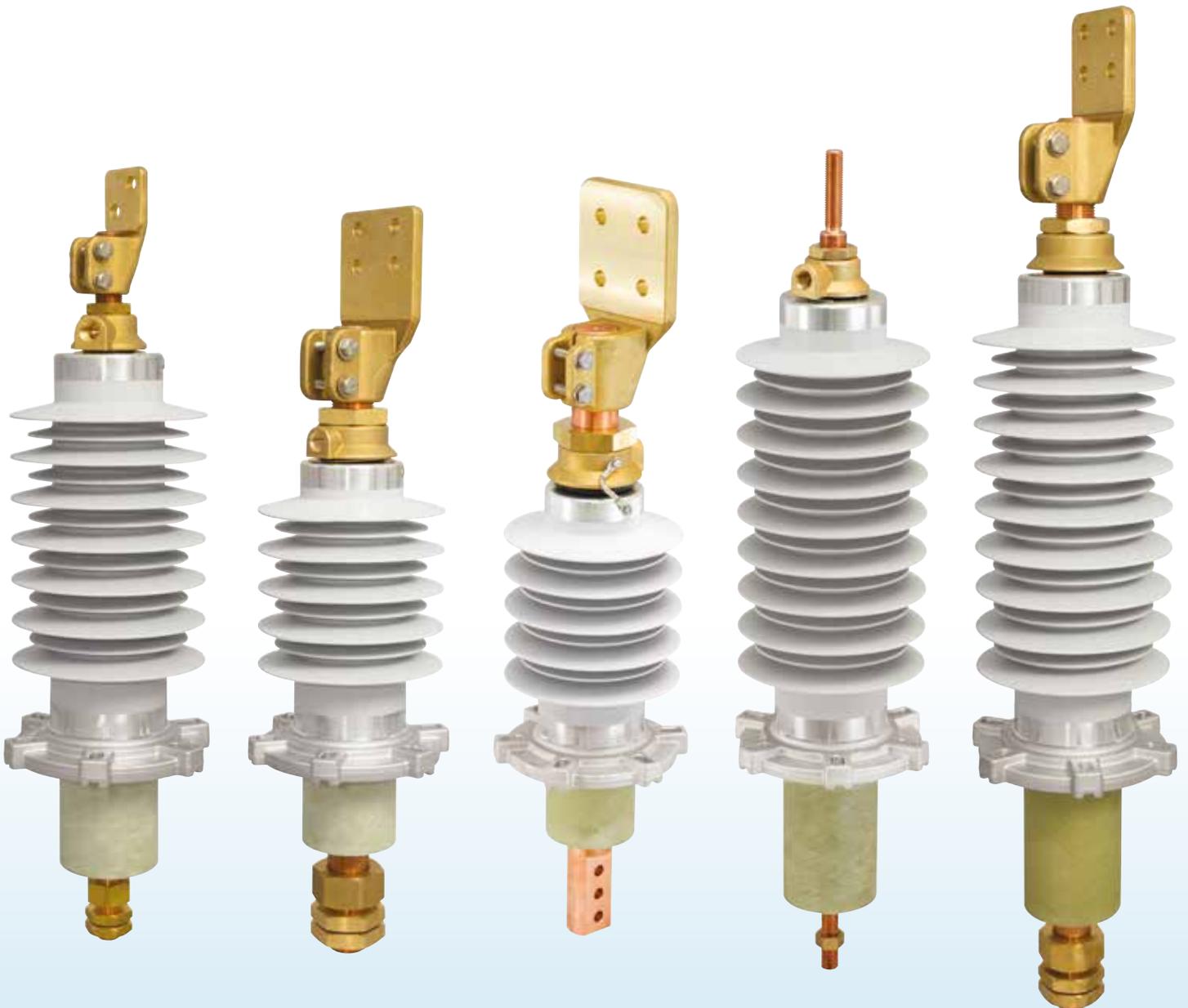


CEDASPE SBC - SILICONE COMPOSITE BUSHINGS

SAFE. EFFICIENT. RELIABLE.



