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### **Enclosures Aluminium Enclosures EJB Series**







### Mode di protection :

Œx II 2 GD

Ex d IIB+H2 T6 (©) Gb

Ex tb IIIC T85°C (©) Db IP66

Ambient temperature -50°C to +60°C

Incoming cables temperature : as per table show in the instruction and maintenance manual included in each supply

(©) Value linked to the heat dissipation of components and relevant wirings of each enclosure.

If any Intrinsically Safety component inside of enclosure

⟨Ex⟩ II 2 GD

Ex d [ia IIA o IIB o IIC Ga] IIB+H2 T6 Gb

Ex tb [ia Da] IIIC T85°C Db IP66

⟨£x⟩ II 2 GD

Ex d [ib IIA or IIB or IIC] IIB+H2 T6 Gb

Ex tb [ib] IIIC T85°C Db IP66

Ambient temperature -50°C to +60°C

Incoming cables temperature : as per table show in the instruction and maintenance manual included in each supply

Suitable for: Zone 1 / 21 e Zone 2 / 22

Mechanical protection degree: IP-66

Operativa voltage: max. 15000 V

Power limit: the heat dissipation value of each electrical circuit sized by our dedicated calculation software related to ambient temperature will define the proper size of EJB enclosure compatible with.



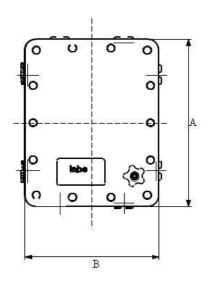
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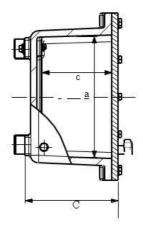
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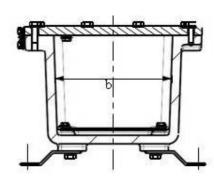
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		Overall dimensions				Interna mensic				ng plate ension	
pos.	Enclosure size	Width B	cover		Width b	Lenght a	Depth c	Weight Kg.	Width	Lenght za	Note
1	EJB-A	245	305	152	168	232	140	10	215	150	
2	EJB-B	245	420	207	170	346	195	15	321	150	
3	EJB-C	407	482	232	314	389	217	34	290	360	
4	EJB-D	487	527	232	390	428	217	40	358	394	
5	EJB-E	535	590	275	433	487	250	78	391	446	
6	EJB-F	445	830	277	339	722	252	87	294	670	
7	EJB-G	610	830	275	504	723	250	119	450	670	
8	EJB-H	610	830	374	505	725	349	130	450	670	









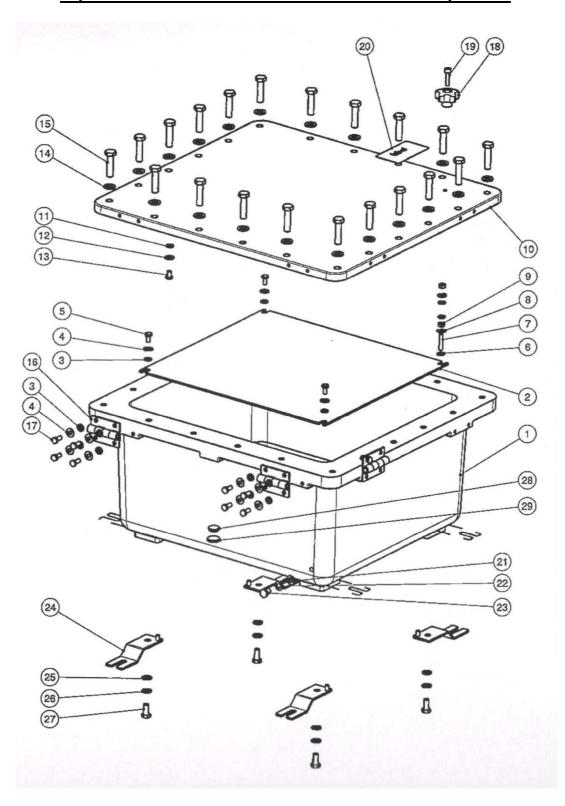
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### **Exploded view EJB D enclosure with base list components**





