Line bushing Type 07-91-…/…..

### Explosion protection

**Ex type of protection**

- **ATEX**
  - II 2G Ex db IIC
  - I M2 Ex db I
- **IECEx**
  - Ex db IIC
  - Ex db I

**Certification**

- EPS 13 ATEX 1 619 U
- IECEx EPS 13.0045U
- FM J.I. 1Q5A5.AE
- CSA Z227587 (LR 85562)
- UL E225236

**Ambient temperature**

Depends on the design and the conductors, see marking of the line bushing, packing label as well as accompanying documents.

**Operating temperature**

**Line bushing with conductors**

For fixed installation

- 4GAF: -55 °C to +110 °C
  - (-67 °F to +230 °F)
- FLB: -40 °C to +105 °C
  - (-49 °F to +221 °F)
- H05G-K, H07G-K: -55 °C to +110 °C
  - (-67 °F to +230 °F)
- H05V-K, H07V-K: -30 °C to +70 °C
  - (-22 °F to +158 °F)
- NXSFOU: -40 °C to +90 °C
  - (-49 °F to +194 °F)
- (N)HX5GAFHKO: -40 °C to +120 °C
  - (-49 °F to +248 °F)
- RADOX 125: -60 °C to +110 °C
  - (-76 °F to +230 °F)
- RADOX 155: -60 °C to +110 °C
  - (-76 °F to +230 °F)
- RADOX UL/CSA: -60 °C to +110 °C
  - (-76 °F to +230 °F)
- RG 176 LFH: -30 °C to +105 °C
  - (-22 °F to +221 °F)
- RG 179 LFH: -30 °C to +105 °C
  - (-22 °F to +221 °F)
- RG 58 CIU: -40 °C to +80 °C
  - (-49 °F to +176 °F)
- ENVIROFLEX 316: -40 °C to +105 °C
  - (-49 °F to +221 °F)
- PROFIBUS FC
  - Standard GP: -40 °C to +75 °C
  - (-49 °F to +167 °F)
  - PROFIBUS Torsion: -25 °C to +75 °C
  - (-13 °F to +167 °F)
  - UNITRONIC BUS: -40 °C to +80 °C
  - (-49 °F to +176 °F)

**RATED CURRENT:**

- 6,0 mm²: 3 A
- 4,0 mm²: 28 A
- 3,5 mm²: 21 A
- 3,0 mm²: 15 A
- 2,5 mm²: 12 A
- 2,0 mm²: 10 A
- 1,5 mm²: 6 A
- 1,0 mm²: 4 A
- 0,7 mm²: 3 A
- 0,5 mm²: 3 A
- 0,3 mm²: 2 A
- 0,2 mm²: 1 A

**Nominal section:**

- 4,0 mm²: 28 A
- 3,5 mm²: 21 A
- 3,0 mm²: 15 A
- 2,5 mm²: 12 A
- 2,0 mm²: 10 A
- 1,5 mm²: 6 A
- 1,0 mm²: 4 A
- 0,7 mm²: 3 A
- 0,5 mm²: 3 A
- 0,3 mm²: 2 A
- 0,2 mm²: 1 A
- 0,1 mm²: 0.5 A

**Pressure**

- 07-91-…/….U.: -500 mbar to 6 bar
  - (-72.5 psi to 87 psi)
- 07-91-…/….D..: -900 mbar to 80 bar
  - (-13.05 psi to 1160.3 psi)

Depends on the respective version, see marking of the line bushing, packing label as well as accompanying documents.

**Approved for zones**

- 1 and 2

### Technical data

**Electrical data**

- **Nominal voltage:**
  - max. 6000 V

- **Rated current:**
  - 0.08 mm²: 1 A
  - 0.1 mm²: 2 A
  - 0.2 mm²: 3 A
  - 0.3 mm²: 5 A
  - 0.5 mm²: 8 A
  - 0.7 mm²: 12 A
  - 0.9 mm²: 15 A
  - 1.0 mm²: 19 A
  - 1.5 mm²: 25 A
  - 2.0 mm²: 37 A
  - 2.5 mm²: 48 A
  - 3.0 mm²: 59 A

**Sleeve material**

- Metal, bare, varnished or electro-plated

**Thread size**

- M10x1 to M42x1.5

**External diameter of the sleeve**

- 10 mm to 40 mm
  - (0.39 in to 1.58 in)

**Gap length of the sleeve**

- L ≥ 12.5 mm (0.49 in)
- L ≥ 25 mm (0.98 in)
- L ≥ 40 mm (1.57 in)

**Dimensions**

See separate dimension sheet.
Safety Instructions
The line bushings are suitable for use in zones 1/2.
The line bushing may be used only for the approved purpose. Unprotected, incorrect installation can cause malfunctioning and the loss of explosion protection.

