

## Enclosures series type “GUB”

### PRODUCTS COVERED:

- GUB00, GUB0, GUB1, GUB23, GUB03 Explosion-proof enclosures for use in Hazardous Locations, Class I, Division 1, Groups B, C, and D; Class II, Division 1, Groups E, F, and G.
- Environmental ratings: Type 1, 4 and 4X.

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### 1. INTRODUCTION

#### 1.1 Scope

This handbook has been written by the manufacturer of the equipment, and it is an integrating part of it.

This handbook defines the scope for which the equipment has been designed and manufactured and contains all the information necessary to guarantee a safe and correct use.

The observance of the contained indications guarantees the personal safety and greater duration of the same equipment.

The information contained in the manual is addressed to the following subjects:

- Assigned to the transport, handling, unpack.
- Assigned to the preparation of installation and its site.
- Installers.
- Equipment's users.
- Assigned to the maintenance.

This handbook must be conserved with the maximum care and must be always available for any consultation; therefore, it must be protected from humidity, carelessness, sunlight and anything else that could damage it.

#### 1.2 General Warning

To avoid the risk of electrical shock, electrical power must be off before and during the installation and maintenance. The manufacturer isn't liable for damages caused to the system or to things in the following cases:

- Improper use.
- Employment of not trained and qualified staff.
- Not correct assembly and installation.
- Defects in the systems.
- Modifications or interventions not authorized.
- Use of non-original spare parts.
- Non-observance of the rules written in this handbook.
- Exceptional events.

Every operation not described in this handbook and/or not authorized by manufacturer, beyond making to lose in immediate way the guarantee, involves the full responsibility of who executes it.

#### 1.3 Standards

**UL 1203** - Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations.

**UL 50** - Enclosures for electrical equipment, non-environmental considerations.

**UL 50E** - Enclosures for electrical equipment, environmental considerations.

## 2. IDENTIFICATION

### 2.1 Product Brand and Type Designation

Enclosures for terminal boards, for control, power and signalling units, series "GUB".

**GUB\*\*=** indicates the series name and the size of the enclosures without light-transmitting parts

### 2.2 Manufacturer Name and Address

#### **BARTEC F.N. Srl**

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## 3. SPECIFICATION OF THE PRODUCT

### 3.1 Cable Entry Holes and Mounting of Accessories

The enclosures can be pre-made or machined with threaded holes on the walls and on the cover, to allow the screwing of the control or signalling accessories, or for the cable entry.

**NB:** all the mechanical processes can only be executed by the manufacturer, unless otherwise specifically authorised by the same.

The quantity and size of the holes must comply with the indications supplied by the manufacturer, in accordance with the type of tests carried out for the certification of the enclosures.

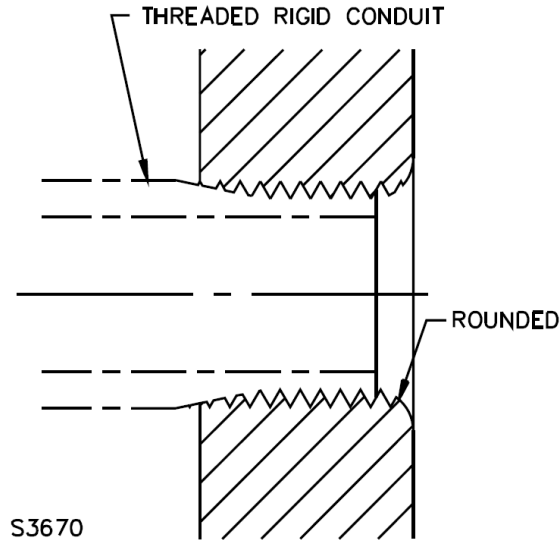
#### **Gauging Requirements for Field-Threaded Entries Shall Conform To:**

- For NPT threaded entries, ASME B1.20.1 except those entries shall gauge from flush to +3-1/2 turns beyond the L-1 gauging notch in lieu of the -1 to +1 turns described in ASME B1.20.1.
- The cylindrical threading must have manufacturing tolerances like the ones indicated on tables ISO 965/1 and ISO 965/III (coupling tolerance 6H/6g).