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Item 🔘		Components	Quantity
1	ALU-D-3-B-001	BODY BOX AL. TYPE D MACHINED	1
2	FZ-D-1-P-001	INTERNAL MOUNTING PLATE TYPE D	1
3 e 6	A4-M6-0-S-001	SPRING WASHER M6	5
4 e 8	A4-M6-0-W-001	FLAT WASHER . M6X18	6
5	A4-M612-0-Y-001	BOLT SS. A4 M6X12	3
6 e 3	A4-M6-0-S-001	SPRING WASHER M6	5
7	A4-M630-0-H-001	HEAD-LESS SCREW SS. A4 M6X30	1
8 e 4	A4-M6-0-W-001	FLAT WASHER M6X18	6
9	A4-M6-0-N-001	NUT SS. A4 M6	2
10	ALU-D-1-L-001	LID AL TYPE D MACHINED	1
11	A4-M6-0-W-002	FLAT WASHER M6	1
12	A4-M6-0-S-001	SPRING WASHER M6	1
13	A4-M610-0-Y-001	BOLT SS. A4 M6X10	1
14	A4-M10-0-W-001	FLAT WASHER M10	20
15	A4-M1040-0-Y-001	BOLT SS. A4 M10X40	20
16	A4-2-0-Q-001	HINGE SS 316 X 60 X 45 X 2,5	2
17	A4-M620-0-Y-001	BOLT SS. A4 M6X20	8
18	R-32-0-G-001	KNOB VCT.32 B-M8-C9	1
19	A4-M820-0-H-001	HEAD-LESS SCREW SS. A4 M8X20	1
20		LABEL	1
21	A4-M8-0-W-001	FLAT WASHER M8	2
22	A4-M8-0-S-001	SPRING WASHER M8	1
23	A4-M814-0-Y-001	BOLT SS. A4 M8X14	1
24	A4-2-0-U-001	FOOT SS 316	4
25	A4-M8-0-W-001	FLAT WASHER M8	4
26	A4-M8-0-S-001	SPRING WASHER M8	4
27	A4-M818-0-Y-001	BOLT SS A4 M8X18	4
28		SPACE MAKER RESIN WASHER	1
29		TRANSPONDER	1



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#### Raw materials EJB Aluminum enclosures :

- Box : Raw material primary Aluminum primary alloy EN AB 43100 by sand casting.

- Lid : Primary Aluminum alloy EN AW 6082 by laminated plate.

- Outer screws : aisi 316 A4 - Inner screws : aisi 316 A4

Mounting plate : Zink galvanized plate "Senzimir "

Hinges : aisi 316Mounting feet : aisi 316

#### Surfaces finish:

Standard version for Al enclosures:

- Sand blasting Sa2 for box surfaces
- Sand paper
  - On demand:
- Standard painting of external surfaces by polyurethane paint as per our standard " Bard" cycle. Minimum thickness  $100\mu$
- Offshore painting of external surfaces by polyurethane paint as per our standard " Fastenet" cycle. Minimum thickness  $240\mu$
- Offshore painting of external surfaces by polyurethane paint as per our standard " Transat" cycle. Minimum thickness  $300\mu$
- Anti- condensation paint of internal surfaces as per our standard cycle "Velù"
- Deep anodization treatment on inner and outer lid surfaces.
- Phosphate Cromatization treatment, Alodine®



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Design of enclosures grant allows the use of largest part of free volume. The full free volume is all in the box. The flat cover doesn't have free volume.

