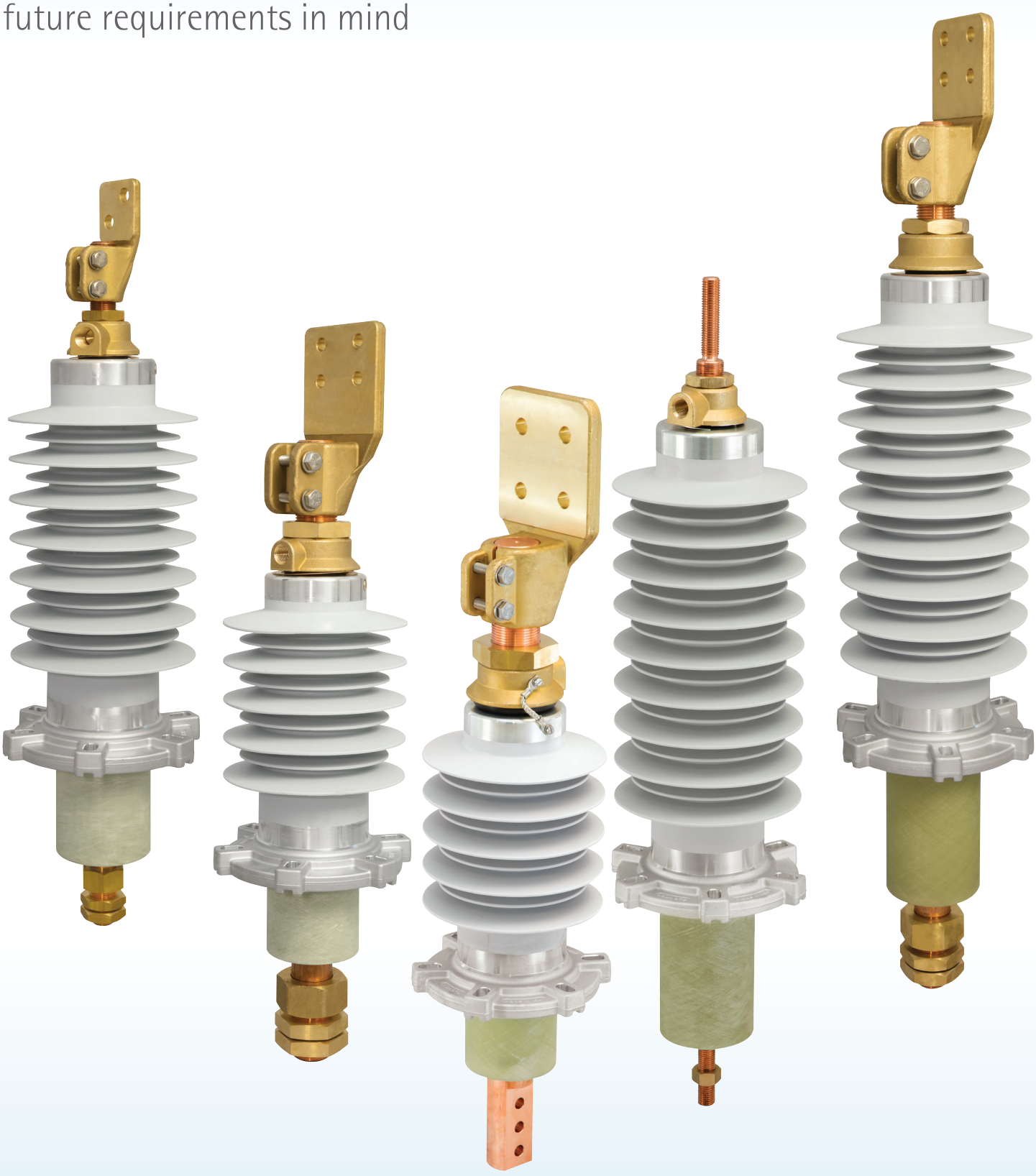
SILICONE COMPOSITE BUSHINGS SBC Series

CEDASPE
MEMBER OF REINHAUSEN GROUP

The newest CEDASPE bushing, designed with future requirements in mind



www.cedaspe.com

CEDASPE POWER s.r.l.
Via Colombara, 1 - Fraz. Pedriano
I - 20098 S. GIULIANO MILANESE (ITALY)
Tel. +39 02 98204411 - Fax +39 02 98204422
e-mail: cedaspe@cedaspe.com
TVA /C.F. / PART. IVA 09060190965
Reg. Imprese R.E.A. MI 2066238
Cap. Soc. € 1.000.000 I.V.
http://www.cedaspe.com
COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