SILICONE COMPOSITE BUSHINGS FOR POWER TRANSFORMERS

OUR INNOVATION FOR POWER TRANSFORMERS

The Silicone Composite Bushing (SBC) is the newest bushing released in the CEDASPE product portfolio. **Safe, efficient and reliable**, this product anticipates future market requirements.

The new family of bushings is the response to the ever-increasing demand for a safe, efficient and reliable product that can help end-users reduce the total cost of ownership (TCO).

Mainly used on oil immersed power transformers, SBC series bushings are **liquid filled (hollow core oil communicating) bushings** designed in accordance with EN 50180, featuring a wide operational range – from a rated voltage of 12 kV up to 52 kV and from a rated current of 630 A up to 4500 A.

The insulation body is made of a fiberglass tube, onto which a premium quality silicone insulator is molded using a modern injection system based on liquid silicone technology (LSR).

The integrated aluminum flange improves the bushing strength, thereby reducing the risk of oil leakage and increasing shock resistance.

Transformer oil fills the space between the rod and the fiberglass tube, increasing the electrical insulation and dissipating the thermal energy generated by high currents.



IMPROVED TOTAL COST OF OWNERSHIP

Thanks to the excellent properties of the silicone insulation body (i.e. selfcleaning, hydrophobicity, UV radiation resistance, elasticity, etc.), this bushing is maintenance-free. The low weight and elasticity of the silicone make the SBC bushing very easy to handle and mount, effectively reducing the risk of breakages and guaranteeing safe operation and a long service life.

THE ADVANTAGE OF FLEXIBILITY

We can provide multiple connection styles as well as tailor-made solutions according to almost any kind of customer requirement/specification.

SBC-Bushings design allows all possible customizations typical for porcelain bushings, such as: longer stem for oil side to suit different configuration of CTs, bolted or flag connection, dismantlable stem, draw lead, extended tail to suit transformers with Nitrogen Cushion, etc..

Moreover SBC – Bushings design facilitates retrofitting of non-standardized old porcelain bushings thanks to the possibility to have clamping faces different than DIN 42538.

This makes the SBC bushing a very flexible and competitive product.

OFF-SHORE VERSION AVAILABLE

A new version of the SBC bushing suitable for **off-shore applications** was released in May 2017: the use of **AISI 316 stainless steel flange** completely avoids the risk of corrosion, reducing maintenance related costs.

ADVANTAGES AND KEY FEATURES

KEY FEATURES:

- | Innovative design
- | Guaranteed to be maintenance-free
- | Low weight for failure risk reduction
- | Partial discharge-free
- | Fully interchangeable with DIN/EN standard bushings
- | Suitable for the retrofitting of old bushings
- | Low risk of leakage
- | Long service life
- | Suitable for highly polluted environments
- | Suitable for off-shore applications
- | Good performance under seismic events

GENERAL FEATURES:

- | Hollow core oil-filled composite bushing
- | For rated voltages from 12 kV up to 52 kV
- | For rated currents from 630 A up to 4500 A
- | Complies with IEC 60137

SAFETY SKILLS:

- | Reduced risk of breakages
- | Reduced risk of oil losses
- | Reduced risk of fire



SBC bushings are the latest goal reached by the CEDASPE R&D department. Designed with future requirements in mind, SBC bushings are:

SAFE

thanks to their high quality silicone composite body, highly flexible and resistant to damage, vandalism or improper handling;



LIGHT

thanks to their silicone composite body and innovative design, requiring less metal component parts, making the bushing very light and easy to handle;



