PORCELAIN BUSHINGS
NEW CEDASPE 1KV SERIES 2021

An innovative design: the most popular and most reliable 1 kV bushing on the market
A new generation for one of the most popular CEDASPE products: Cedaspe© 1kV series 2021

ED bushings family has been replaced by a new series of 1kV LV bushings according to EN50386:

- This series has been designed for a rated voltage of 1kV and a rated current range of 250 A to 4500 A and is fully interchangeable with the old DIN standard which allows easy replacement, offering an easy, fast and reliable solution for the requirements of distribution transformer manufacturers.
- An intelligent assembly, packaging and delivery process as well as the optimized tightening solution ensure that this series represents the best value-price guarantee on the market.
- The reduced number of components and gaskets significantly reduce maintenance costs. Each bushing is shipped pre-assembled, saving mounting time and reducing costs.
- The special design of this series provides better gasket protection against external environmental conditions, ensuring a longer service life for the gaskets, thus reducing maintenance costs as well as leakage issues.
- The main feature of these low-voltage bushings is a reinforced nylon insulating support on the oil side that ensures an optimal tightening solution.

The most important characteristics are:

- Full interchangeability with the old DIN Bushings with same current rating, without need of any change in the design of the transformer as the bushings ED have the same fixing hole on the tank and are protruding under the cover with the same distance.
- Special gaskets design, special top cap and special flange gaskets seats, which contains the gaskets into their seat, avoiding protrusion of the gasket outside the figure of the bushing, as it happens with the DIN design, when the gaskets are compressed at the correct tightening torque. This reduces a lot the risk of gaskets cracks due to UV radiation.
- Minor number of components to make the bushings; it means higher reliability (less pieces less possibilities of failure!!!!), but more important less pieces, less time required for the bushing assembly on the transformer cover.
- Reinforced nylon insulating support on the oil side, instead of the “B” bottom porcelain, which does not require any internal spacer gasket (in fibre or presspan). This is an important advantage as eliminate the risk of breaks of the internal insulator as in the DIN design
- Only two tightening gaskets on the air side instead of the three pieces required by the DIN models: 33 % lower risk of oil leakage
- Special profile of the flange NBR gaskets, with lips to enable an easier centering of the gasket on the porcelain stem
- Oil spade connection design is available for all models from 250 up to 2000 A, alternatively to the traditional nuts or screws connection.

The spade design allows an easy use of the flexible links between LV coils and bushings; connections can be made in two ways: by means of rivets (R execution with 6,7 mm bore) or with screws and nuts M12 (V3 execution).

Economic Advantages:

The direct economic advantages are:

- Lower price than the corresponding DIN sizes
- Price reduction is amplified in case of the spade models 1-630/1000/1800-Ms, due to the possibility of using a brass rod for currents up to 580/1000/1800A respectively and the spade rod design
There is an important indirect economic advantage:
- Saving of 30 to 50% of the total working time necessary for the assembly of the bushing on the transformer (total working time considering picking of the components, assembly and tightening of the bushing)

**Important information regarding CURRENT RATINGS:**

**For 630 A** bushings the new specification EN50386 state that the conductor can be in brass, instead of copper (as it was before).
Rising temperature test and long experience in this kind of execution made by the major European manufacturers, confirm that with oil at a temperature of 60°C above ambient temperature the bushing 1/630-Ms satisfy in full the requirements of IEC 137, with the following results:
- Brass rod over temperature of the oil side connection at 630 A above oil < 10°C
- Brass rod over temperature of the air side connection at 630 A above air < 60°C
A real current of 630A is a not frequent case, occurring on a 250kVA transformer with 230V rated voltage (three phase)
Considering the most common use of this bushing with 400 V rated voltage, on 250 and 400-kVA transformer, the real current, which pass through the bushing, is only 365 and 580 A respectively: in these conditions, the performance of the bushings 630A-Ms is even better:
- Brass rod over temperature of the oil side connection at 580 A above oil < 6°C
- Brass rod over temperature of the air side connection at 580 A above air < 55°C
(At 365 A the over temperature is negligible).

**For 1250 & 2000 A** bushings the new specification EN50386 state that the conductor must be in copper, but also other materials like brass or aluminium are allowed at condition to underrate the bushing.
A long experience on this kind of bushings with brass rod has been made in the last 30 years by all the major European transformer manufacturers, confirm that brass can be used with extremely good results.
Repeating a test with same procedures described above with oil at a temperature of 60°C above ambient temperature, the bushing 1/1000-Ms and 1/1800-Ms satisfy in full the requirements of IEC 137, with the following results:

1/1000-Ms
- Brass rod over temperature of the oil side connection at 1000 A above oil < 8°C
- Brass rod over temperature of the air side connection at 1000 A above air < 60°C

1/1800-Ms
- Brass rod over temperature of the oil side connection at 1800 A above oil < 8°C
- Brass rod over temperature of the air side connection at 1800 A above air < 60°C

The over temperature of the rods much lower than above limits using 1000A-Ms on 500 and 630 kVA transformers or 1800A-Ms bushing on 500 and 630 kVA transformers with 400 V rated voltage, where the real current which pass through the bushing is much lower than 1000 and 1800 A respectively.