SBC Transformer Bushings

Cedaspe introducing a new family of bushings for Power Transformer with rated voltage up to 52 kV and current rating up to 3150 A with a composite silicon insulation body.
The insulation body is made by a fiberglass tube with an aluminum flange; the silicon insulator is moulded directly on the fiberglass tube with a modern injection system based on the liquid silicon technology (LSR).
The silicon used is a first quality material, Powersil XLR-630 by Wacker, with excellent properties.
The result are that our SBC bushings family have a very strong construction and a very efficient design which make also possible the replacement on site of the old porcelain bodies with these new composite insulators.
The design of our SBC bushings keeps the same overall dimension of the corresponding porcelain type bushing either acc to DIN 42533 & 4 or to EN 50180; very long creepage distances and alternated shed profile guarantee an excellent insulation.
Test conducted on these bushings show very good results with values of p.f. withstand voltage and impulse voltage much higher than the minimum values required by IEC 60137.
Regarding Partial Discharge, these bushings can be considered PD free, as the performance is extremely good with test results below 2 pC and all bushings tested remained free of PD by 10% above the rated voltage.
This means 1.9 times above line to ground Ur/srt3: at all a very good result !!

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GENERAL INFORMATION

ADVANTAGE OF USING SILICONES BUSHING:

Silicones have been used in bushings insulator for more than 50 years on account of their high weathering resistance and good tracking and erosion resistance.
Further advantages include:

- LONG SERVICE LIFE:

  Silicone rubbers have excellent hydrophobic proprieties and outstanding resistance to temperature, UV radiation and ozone.

- LOW WEIGTH:

  Hollow-core insulators are up to 80 percent lighter than conventional porcelain insulators.
  This facilitates installation in challenging locations and reduce cost of transportations.

- GOOD IMPACT AND SHOCK RESISTANCE:

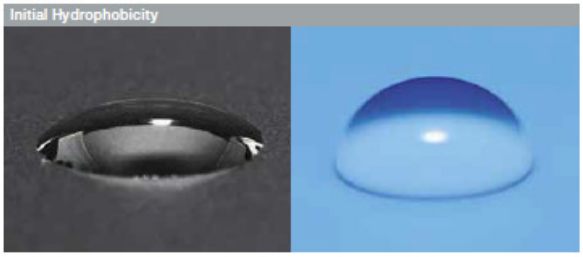
  The flexibility of silicone insulating materials reduces the risk of breakage during transport and installation and earthquakes.
  Failure as the result of vandalism is rare.

- HIGH FLASHOVER RESISTANCE AT THE POLLUTION:

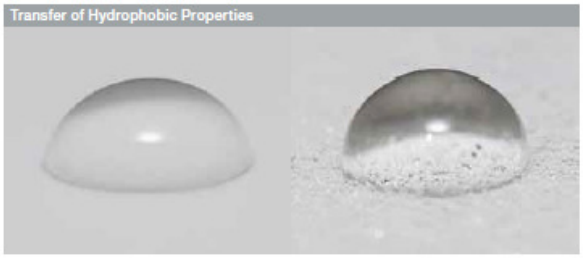
  The surface hydrophobicity (see picture) of silicones provides long-lasting protection against leakage currents and flashovers, even if the surface is very dirty.
  In such situations, this increases the reliability of the power supply, for example in industrial, coastal and desert regions.

- LOW MAINTANCE COST:

  Due to transfer of hydrophobic proprieties, the water-repelling effect is maintained even if the surface is dirty, which means that the insulators do not need regular cleaning.



Water droplet on a porcelain surface. Water droplet on a silicone-coated surface.



Water droplet on a clean silicone surface. Water droplet on a dirty silicone surface.

Water droplet on a dirty silicone coating. Water droplet on a cleaned silicone coating.

- RELIABLE PRODUCTION PROCESS:

  The low-pressure molding process produces silicone hollow-core insulators with considerable reliability and flexibility, making products available on demand.