Each entry shall be provided with one of the following instructions:

- A smooth and well-rounded integral conduit stop, having a throat or inner diameter as specified in Table 14.1 on UL1203 Standard
- A smooth and well-rounded inner end as shown in the following figure:

Figure 14.1  
Conduit Opening Without Conduit Stop



- Threads not exceeding the maximum number specified on Table 14.2 on UL1203 Standard for the conduit size, such that a conduit bushing is able to be installed on the end of the conduit after it is engaged with the entry threads.
- Where a conduit stop (also known as integral bushing) is not provided, the inner end of the entry shall be smooth and well-rounded. The dimensions of the conduit stop, if provided shall be as shown in Table 14.1.
- Metric threaded entries shall comply with the requirements in 10.6 Section on UL1203 Standard, Threaded Joints, and Section 21, Explosion Tests. Means shall be provided to minimize abrasion to conductor insulation.

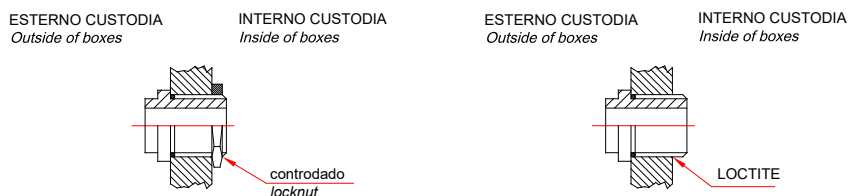
**3.2 Threading**

The threading may be chosen between that indicated in the following tables, considering dimensions and manufacturing tolerances.

GUB MODEL	MINIMUM BODY WALL THICKNESS [mm]	THREAD TYPE	MINIMUM NUMBER OF ENGAGED THREADS
GUB00	7.7	NPT – ANSI/ASME B1.20.1	≥ 5
		NPSM – ANSI/ASME B1.20.1	≥ 5
		METRIC – ISO 261	NOT APPLICABLE
GUB0	12.3	NPT – ANSI/ASME B1.20.1	≥ 5
		NPSM – ANSI/ASME B1.20.1	≥ 5
		METRIC – ISO 261	≥ 7
GUB1	12.6	NPT – ANSI/ASME B1.20.1	≥ 5
		NPSM – ANSI/ASME B1.20.1	≥ 5
		METRIC – ISO 261	≥ 7
GUB23	14	NPT – ANSI/ASME B1.20.1	≥ 5
		NPSM – ANSI/ASME B1.20.1	≥ 5
		METRIC – ISO 261	≥ 7
GUB03	15.9	NPT – ANSI/ASME B1.20.1	≥ 5
		NPSM – ANSI/ASME B1.20.1	≥ 5
		METRIC – ISO 261	≥ 7

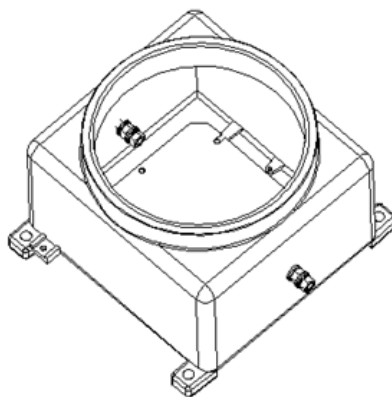
For the cylindrical threading, an anti-loosing grip device must be provided (mechanical block).