**Information regarding INSULATION TEST:**
All our bushings have been type tested in a specialized laboratory in Turin (Italy) to check impulse and power frequency withstand voltages. All bushings, mounted on an oil-filled tank, in normal operating conditions passed the following tests:
- Power frequency withstand voltage for 60 s : 15kV
- Lighting impulse withstand voltage (1.2/50) : 30kV

**Information regarding GASKETS:**
All our bushings are fit with special gasket made in NBR (nitrile rubber) suitable for use in mineral oil at a temperature range between -40°C and +115°C.

Upon request, we can supply “VITON” rubber gaskets
**Rated voltage:** 1kV  
**P.F. 1':** 15kV  
**BIL:** 30kV  
**Rated current:** 250A  
**Creepage dist.:** 60mm

<table>
<thead>
<tr>
<th>BUSHING TYPE</th>
<th>CODE</th>
<th>SPADE HOLE</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 1/250—CO</td>
<td>BN102BG9CN0</td>
<td>/</td>
<td>STANDARD EXECUTION</td>
</tr>
<tr>
<td>EN 1/250—E1</td>
<td>BN102BG9EN0</td>
<td>/</td>
<td>STANDARD EXECUTION</td>
</tr>
<tr>
<td>EN 1/250—SR</td>
<td>BH102BG96N0</td>
<td>6.7</td>
<td>STANDARD EXECUTION</td>
</tr>
<tr>
<td>EN1/250—SVs</td>
<td>BH102BG97N0</td>
<td>12.2</td>
<td>STANDARD EXECUTION</td>
</tr>
</tbody>
</table>

**Pos Description**

1. Brass rod "N-250"
2. Brass spade "S-250"
3. Brass Nut DIN 934
4. Brass cap EN 1/250
5. Porcelain EN 1/250
6. Bottom insulator body
7. Ring gasket ED/02
8. Flange gasket ED/02
9. Brass cont. washer
10. Spring washer
11. Brass Nut DIN 936
Rated voltage: 1kV
P.F. 1': 15kV
BIL: 30kV
Rated current: 630A
Creepage dist.: 75mm
Pos | Description |
--- | --- |
1a | Brass spade "EN 1/1000" |
1b | Cu spade "EN 1/1250" |
3 | Tightening ring |
4 | Brass cap EN 1/1000 |
6 | Porcelain EN 1/1000 |
7 | Bottom insulator body |
8 | Ring gasket EN 1/1000 |
10 | Flange gasket EN 1/1000 |

Rated voltage: 1kV
P.F. 1': 15kV
BIL: 30kV
Rated current EN 1/1000: 1000A
Rated current EN 1/1250: 1250A
Creepage dist.: 80mm
Rated voltage: 1kV
P.F. 1': 15kV
BIL: 30kV
Rated current EN 1/1000: 1000A
Rated current EN 1/1250: 1250A
Creepage dist.: 80mm

Pos Description
1a Brass spade "EN 1/1000"
1b Cu spade "EN 1/1250"
2 Brass bottom plate
3 Tightening ring
4 Brass cap EN 1/1000
6 Porcelain EN 1/1000
7 Bottom insulator body
8 Ring gasket EN 1/1000
10 Flange gasket EN 1/1000

EN 1/1250–D1 Copper BN112BG9BN0
EN 1/1000–D1 Brass BN110BG9BN0

Transformer bushings
EN 1/1000–1250 (EN50386)
(M.Y. 2021)
**Transformer bushings EN 1/1800–2000 (EN50386) (M.Y. 2021)**

<table>
<thead>
<tr>
<th>Pos</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>Brass stem &quot;EN 1/1800&quot;</td>
</tr>
<tr>
<td>1b</td>
<td>Cu stem &quot;EN 1/2000&quot;</td>
</tr>
<tr>
<td>2</td>
<td>Brass Spade</td>
</tr>
<tr>
<td>3</td>
<td>Tightening ring</td>
</tr>
<tr>
<td>4</td>
<td>Brass cap EN 1/2000</td>
</tr>
<tr>
<td>6</td>
<td>Porcelain EN 1/2000</td>
</tr>
<tr>
<td>7</td>
<td>Bottom insulator body</td>
</tr>
<tr>
<td>8</td>
<td>Ring gasket EN 1/2000</td>
</tr>
<tr>
<td>10</td>
<td>Flange gasket EN 1/2000</td>
</tr>
</tbody>
</table>