Largest part of competition offer casted cover with cross section that reduces:

The inner free volume

The quantity and the size of barrels (operators) on the lid

The size and qty. of knobs / operating handles /

The quantity and the size on threaded entries on the walls

Internal earth terminal as per (pict..2) can be placed in each of 4 internal corners on base of electrical wiring needs.





Pict.. 2



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**The outer earth terminal** as per pict. 3 on left long side by standard can be doubled on each of the other 3 sides according to wiring need







Pict. 3)

**Lid and box are perfectly lined**. Thank to a dedicated lining-up by CNC machining, all parts of Ex joints on lid as well on box are fully protected .



Pict. 4)



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#### Permanent ID of each enclosure.

Each enclosure foreseen a transponder sealed in Pict. 5) where are recorded to topics data:

- Source serial number
- Raw material batch
- Manufacturing date
- All checks performer on with date and sign of the operator
- Individual hudrostatic pressure test
- References and checks of custom jobs

By a suitable reader will be any time possible to see all a.m. information even if the "certificate label" would: unreadable or lost. Pict.. 6) and 7)





Pict. 5)

TAG		CONTENITORE		COLLAUDO		PERSONALIZZAZI	ONE
Campo	Valore	Campo	Valore	Campo	Valore	Campo	Valore
Codice Univoco		Ordine di acquisto		Tipo di test pressione		Numero ordine costruttore	0
Identità		Quantità	0	Numero di test pressione	0	Spessore Verniciatura	
		Certificato del materiale		Risultato test pressione		Controllo Lavorazioni	
SCATOLA		Tipo di scatola				Azienda	
Campo	Valore	Tipo di materiale				Operatore	
Ordine di acquisto	* GIOTE	Scatola antideflagrante				Data	
Quantità	0	Coperchio antideflagrante					
Certificato del materiale		Spessore		COSTRUTTORE			
Tipo di scatola		Filettatura bulloni scatola		Campo	Valore		
Peso e Dimensioni		Dimensioni complessive		Numero commessa	0	мо	DIFICA
Azienda		Ruvidezza		Numero di serie	0	l F	(2000) (St. 60) (St. 60)
Operatore		Spessore verniciatura		Spessore verniciatura			
Data		Azienda		Controllo lavorazioni			
7.717		Operatore		Informazioni Extra			
		Data		Azienda			
				Operatore			
				Data			
				MO	DIFICA		

Pict. 6)





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### Elclosures EJB Group I and II Iron steeel made



### Mode of protection:

€x | M2

Ex d I Mb T85°C (©)

Suitable for: M2

Or

€x II 2 GD

Ex d IIB+H2 T6 (©) Gb

Ex tb IIIC T85°C (©) Db IP66

Ambient temperature -50°C to +60°C

Incoming cables temperature : as per table show in the instruction and maintenance manual included in each supply

(©) Value linked to the heat dissipation of components and relevant wirings of each enclosure.

If any Intrinsically Safety component inside of enclosure

(Ex) II 2 GD Ex d [ia

Ex d [ia IIA o IIB o IIC Ga] IIB+H2 T6 Gb

Ex tb [ia Da] IIIC T85°C Db IP66

Œx II 2 G

GD Ex d [ib IIA or IIB or IIC] IIB+H2 T6 Gb

Ex tb [ib] IIIC T85°C Db IP66

Ambient temperature -50°C to +60°C

Incoming cables temperature : as per table show in the instruction and maintenance manual included in .

each supply

Suitable for: Zone 1 / 21 e Zone 2 / 22

Mechanical protection degree: IP-66

Operativa voltage: max. 15000 V

**Power limit:** the heat dissipation value of each electrical circuit sized by our dedicated calculation software related to ambient temperature will define the proper size of EJB enclosure compatible with.