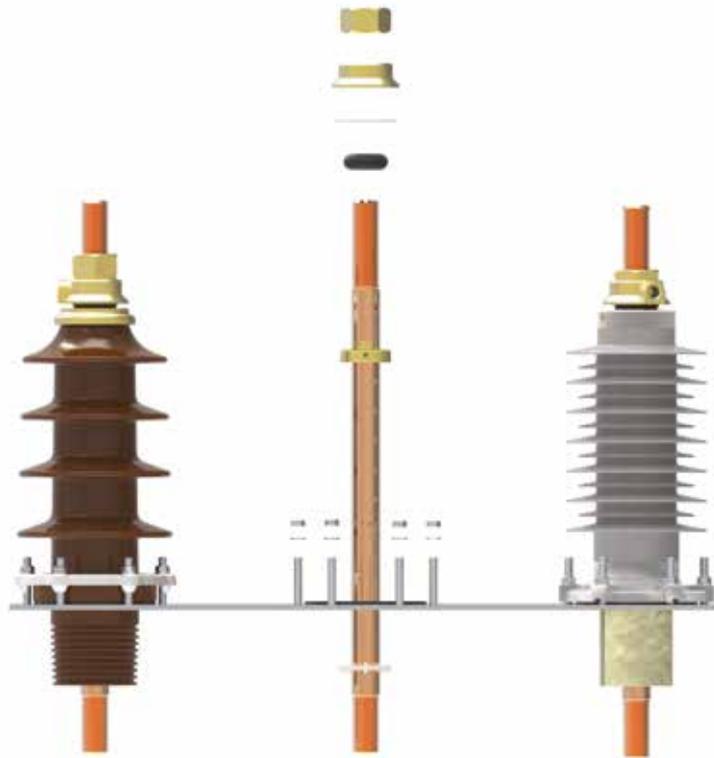
STRONG

thanks to their innovative integrated flange, shaped to fit the composite body perfectly, strengthening the bushing structure.

SILICONE BUSHINGS VERSUS PORCELAIN BUSHINGS

SBC bushings keep the **same overall dimensions** of the corresponding **porcelain HV bushing type**, either in accordance with DIN 42533 & 4 or with EN 50180, but it has a much greater creepage distance with an alternated shed profile.

This design optimizes anti-fogging performance, avoiding the need to choose bushing with a higher insulation level when a long specific CD is required or for installation at elevation (i.e. why should a 52 kV bushing be chosen on a 36 kV system, simply based on a min. CD requirement?).



In order to improve lifecycle and safety, a **proactive and predictive approach** is required: a small investment in the **latest technology** will quickly pay for itself.

Key features	Porcelain type	SBC type
Low risk of mechanical failures/breakages	✗	✓
Low risk of damages due to vandalism	✗	✓
Maintenance free	✗	✓
Good impact and shock resistance	✗	✓
High flashover resistance at the pollution	✗	✓
Good strength	✗	✓
Low risk of oil leakage at flange level	✗	✓
Low weight	✗	✓
Fast and reliable production process	✗	✓
Good manufacturing flexibility	✗	✓
Long service life	✗	✓

CHOOSE THE RIGHT BUSHING FOR YOUR PROJECT

GENERAL FEATURES OF SILICONE COMPOSITE BUSHINGS

- | **Premium Quality Silicone** (Power XLR-630 by Wacker) and modern injection system based on liquid technology (LSR).
- | **Excellent insulation** even in highly polluted environments (antipollution values up to level «d»).
- | Excellent sealing even under **extreme temperature** conditions (from -60°C up to +140°C).
- | Designed to fulfill and exceed minimum standard requirements (IEC 60137).
- | All type tests have been performed at independent and accredited labs.

ADVANTAGES AND FEATURES OF SILICONE COMPOSITE BUSHINGS

- | **Creepage distances** of up to 1690mm.
- | The shape of the silicone shed profile, along with the use of premium quality silicone and high quality fiber glass tube (FRP tubes), enables the CEDASPE SBC bushing to be partial discharge-free.
- | We can provide **customized solutions** such as: special fixing flange dimensions, longer stems for CT placement and/or Nitrogen cushion on the oil side, special treatment on external surfaces etc. . .
- | Designed for both indoor and outdoor applications, the SBC bushing series **can even operate under extreme environmental conditions** (i.e. highly polluted areas, very cold/hot ambient temperatures, very corrosive/aggressive environments, etc.).