Rated voltage: 1kV
P.F. 1': 15kV
BIL: 30kV
Rated current EN 1/1800: 1800A
Rated current ED 1/2000: 2000A
Creepage dist.: 80mm
**ORDER FORM**

**Type of Bushing:**
- EN Series M.Y. 2021
  - EN 1/630 MS “Brass Rod”
  - EN 1/1000 “Brass Rod”
  - EN 1/1800 “Brass Rod”
  - EN 1/250
- ED Series
  - ED 30 (3150A)
  - ED 40 (4500A)
  - ED 50 (5000A)

**Creepage distance:**  
............... mm

**Airside components:**
- Naked  
- Nuts (Only for 250A/350A)
- DIN Flag
- UNEL Flag
- NEMA Flag
- SPECIAL

**Oil side components:**

<table>
<thead>
<tr>
<th>Type</th>
<th>Only for Spade execution</th>
</tr>
</thead>
</table>
| EN 1/250: | N (threaded)  
S (Spade) |
| EN 1/630 MS: | N (threaded)  
S (Spade) |
| EN 1/630 Cu: | N (threaded) |
| EN 1/1000: | N (Base)  
1 Hole V3  
2 Holes S |
| EN 1/1250: | N (Base)  
1 Hole V3  
2 Holes S |
| EN 1/1800: | N (Base)  
2 Holes V3  
3 Holes S |
| EN 1/2000: | N (Base)  
2 Holes V3  
3 Holes S |
| ED 30: | N (Base)  
3 Holes V3  
5 Holes S |
| ED 40: | N (Base)  
4 Holes V3  
6 Holes S |
| ED 50: | N (Base) |

**Gasket:**
- NBR (-30°C/120°C)
- NBC (Cork TD1120) (-30°C/+120°C)
- Low temp. (Cork TD7000) (-45°C/+120°C)
- Very Low temp. (Blue Fl/Sil) (-60°C/+150°C)
- Heavy Duty (MTON) (-20°C/+150°C)

**Surface finishing:**
- Tinplated 6/10 µm
- Silver plated 6/10 µm
- Only Flag (F)
- Flag & Cap (F+C)
- Flag/Cap/Rod (F+C+R)

**Notes:**

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**Titolo**
New CEDASPE 1kV
Series 2021 Order sheet

**Data** 02/11/21
**Dis. Nr** 4400
**Scala**
**Viso**

MR
LV BUSHINGS ED
1KV -3150/4000/5000A
1. Copper rod "ED-N/30"
2. Brass connection piece
3. Tightening ring
4. Brass cap ED 30
5. Medium spacer
6. Porcelain ED 30
7. Bottom insulator body
8. Ring gasket ED 30
9. O-Ring OR6250
10. Flange gasket

Rated voltage: 1kV
P.F. 1": 10kV
BIL: 20kV
Rated current: 3150A
Creepage dist.: 80mm
CEDASPE Code: BE0A30N0....
<table>
<thead>
<tr>
<th>Pos</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stem</td>
</tr>
<tr>
<td>2</td>
<td>Bottom closing piece</td>
</tr>
<tr>
<td>3</td>
<td>Brass tightening ring</td>
</tr>
<tr>
<td>4</td>
<td>Brass cap</td>
</tr>
<tr>
<td>5</td>
<td>Brass washer</td>
</tr>
<tr>
<td>6</td>
<td>Top porcelain &quot;A&quot;</td>
</tr>
<tr>
<td>7</td>
<td>Bottom insulating part</td>
</tr>
<tr>
<td>8</td>
<td>NBR ring gasket</td>
</tr>
<tr>
<td>9</td>
<td>Viton O-Ring GBE337</td>
</tr>
<tr>
<td>10</td>
<td>Cork flange gasket</td>
</tr>
</tbody>
</table>

Rated voltage: 1kV  
P.P. 1': 10kV  
BIL: 20kV  
Rated current: 4000A  
Creepage dist.: 90mm

This bushing is according to EN 50388 SPEC'S SIZE 1/4000

Transformer Bushing  
Type ED-N-40

Data 10/05/05  
Scala 1:4  
Dis. 7  
Visto

Dis. Nr 7428
FILE = 7477  DWG

Pos Description
1 Stem
2 Bottom closing piece
3 Brass tightening ring
4 Brass cap
5 Brass washer
6 Top porcelain "A"
7 Bottom insulating part
8 Viton ring gasket
9 Cork plane gasket
10 Cork flange gasket
11 Fiber internal gasket

Rated voltage: 1kV
P.F. 1": 15kV
BIL: 30kV
Rated current: 5000A
Creepage dist.: 150mm
Cedaspe Code: B80A50N100

THIS BUSHING IS ACCORDING TO
EN 50386 SPEC'S SIZE 1/5000

TRANSFORMER BUSHING
TYPE ED-N-50

Data 04/06/08
Scala 1:4
Dis. 7477
Visto 1 2 3 4