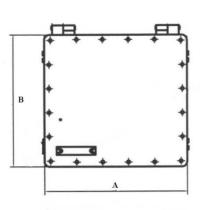


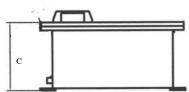
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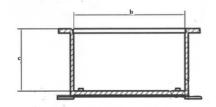
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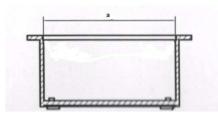
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		Oute	r Dime	nsions		Interna imensic				ng plate nsions	
pos.	Enclosure size	Width B	Lenght A	Depth (Out of head bolts on cover) C	Width b	Lenght a	Depht c	Weight Kg.	Width	Lenght	Note
1	EJB-S-A	254	319	179	170	235	136	31,2	160	225	
2	EJB-S-B	254	430	239	170	345	196	41,8	160	335	
3	EJB-S-C	416	491	260	315	390	217	81	305	380	
4	EJB-S-D	496	536	259	390	430	216	98,90	380	420	
5	EJB-S-E	546	601	274	430	485	221	154	420	475	
6	EJB-S-F	461	846	319	340	725	266	179,2	330	715	
7	EJB-S-G	616	836	316	505	725	253	287	495	715	
8	EJB-S-H	616	836	411	505	725	348	309,2	495	715	

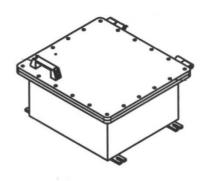


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### Raw material enclosure Iron Steel Group I and II:

- Box and cover : Iron Carbon steel FE -510D

Outer srews : aisi 316 A4Inner screws : aisi 316 A4

Internal mounting plate
 Hinges
 Glavanized steel Senzimir
 Carbon steel
 FE -510D
 Carbon steel
 FE -510D

#### Surface finish:

### Standard for Iron Steel enclosures :

- Finishing by pickling and sand paper
- Zinc galvanized by electrolitic bath

#### On request:

On demand:

- Standard painting of external surfaces by polyurethane paint as per our standard " Bard" cycle. Minimum thickness  $100\mu$
- Offshore painting of external surfaces by polyurethane paint as per our standard " Fastenet" cycle. Minimum thickness  $240\mu$
- Offshore painting of external surfaces by polyurethane paint as per our standard " Transat" cycle. Minimum thickness  $300\mu$
- Anti- condensation paint of internal surfaces as per our standard cycle "Velù"



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### **Enclosures EJB series Stainless Steel aisi 316L**



### Mode of protection:

Ex d I Mb T85°C (©)

Suitable for: M2

Or

⟨£<u>x</u>⟩ <sub>II 2 GD</sub>

Ex d IIB+H2 T6 (©) Gb

Ex tb IIIC T85°C (©) Db IP66

Ambient temperature -50°C to +60°C

Incoming cables temperature : as per table show in the instruction and maintenance manual included in each supply

(©) Value linked to the heat dissipation of components and relevant wirings of each enclosure.

If any Intrinsically Safety component inside of enclosure

⟨Ex⟩ II 2 GD

Ex d [ia IIA o IIB o IIC Ga] IIB+H2 T6 Gb

Ex tb [ia Da] IIIC T85°C Db IP66

Ex d [ib IIA or IIB or IIC] IIB+H2 T6 Gb

Ex tb [ib] IIIC T85°C Db IP66

Ambient temperature -50°C to +60°C

Incoming cables temperature : as per table show in the instruction and maintenance manual included in each supply

Suitable for: Zone 1 / 21 e Zone 2 / 22

Mechanical protection degree: IP-66

Operativa voltage: max. 15000 V

Power limit: the heat dissipation value of each electrical circuit sized by our dedicated calculation software related to ambient temperature will define the proper size of EJB enclosure compatible with.