SBC bushing design enables easy onsite replacement of conventional porcelain bushings insulators during normal transformer maintenance operations



INTEGRATED ALUMINUM FLANGE. INNOVATIVE DESIGN. IMPROVED STRENGTH.

GENERAL FEATURES OF FLANGE:

- | Integrated directly onto composite body
- | No need for the use of clamps for fixing
- | High resistance to bending loads
- | Manufacturing flexibility

KEY FEATURES OF FLANGE:

- | Improved strength
- | Reduced risk of oil leakage
- | Smart fixing
- | Off-shore version available upon request in AISI 316 stainless steel



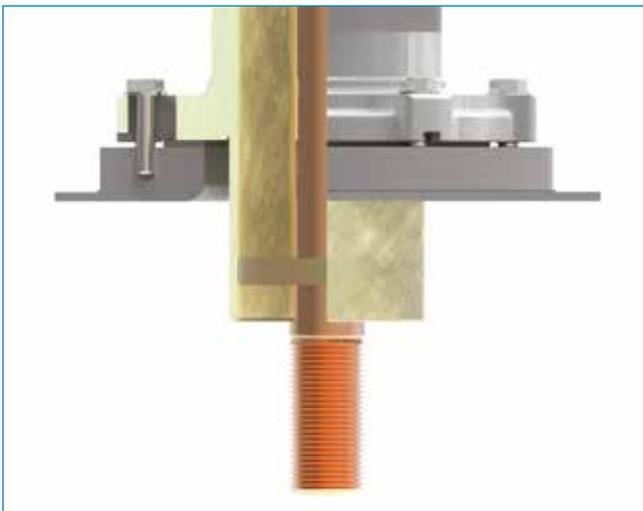
COMPARISON OF FIXING BETWEEN SILICONE AND PORCELAIN BUSHINGS

SBC BOLTED FIXING:

- | Improved distribution of the electric field in this area
- | Almost complete neutralization of «corona» discharges

PORCELAIN TYPE STUD FIXING:

- | Peak effect on the electric field
- | Noise and sparking between studs and the first shed/corona