**FIG. 2**



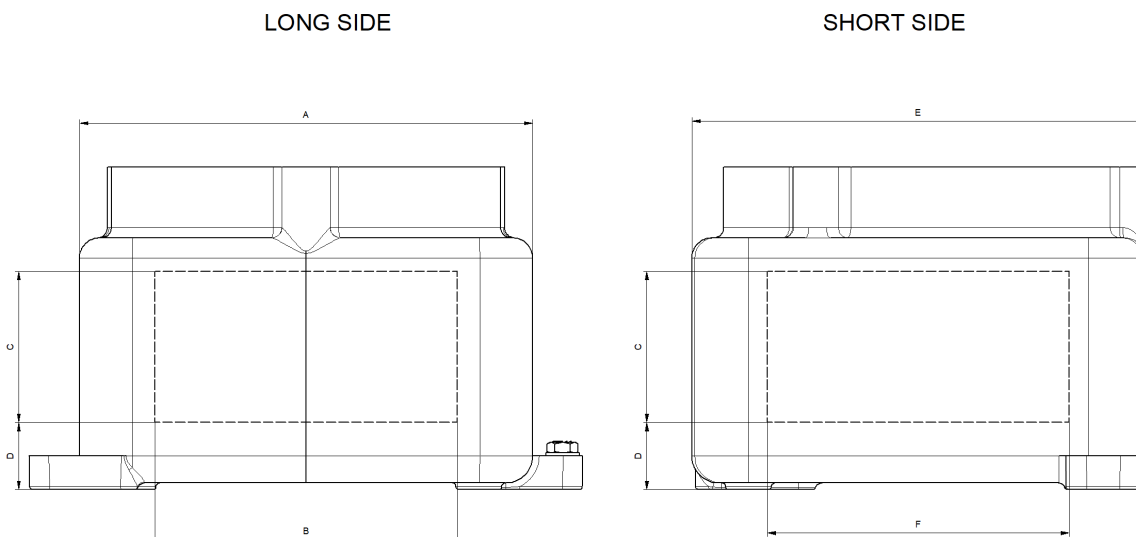
It is possible to install a conduit tube (UNI 7683:1977) with a maximum length of 200 mm and maximum thread 3".

For all GUB enclosure series, you can install an external/internal earthing bolt as shown in the following figure (example):



The body may be provided with threaded openings for engagement with auxiliary devices with no more than the table illustrating the maximum removable area per GUB model.

**3.3 Drilling areas**



### Drilling Areas Dimensions

Model / Dimensions	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
GUB00	135	90	45	20	135	90
GUB0	172,97	122	65	24	170	122
GUB1	200	150	75	23	200	150
GUB23	310	262	78	24	270	222
GUB03	309,9	255	120	30	280	228

### Maximum Removable Area per GUB

GUB Model	Long Side				Short Side			
	Hole Size	N° Holes	Tot Holes Area [mm <sup>2</sup> ]	% Max Removable Area	Hole Size	N° Holes	Tot Holes Area [mm <sup>2</sup> ]	% Max Removable Area
NOT APPLICABLE FOR METRIC THREADS								
GUB00	3/8" NPT / NPSM	2	461	11	3/8" NPT / NPSM	2	461	11
	M63	1	3116	39	M63	1	3116	39
GUB0	2" NPT / NPSM	1	2857	36	2" NPT / NPSM	1	2857	36
	M75	1	4416	39	M75	1	4416	39
GUB1	2 1/2" NPT / NPSM	1	4186	37	2 1/2" NPT / NPSM	1	4186	37
	M63	3	9347	46	M75	2	8831	51
GUB23	2" NPT / NPSM	3	8570	42	2 1/2" NPT / NPSM	2	8372	48
	M115	2	20763	68	M90	2	12717	46
GUB03	4" NPT / NPSM	2	20511	67	3" NPT / NPSM	2	12408	45

### Area per Hole Size

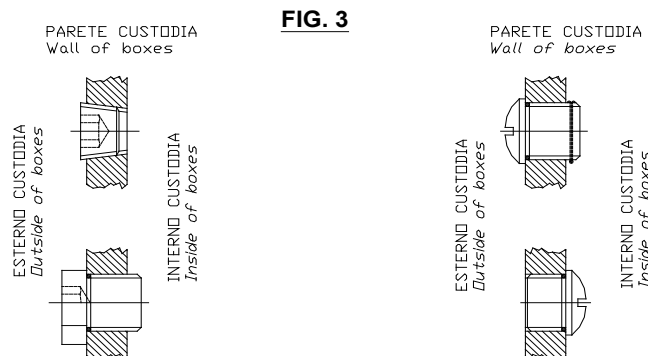
NPT / NPSM		METRIC	
Size	Hole Area [mm <sup>2</sup> ]	Size	Hole Area [mm <sup>2</sup> ]
1/8"	74	M6	28
1/4"	136	M10	79
3/8"	231	M16	201
1/2"	357	M20	314
3/4"	558	M25	491
1"	876	M32	804
1 1/4"	1396	M40	1256
1 1/2"	1828	M50	1963
2"	2857	M63	3116
2 1/2"	4186	M75	4416
3"	6204	M90	6359
4"	10256	M115	10382

