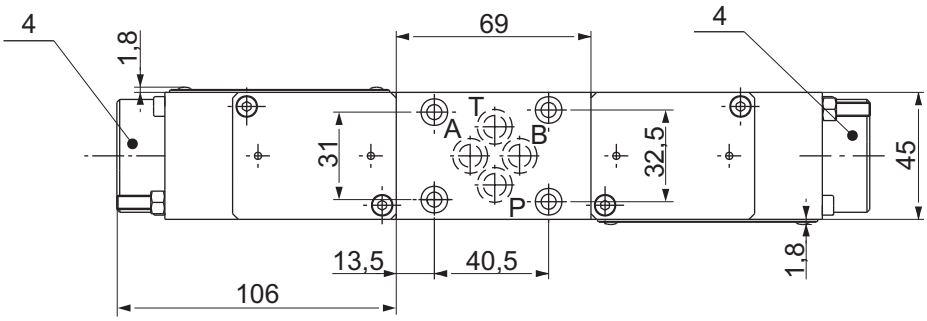
DIMENSIONS (In MM)

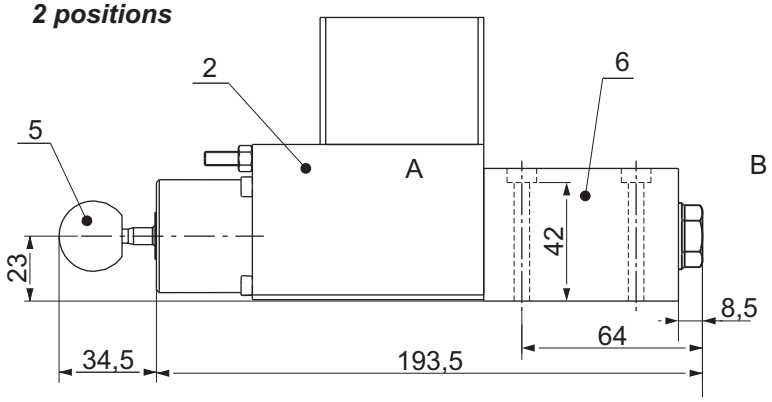
CONNECTION WITH A BOX AND A TERMINAL BLOCK (GROUP I & IIB+H2)

3 positions



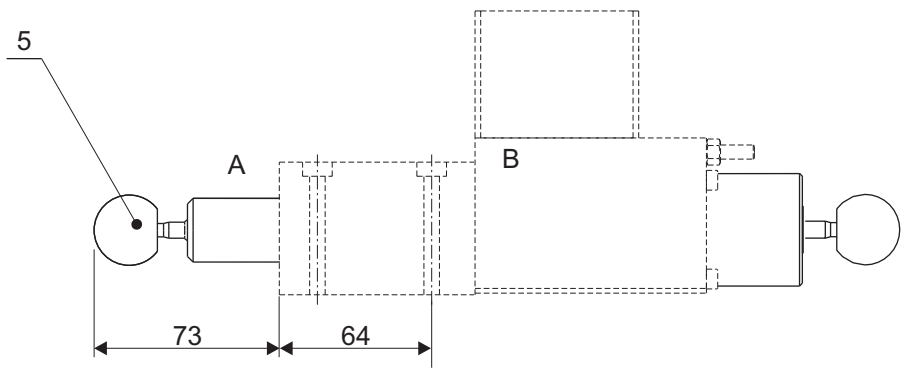


2 positions



1 : EEx"d" and EEx"de" type connection box
2 : Solenoid housing side A
3 : Solenoid housing side B
4 : Without pushbutton housing
5 : Control pushbutton
6 : Hydraulic housing
7 : 4 fixing screws M5 x 50 DIN 912-10.9, to be ordered separately
8 : 4 rectangular seals 9,81 x 1,5 x 1,78