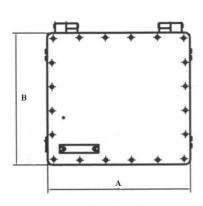


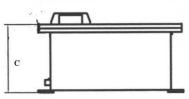
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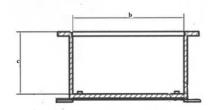
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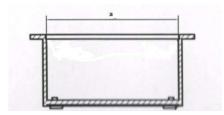
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		Dimensioni esterne			Dime	Dimensioni interne				oni piastra erna	
pos.	Grandezza cassetta	Larghezza B	Lunghezza A	Profondità ( esclusi bulloni coperchio ) C		Lunghezza a	Profondità C	peso Kg.	larghezza	lunghezza	Note
1	EJB-S-A	254	319	179	170	235	136	31,2	160	225	
2	EJB-S-B	254	430	239	170	345	196	41,8	160	335	
3	EJB-S-C	416	491	260	315	390	217	81	305	380	
4	EJB-S-D	496	536	259	390	430	216	98,90	380	420	
5	EJB-S-E	546	601	274	430	485	221	154	420	475	
6	EJB-S-F	461	846	319	340	725	266	179,2	330	715	
7	EJB-S-G	616	836	316	505	725	253	287	495	715	
8	EJB-S-H	616	836	411	505	725	348	309,2	495	715	

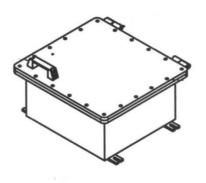


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### Raw material enclosure Stainless Steel Group I and II:

- Box and cover : Aisi 316 L - Outer srews : aisi 316 A4 - Inner screws : aisi 316 A4

Internal mounting plate : Glavanized steel Senzimir

- Hinges : Aisi 316 L - Feet : Aisi 316 L

#### Surface finish:

#### Standard for Stialess Steel enclosures :

Finishing by pickling and sand paper

### On request:

On demand:

- Standard painting of external surfaces by polyurethane paint as per our standard " Bard" cycle. Minimum thickness  $100\mu$
- Offshore painting of external surfaces by polyurethane paint as per our standard " Fastenet" cycle. Minimum thickness  $240\mu$
- Offshore painting of external surfaces by polyurethane paint as per our standard " Transat" cycle. Minimum thickness  $300\mu$
- Anti- condensation paint of internal surfaces as per our standard cycle "Velù"



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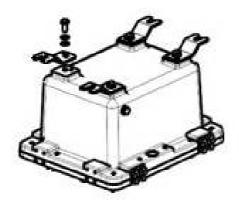
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### **Customization on request**

The Aluminum alloy enclosures foreseen a 90° adjustable mounting feet system. pict. 16). Each foot , stainless steel aisi316 made, is 90° free adjustable. To allow the best combination with the pre-existing site frame as well as to optimize the steel surface / wall frame. Especially when the enclosures are assembled in a switchrack. With only 3 sizes of mounting feet all 8 size of EJB enclosures are covered









Pict. 16





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- **Hinged cover**. ( Pict. 8 ) All enclosures are engineered to fit a couple of hinges on each of four sides. The hinge's assembling can happen by the user also. Suggestion is to ask for to us ( manufacturer) or to customizer company duly trained and audited by us.







Pict. 8)

- **Knob / handle for lid opening**. (pict. 9) All enclosures can foresee the knob / handle assembling on the lid. Opposite hinges side. The knob/handle's assembling can happen by the user also. Suggestion is to ask for to us (manufacturer) or to customizer company duly trained and audited by us.





Pict. 9)

- **Earth bolt / equipotential between lid and box**. In case of electrical components (barrels) mounted on lid will be mandatory (by Standard) to grant the equipotentiality between lid and box by the suitable earth bolt terminal on back cover (Pict. 10). The earth bolt will allow the proper earth wiring.



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Pict. 10)

#### Drilling and taping of entries for in / out of electrical and various wiring



Pict. 11)

The given notification covers the largest of never-ending combination (per size and quantity) of threaded entries. The A) table shows the maximum number of entries per size for each type of enclosure. By Standard only the manufacturer or customizer company duly trained and audited by him can perform the threaded entries on Ex d enclosures. The EC manufacturer's declaration must care all customization either Electrical and Mechanical. Therefore the a.m. customization can happen on demand by the manufacturer or customizer company duly trained and audited by him according to Standards and Directive in force.