**Minimum Center-To-Center Distance Between Entries**

<b>M115</b>	-	-	-	-	-	-	-	-	-	139
<b>4"</b>										(5.47)
<b>M90</b>	-	-	-	-	-	-	-	-	115	126
<b>3"</b>									(4.53)	(4.96)
<b>M75</b>	-	-	-	-	-	-	-	101	108	120
<b>2 1/2"</b>								(3.98)	(4.25)	(4.72)
<b>M63</b>	-	-	-	-	-	88	94	88	102	112
<b>2"</b>						(3.46)	(3.70)	(3.46)	(4.02)	(4.41)
<b>M50</b>	-	-	-	-	75	82	88	75	95	106
<b>1 1/2"</b>					(2.95)	(3.23)	(3.46)	(2.95)	(3.74)	(4.17)
<b>M40</b>	-	-	-	67	70	77	84	67	91	103
<b>1 1/4"</b>				(2.64)	(2.76)	(3.03)	(3.31)	(2.64)	(3.58)	(4.06)
<b>M32</b>	-	-	58	63	66	73	80	58	86	99
<b>1"</b>			(2.28)	(2.48)	(2.60)	(2.87)	(3.15)	(2.28)	(3.39)	(3.90)
<b>M25</b>	-	52	55	59	63	69	76	52	83	95
<b>3/4"</b>		(2.05)	(2.17)	(2.32)	(2.48)	(2.72)	(2.99)	(2.05)	(3.27)	(3.74)
<b>M20</b>	46	49	52	57	60	67	73	46	80	93
<b>1/2"</b>	(1.81)	(1.93)	(2.05)	(2.24)	(2.36)	(2.64)	(2.87)	(1.81)	(3.15)	(3.66)
<b>METRIC</b>	<b>M20</b>	<b>M25</b>	<b>M32</b>	<b>M40</b>	<b>M50</b>	<b>M63</b>	<b>M75</b>	<b>M90</b>	<b>M115</b>	
<b>NPT</b>	<b>1/2"</b>	<b>3/4"</b>	<b>1"</b>	<b>1 1/4"</b>	<b>1 1/2"</b>	<b>2"</b>	<b>2 1/2"</b>	<b>3"</b>	<b>4"</b>	
<b>NPSM</b>										

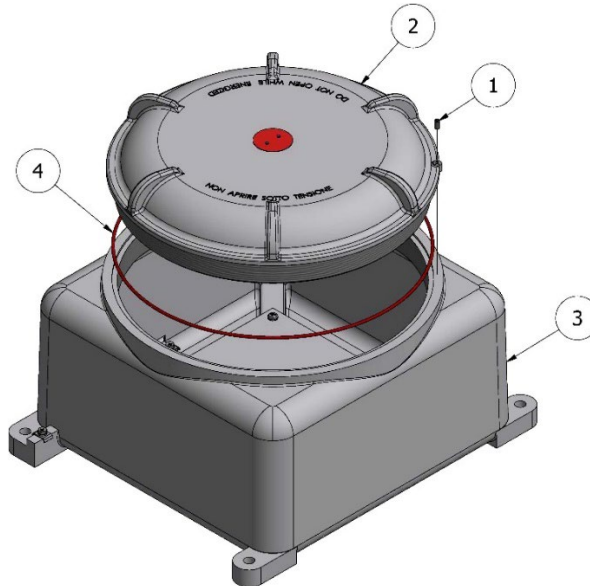
**3.4 Important Notes**

- Each damaged part may only be replaced or repaired by the manufacturer, unless with express authorization by it.
  - The internal and external ground terminal board is addressed for the conductor that must be placed between the anti-rotational washer and the flat washer. If the connection is made with a lug, this must have an anti-rotational pin, or it must be provided whichever mean to secure the conductors from rotation.
  - The internal grounding terminal shall be used as the primary equipment ground.
- For CAN application: The external grounding terminal is only a supplemental bonding connection where local authorities permit or require such a connection.
- For US application: The external grounding terminal should not be used.
- Do not overspray joints if the end-user paints the exterior of the enclosure.
  - No thread locking compound should be applied to threaded joints and threaded entries.
  - Each unused hole in the enclosure must be closed with conical or cylindrical plugs that have a full conformity certificate to preserve the anti-explosion seal characteristics of the enclosure. These plugs must only be removed with special tools (see FIG. 3).