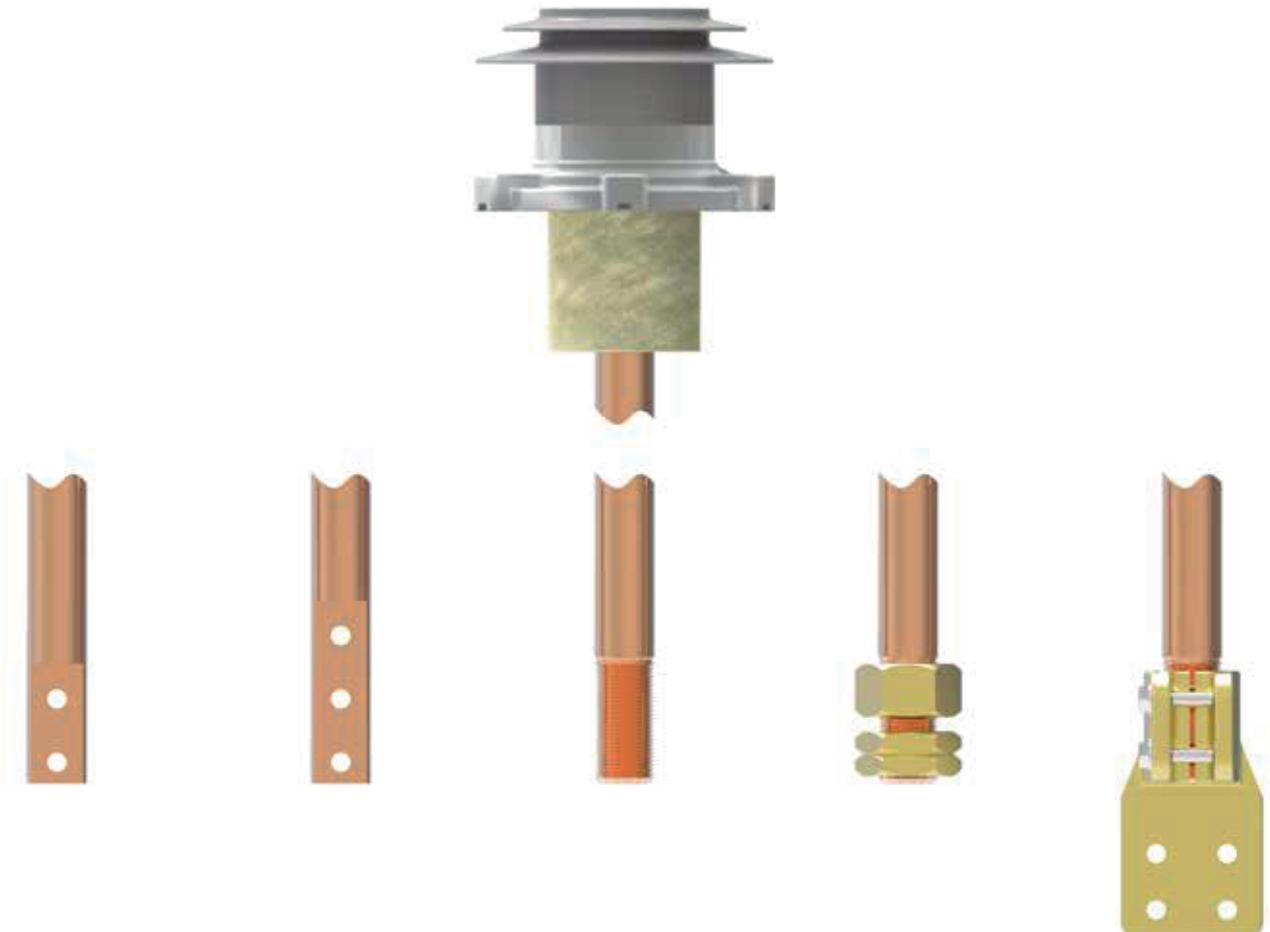


AT A GLANCE - TECHNICAL DATA AND CONNECTION STYLES

TECHNICAL DATA

RATED VOLTAGE:	From 12kv up to 52kv
RATED CURRENT:	From 250A up to 4500A
ANTIPOLLUTION LEVEL:	c(P3) & d(P4)
NOMINAL CREEPAGE DISTANCE:	From 505mm up to 1690mm
OFFSHORE EXECUTION:	AISI 316 flange
PARTIAL DISCHARGE-FREE	
ROD DESIGN:	Rigid stem/ split (limited to 1250A & 2000A)/ drawlead/ Rod elongation for CT accommodation
ROD MATERIAL:	Copper / Brass
MULTIPLE CONNECTION STYLE (SEE DRAWING BELOW)	
SPECIAL FINISHING	Tinplating / Silverplating

MULTIPLE CONNECTION STYLES



STYLE C6
(AT 1250)

STYLE C6
(AT 2000/3150)

STYLE C0

STYLE E1

STYLE A1



MEMBER OF REINHAUSEN GROUP

Via Colombara, 1
Fraz. Pedriano - 20098 S. Giuliano Milanese (MI) - Italy
Tel. +39/0298204411
Fax +39/0298204422
e-mail: sales@cedaspe.com
www.cedaspe.com

Please note: The data in our publications may differ from the data of the devices delivered. We reserve the right to make changes without notice.