When determining the maximum current carrying capacity of the connection cores, consideration must be given to their self-heating and the enclosure heating at the place of installation at maximum ambient temperature.

Utilization in areas other than those specified or the modification of the product by anyone other than the manufacturer is not permitted and will exempt BARTEC from liability for defects and any further liability.

The generally applicable statutory rules and other binding directives relating to workplace safety, accident prevention and environmental protection must be observed.

The line bushings may be operated only if they are clean and not damaged in any way. It is not permissible to convert or modify the line bushings.

Marking
Particularly important points in these instructions are marked with a symbol:

- **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
- **NOTICE** is used to address practices not related to personal injury.

**Note**
Important instructions and information on effective, economical and environmentally compatible handling.

**Standards conformed to**
IEC 60079-0:2011
EN 60079-0:2012
IEC/EN 60079-1:2007

**Transport, Storage**

**NOTICE**
Damage to the line bushings through incorrect transport or incorrect storage.
- Transport and storage is permissible in original packaging only.

**Assembly, Installation, and Commissioning**

- **WARNING**
  Risk of serious injury due to incorrect proceedings.
  - Only authorized and qualified personnel may do any of the assembly, disassembly, installation and commissioning work.

**Assembly/Disassembly**

- **WARNING**
  Risk of serious injury due to incorrect assembly.
  - When assembling the equipment, the IEC/EN 60079-14 (NEC for USA/CEC for Canada) and other applicable national standards and installation regulations must be observed.
  - Tapped holes, into which line bushings are screwed, must meet the minimum requirements of IEC/EN 60079-1, section 5.3 (table 3 and 4). Observe the minimum depth of engagement. This requires comparing the length of the thread in the line bushing with the minimum depths of engagement in Table 3. A threading length which is longer or equal to the lengths specified in Table 3 must be selected.
  - Boreholes into which the line bushings are inserted must meet the minimum requirements of IEC/EN 60079-1, section 5.2 (table 1 or 2). Observe the minimum lengths and gap widths.
  - Select the quality of the conductors so that they correspond to the thermal and mechanical requirements of the respective range of application.

Check when assembling:
- Use appropriate tools.

<table>
<thead>
<tr>
<th>Thread size</th>
<th>Max. tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>M10x1</td>
<td>10 Nm (0.69 lb.ft)</td>
</tr>
<tr>
<td>M16x1</td>
<td>15 Nm (1.03 lb.ft)</td>
</tr>
<tr>
<td>M16x1.5</td>
<td>15 Nm (1.03 lb.ft)</td>
</tr>
<tr>
<td>M20x1.5</td>
<td>25 Nm (1.71 lb.ft)</td>
</tr>
<tr>
<td>M24x1.5</td>
<td>35 Nm (2.40 lb.ft)</td>
</tr>
<tr>
<td>M25x1.5</td>
<td>35 Nm (2.40 lb.ft)</td>
</tr>
<tr>
<td>M33x1.5</td>
<td>50 Nm (3.43 lb.ft)</td>
</tr>
<tr>
<td>M36x1.5</td>
<td>50 Nm (3.43 lb.ft)</td>
</tr>
<tr>
<td>M38x1.5</td>
<td>50 Nm (3.43 lb.ft)</td>
</tr>
<tr>
<td>M42x1.5</td>
<td>50 Nm (3.43 lb.ft)</td>
</tr>
</tbody>
</table>

- Make sure the line bushing is in perfect condition.
- Fasten the line bushing in the electrical operating equipment in a way that will prevent rotation and self-loosening. Customary aids are: lock washer, locknut, adhesive, retaining ring, etc. Assembly instruction, see page 3.
- When installing, observe the minimum bending radius for the conductors.
- If a coxial cable is used, it must be insulated and laid according to its design.
- If sealing materials are used, they must be selected to ensure compliance with the specified operating temperature and chemical resistance.
- Do not use sealing material over Ex gaps.