### 3.5 Installation

The enclosures type GUB, are furnished with or without drilled and tapped openings. Drilling and tapping of conduit openings are subject to the limitations of maximum size and number of openings as well as spacing. Refer to drilling and tapping, paragraph 3.1.



#### **Enclosure Opening:**

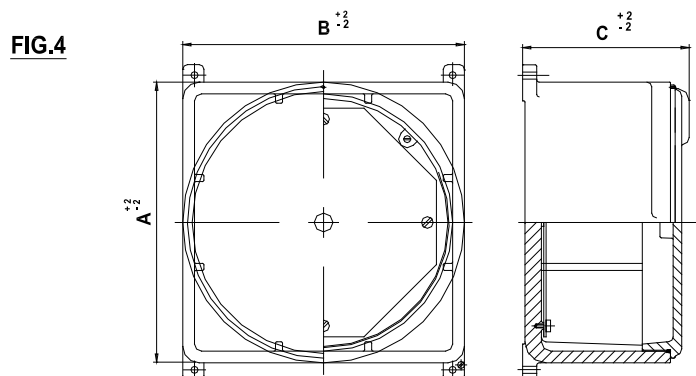
1. Unscrew the threaded pin (1).
2. Unscrew the cover (2).

#### **Enclosure Closing:**

1. Check if the O-ring gasket (4) is in good condition and without any damage. In case it is not, proceed to change the O-ring with another one supplied by the manufacturer.
2. Check the thread on body (3) and cover (2) if dirty or damaged. ⚠️ NOTE: Dirt or damage can block the thread.
3. To prevent corrosion on the cover thread and to ensure low friction screwing in it, the thread must be greased. Joint surfaces and supply connection threads may be coated with petroleum jelly or soap-thickened mineral oil or other corrosion-inhibiting greases. The grease shall not contain metal and shall be of a type that does not harden because of aging, does not contain an evaporating solvent and does not cause corrosion of the joint surfaces. ⚠️ NOTE: screwing the cover without a lubricated thread can block the latter.
4. To avoid damaging the thread of the flameproof housing (3), the cover must be correctly and carefully placed on it. To have a correct coupling of the threads, it may be necessary to turn counterclockwise the cover.
5. Slowly screw the cover clockwise into the housing body as far as it is completely coupled. If there is increased resistance or blocking, the cover must be opened counterclockwise again and checked if it is dirty or damaged. ⚠️ NOTE: forcibly screwing the cover, in case of increased resistance or blocking, will damage the thread.
6. Continue with point 3.
7. Block the cover screwing the threaded pin (1).

### 3.6 Dimensions and Weight of the Empty Enclosures

Dimensions		Sizes				
		GUB0	GUB1	GUB23	GUB00	GUB03
A [mm]		170	200	310	135	280
B [mm]		172,9	200	270	135	309,8
C [mm]		142	153	177	111	231
AI	weight [Kg]	3.50	5.00	10.50	1.85	14.20
		3.70	5.30	11.60		15.50



### 3.7 Technical Data

#### Enclosure Materials:

- Aluminium-silicon primary alloy for sand-casting (EN\_AC43100) or for gravity-casting/die-casting (EN\_AC44100) according to UNI EN1706:1999 – ISO3522:2006 standards. Quantity of magnesium (Mg) and titanium (Ti) in less than 7.5% of the total mass.
- Stainless steel AISI 03-304-316-316L UNI EN10088-3:2005

#### Gaskets:

- Silicone (LSR); temperature of use -60...+260 [°C]

The Cover Gasket (O-Ring) is provided along the perimeter and constructed of the following:

- Red silicone, manufactured by Vergomma or Tiger, compound designation LSR.