MANUAL TYPE WITHOUT SOLENOID

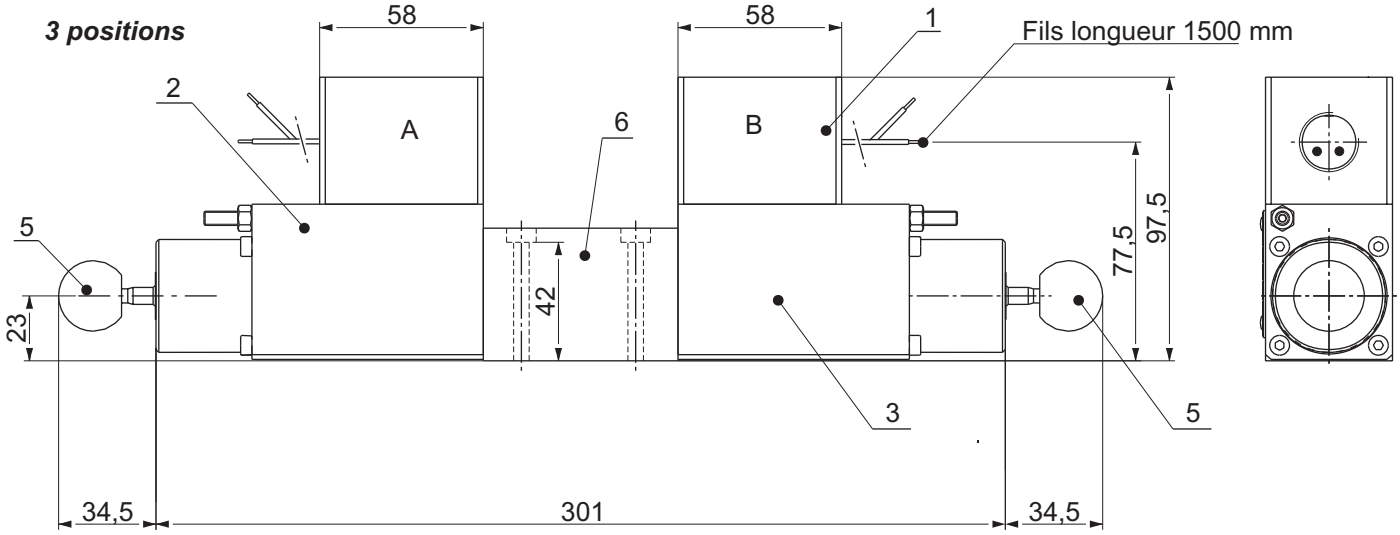


ZAE CAPNORD - 4 Rue NOURISSAT - BP36710
F-21067 DIJON Cedex
Tél : 03 80 59 60 00 - Fax : 03 80 51 40 89
E-mail: ace.dijon@acefrance.com

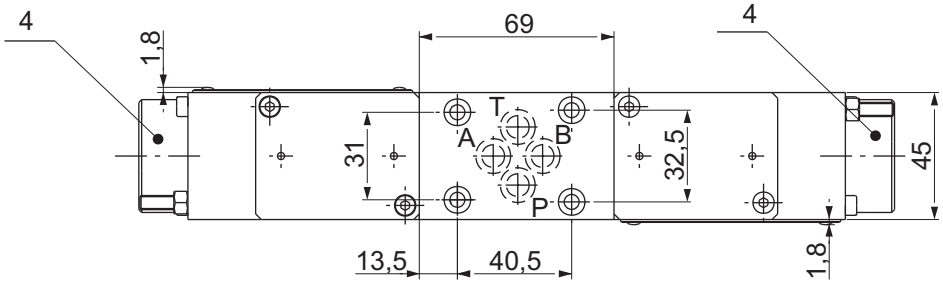
DIMENSIONS (In MM)

CONNECTION WITH A BH TYPE THREADED FLANGE (GROUP IIB+H2)

3 positions

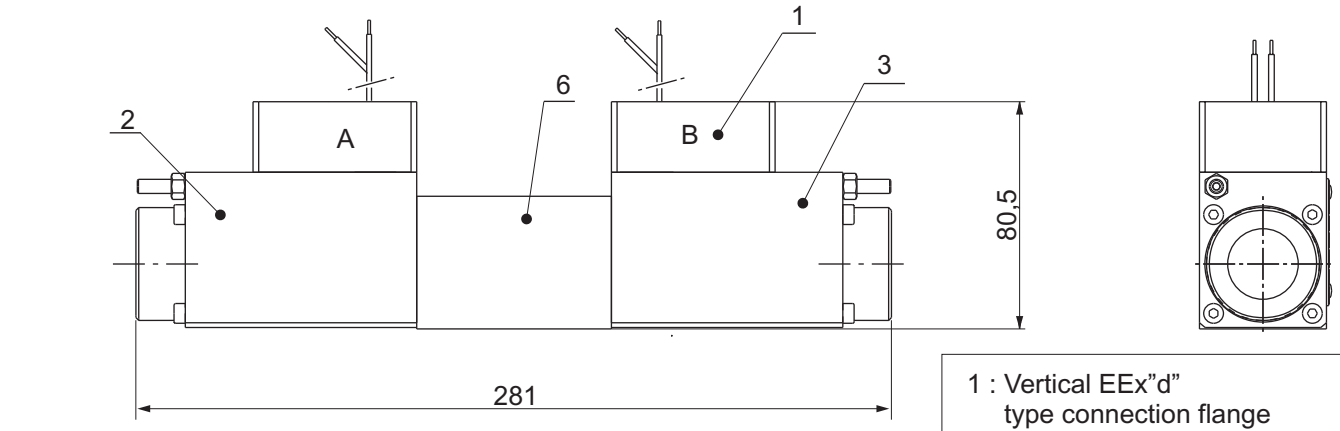


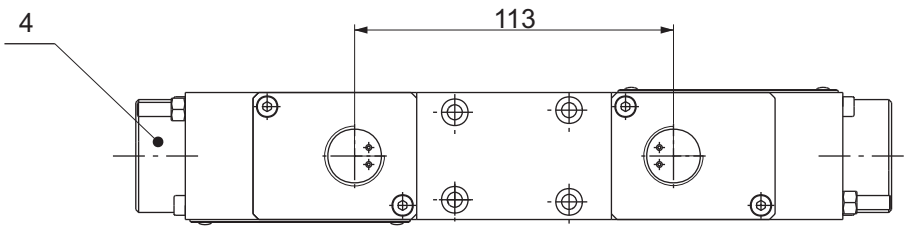
3 positions sans Commande Manuelle



1 : Horizontal EEx"d" type connection flange
2 : Solenoid housing side A
3 : Solenoid housing side B
4 : Without pushbutton housing
5 : Control pushbutton
6 : Hydraulic housing
7 : 4 fixing screws M5 x 50 DIN 912-10.9, to be ordered separately
8 : 4 rectangular seals 9,81 x 1,5 x 1,78

CONNECTION WITH A BI TYPE THREADED FLANGE (GROUP IIB+H2)





1 : Vertical EEx"d" type connection flange
2 : Solenoid housing side A
3 : Solenoid housing side B
4 : Without pushbutton housing
5 : Control pushbutton
6 : Hydraulic housing
7 : 4 fixing screws M5 x 50 DIN 912-10.9, to be ordered separately
8 : 4 rectangular seals 9,81 x 1,5 x 1,78

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