**Installation**
Check when installing:
- Connect the line bushing carefully and protect it by means of an enclosure in a standardized type of protection conforming to IEC/EN 60079-0.
- Cores that are not needed must be wired to terminals.
- Conductor lines or hose lines of the following types: PROFIBUS Torsion 6XV1830-OPH10, Koax RG 178 LFH, and Koax RG 179 LFH have to be permanently installed.
- There is no need to install other hose lines permanently.

**Note**
The pressure-proof and vacuum-tight version must conform to the Pressure Equipment Directive 97/23/EC and the relevant standards it contains.

**Commissioning**
Before commissioning, check that:
- The line bushings are assembled and installed correctly.
- The line bushings are not damaged.
- The conductors have been laid correctly.
- The junction space is clean.
- The connection has been established properly.

**Note**
Temperature ranges are specified for fixed installed cables. For flexible installation it is necessary to contact the manufacturer.
### Operational Instruction

#### Line bushing Type 07-91..-..../....

#### Operation

**DANGER**

Death or serious injury due to improper use.
- The line bushings may be operated only within the technical limits that apply to them (see page 1).

#### Maintenance and Fault Clearance

**WARNING**

Risk of serious injury due to incorrect proceedings.
- Only authorized qualified personnel may do any of the work relating to maintenance and fault clearance.
- IEC/EN 60079-17 must be observed.

#### Fault Clearance

**WARNING**

Risk of serious injury due to use of non-original spare parts.
- Use original parts only as replacements. Defective line bushings cannot be repaired; they must be replaced considering this operational instruction.

#### Maintenance

**WARNING**

Risk of serious accidents due to damaged parts.
- Check line bushings and cables regularly for cracks and damage. Make sure that they are properly established.

The operator of line bushings must keep them in good condition, operate them properly, monitor them and clean them regularly.

#### Assembly Instruction

**Note**

The line bushings in the sketches are used as examples for all different types of line bushings.

**For Line Bushings with Threads**

- Protection against twisting and self-loosening by securing with a locknut.
  - "e" connection space
  - "d" connection space

- Protection against twisting and self-loosening by means of a lock washer.
  - "e" connection space
  - "d" connection space

- Protection against twisting and self-loosening by gluing in place with a temperature-resistant adhesive.
  - "e" connection space
  - "d" connection space

**For pluggable Line Bushings**

1. Retaining ring
2. Protection against twisting
   - by adhesive
   - place the collar against a surface, i.e. without adhesive

#### Accessories, Spare Parts

See BARTEC catalogue.

#### Disposal

The components in the line bushings contain metal and plastic parts. Therefore the statutory requirements for disposing of electronic scrap must be observed (e.g. disposal by an approved disposal company).

#### Service-Address

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Erklärung der Konformität
Declaration of Conformity
Attestation de conformité

Wir erklären in alleiniger Verantwortung, dass das Produkt Ex d Leitungsdurchführung Ex d bushing Traversée de cloison Ex d

auf das sich diese Erklärung bezieht den Anforderungen der folgenden Richtlinien (RL) entspricht:

ATEX-Richtlinie 94/9/EG

und mit folgenden Normen oder normativen Dokumenten übereinstimmt:

(alle weiteren Angaben in der Originalsprache)

EN 60079-0:2012
EN 60079-1:2007

Kennzeichnung
Marking
Marquage

II 2G Ex db IIC
I M2 Ex db I

Verfahren der EG-Baumusterprüfung / Benannte Stelle
Procedure of EC-Type Examination / Notified Body
Procédure d'examen CE de type / Organisme Notifié

EPS 13 ATEX 1 619 U
2004, Bureau Veritas Germany GmbH, 86842 Türkheim, D

0044

Bad Mergentheim, den 19.03.2014

ppa. Ewald Warmuth
Geschäftsführung / General Manager

03-0383-0289