Table A)

L = Lato lungo Long side	EJB-A		EJB-B		EJI	EJB-C		EJB-D		EJB-E		B-F	EJB-G		EJB-H	
S = Lato corto Short side	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S
M20 - 1/2"	8	6	12	6	20	16	24	22	30	24	55	26	55	32	60	38
M25 - 3/4"	8	4	8	4	12	9	22	16	25	20	38	18	40	22	44	24
M32 - 1"	3	3	3	2	10	8	11	9	13	11	30	15	34	18	36	20
M40 - 1"1/4	2	1	2	1	4	3	8	8	8	8	14	6	16	12	17	13



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M50 - 1"1/2	2	1	2	1	4	3	8	8	8	8	14	6	16	12	17	13
M63					3	2	3	3	4	4	10	4	11	5	12	6
M75					2	2	2	2	3	2	4	2	6	4	6	4
M80							1	1	2	2	3	1	5	3	5	3

To check the feasibility of a certain side - entries – configuration, various sizes, can be profitable to care of following B) table.

Table B)

	<u>'</u>
Real entry size	Equivalence value in size ½" M20
1 = ½" o M20	1 x ½
2=3/4" o M25	1,5 x ½
3=1" o M32	2 x ½
4= 1"1/4 o M40	2,25 x ½
5=1"1/2 o M50	3 x ½
6=2" o M62	4 x 1/2
7=2"1/2 o M75	5 x½
8=3" o M80	6 x ½

By the a.m. equivalence table all entries of various size of a single side can be related to a number of  $\frac{1}{2}$ " (M20) entries. If the resulting number will be lowest or equal to the maximum number of entries  $\frac{1}{2}$ " (M20) compatible listed in Table A), the needed configuration will be.

e.g.

- Entries needed on the long side of EJB enclosures:

Entry size	Number of ½" equivalent entries	qty. Needed on long side	Total equivalnce ½"
1 = ½" o M20	1	2	2



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2=3/4" o M25	1,5	3	4,5
3=1" o M32	2	1	2
4= 1"1/4 o	2,25		
M40		0	0
5=1"1/2 o	3		
M50		1	3
6=2" o M62	4	0	0
7=2"1/2 o	5		
M75		0	0
8=3" o M80	6	0	0
Grand total ed	uivalence in	size ½" (M20)	11,5

According to table A) the smallest enclosure compatible will be : EJB-B

### Entries on lid for push buttons pilot lights selector switches (barrels)



Pict. 12)

Table C)

Ingre	Ingressi filettati M32 x 1,5 fattibili a coperchio												
	Cylindric M32 x 1,5 On Cover												
Cassetta tipo Box type	A B C D E F G H												
Ingressi per fila Entries x row	2	5	6	6	6	5	8	8					
Qtà. Di file Number of rows	2	2	4	6	7	11	11	11					



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### Windows feasibility on the lid and combination with entries for push buttons pilot lights selector switches ( barrels )





Pict. 14)

Table D)

Cassetta tipo - box type	Α	В	С	D	E	F	G	Н
Qtà. Ingressi M32 x 1,5 + finestra compatibile Entries M32 x 1,5 Qty. + compatible window		4	6	12	18	35	56	56
Tipo di finestra compatibile - window type compatible								
Р	-	х	Х	X	Х	Х	Х	X
Q	-	-	X	x	x	x	x	x
R	•	•	•	x	х	x	x	x
S	-	х	X	x	x	x	x	x
Т	-	-	х	x	x	x	x	x
U	•	•	•	ı	х	x	x	x
V	-	-	Х	Х	Х	Х	Х	Х
W	-	-	-	Х	Х	Х	Х	Х
X	-	-	-	-	х	х	х	х