Model	Diameter	Length
GUB00	3,53 mm	91,67 mm
GUB0	3,53 mm	132,90 mm
GUB1	3,53 mm	158,30 mm
GUB23	3,53 mm	215,50 mm
GUB03	3,53 mm	240,90 mm

### 3.8 Joint Between Cover and Body

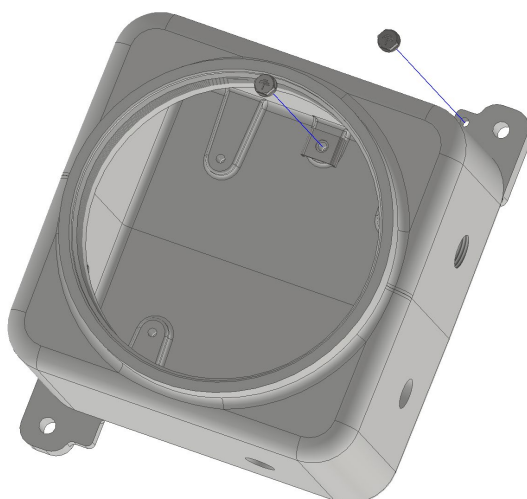
<i>Model</i>	<i>Joint thread type</i>	<i>Min. n° engaged threads</i>	<i>Min. engagement length [mm]</i>
GUB00	M100x2	5	11,5
GUB0	M138x2	6	12,6
GUB1	M164x2	6	12,8
GUB23	M225x3	6	18,0
GUB03	M250x3	8	24,0

### 3.9 Grounding

For all GUB enclosure series, you can install an external and an internal earthing bolt. The internal grounding terminal shall be used as the primary ground equipment.

For CAN application: The external grounding terminal is only a supplemental bonding connection where local authorities permit or require such a connection.

For US application: The external grounding terminal should not be used.



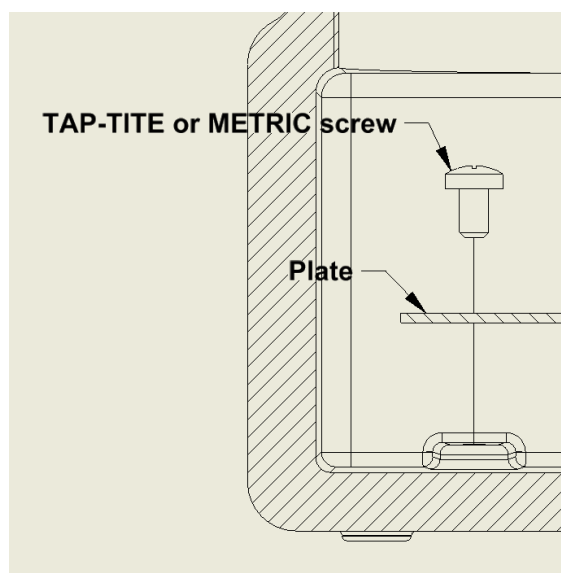
- Internal Ground Screw: Hexagonal head screw M5 x 10, or M6 x 10, with a stainless-steel flat and lock washer provided on the base of the body, marked with the letter “G” or word “GROUND” or with a grounding symbol.
- External Ground Screw: Hexagonal head screw M5 x 10, or M6 x 10, marked with the letter “G” or word “GROUND” or marked with a grounding symbol.

## 4. MOUNTING PLATE KIT

### 4.1 Application

Inside the enclosures series GUB, mounting plates are used for the installation of terminal blocks, relays and various electrical devices.

The mounting plate should be installed by qualified and competent employees.



## 5. MAINTENANCE

- Before carrying out whichever maintenance operation, disconnect the electrical system.
- The inspections and maintenance of the enclosures must be carried out only by expert staff, whose training has included all the necessary instructions on the installation modalities, on the laws and standards relevant and on the general principles of the classification of the hazardous areas.
- For the use in environments where combustible dusts may be present, the user must carry, on regular basis, the cleaning of the enclosure to prevent the formation of dust on the surface (thickness < 5 mm).
- Use water moistened clothes or whichever other product that doesn't damage the group parts.
- Don't make strain the water (or whichever other product used) inside of the joints of the electrical apparatus.
- Visually check for undue heating evidenced by discoloration of wires or other components, damaged or worn parts, or leakage evidenced by corrosion water inside the enclosure.
- Electrically check to make sure that all connections are clean and tight, and that contacts, in the components, make or break as required.
- Mechanically check that all parts are properly assembled and the operating mechanism moves freely.