Table E) Standard windows



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Finestra tipo Window type	Dimensioni . dimensions (mm)	Dimensioni del vetro glass dim. min. (mm)	Spessore vetro glass thickness min. (mm)
Р	square 80X80	120x120	23
Q	square 120x120	160x160	23
R	square160x160	200x200	23
S	rectangular 40x70	80x110	23
Т	rectangular 40x200	80x240	23
U	rectangular 100x270	140x310	23
٧	round 120	160	23
W	round 160	200	23
X	Round 180	220	23

#### Routine test and checks

As stated in EN/IEC 79001-1 § 16.1 Standard each <u>enclosure</u> before selling must be subject to the <u>hydrostatic</u> <u>pressure test</u>. In to the EC Type Examination Certificate issued by Ineris Laboratory ( Notified Body ) the a.m. must is re-confirm and are listed the values of pressure for each enclosure size to apply, also related to the ambient temperature ( -20°C e -50°C ).

Basically the hydrostatic test isn't a complicate test. It's enough:

- To drill and to tape one ½" entry on two opposite sides: one for the pressurized water entry and the other for the pressure gouge connection. To allow the check of pressure value
- To previde the assembling lid box fitting in between a suitable gasket . To secure all bolts : To connect the water supply pipe, To connect the pressure gouge
- To have a pump (even by hand operated) to put the water in pressure
- To fulfil the enclosure of water (i.e. the biggest EJB size available 130 litres!)
- To put in pressure the water by the pump to reach the level stated in the EC Examination certificate
- To keep the pressure value constant for at least 20"

  If the enclosure at the end of 20" will not show any release of water or any crack, the test will be positive
- To download the enclosure (130I) and dry it
  In any case the two ½" entries will remain and may effect on the final application of the enclosure
  To provide for the record of the test. On paper or on a computer file: Identifying each enclosure by a serial number



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Pict. 15)

It's evident as a test done as above need a sensible contribution of man power

By real tests done the time required cannot be less than 30 minutes for each enclosure (average value).

The impact o fan a.m. man power value would enormously effect on production cost. The selling price would be to high.

We do not know as our competitors solved the a.m. problem of costs. Isn't our duty.

Contrariwise we show you what our company did to make the pressure test and relevant registration compatible with market price. Always respecting the Standard requirements.

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Together with a primary manufacturer of special machine we set up a fully automated test station that :

- Perform the test on entries less enclosure
- Recognize the size of enclosure on board and set accordingly the test parameters prescribed by the Atex Manager
- Stem the test time within 4 minutes (for the biggest size).
- Record the test results and relevant parameters on the transponder of each enclosure. With also the date and sign of operator
- Down load the water recycling it.



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- The pressure test is done on 100% of enclosure proposed to the market
- The testing procedure are fully according to the Standard's requirement e EC Examination certificate statements. Also totally independent by the operator ( He cannot touch the test parameters )
- The test report will be permanently recorded . The testing station machine transfer the test result on the transponder of each enclosure
- Any time will be possible to read the test parameters and results by:

Notified body

Customer test man

Third testing authority appointed by customer -Ente terzo nominato dal Cliente



Transponder reader



Very soon will be available a direct view of the pressure test by a dedicated web can located in our work shop If any test in progress by the suitable pass word you will see how we are doing. If . at time of your connection, there will not be tests in progress the software will show you the last test done ( showing the date and time of recording ).



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### **Control Units (Barrels)**





Full Guard Push buttons TB-PB .. series













Emergency push button: TB-EPB ..... series











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Switches and selector switches: TB-SW..... series









Pilot lamps: TB-PL... series









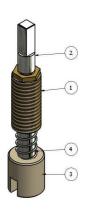


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Operating handle for on load swathes / MCB / MCCB: TB-PT series , M12 or M20 sizes







Reset for protection relay