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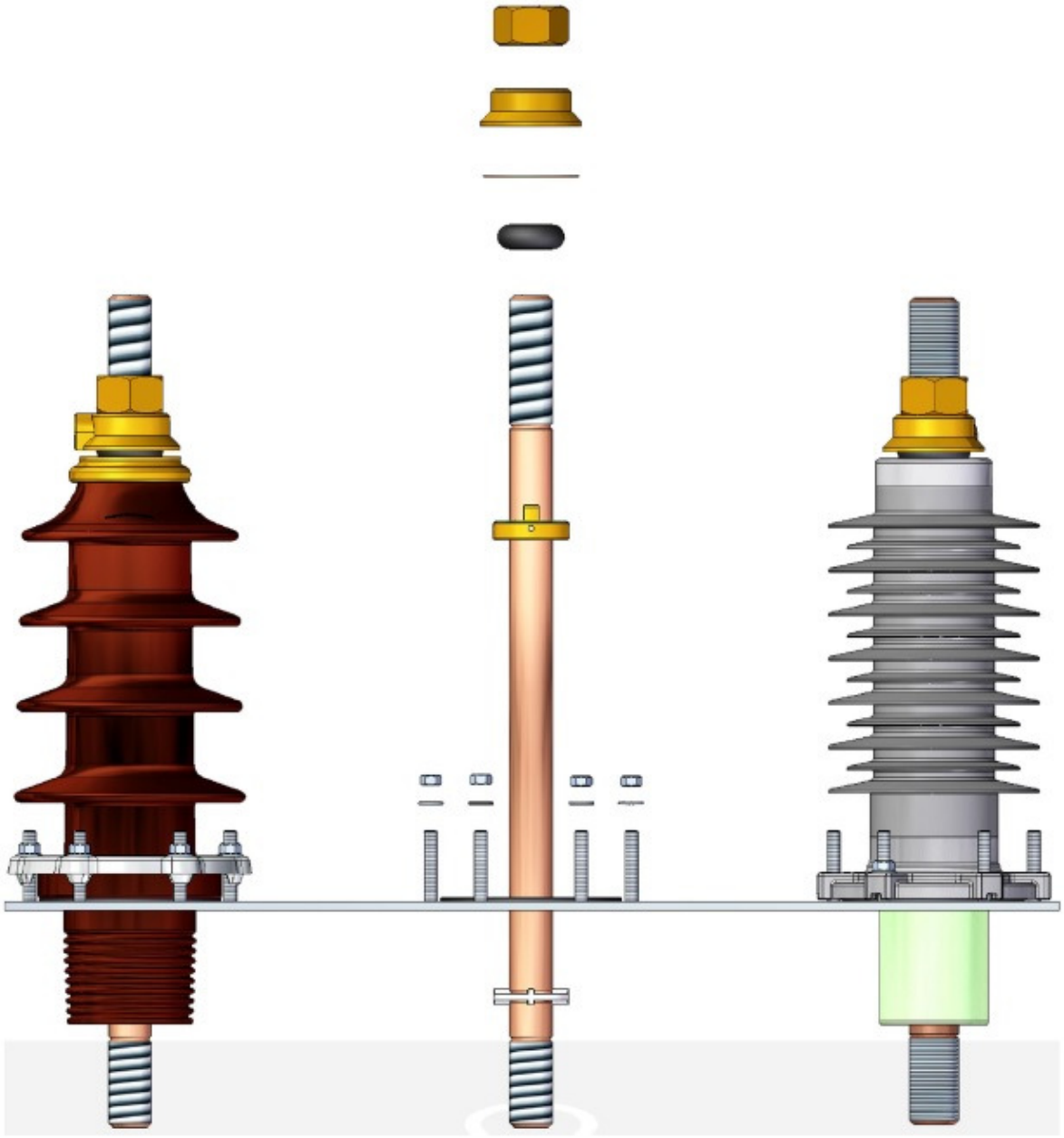
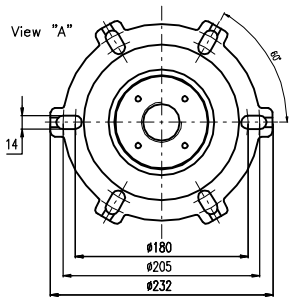
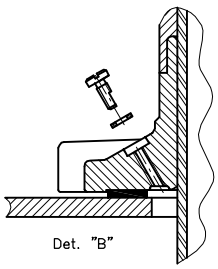
INTERCHANGEABILITY WITH OLD DIN BUSHINGS

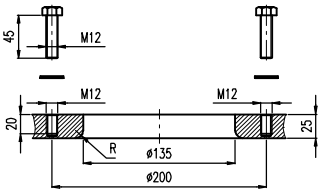


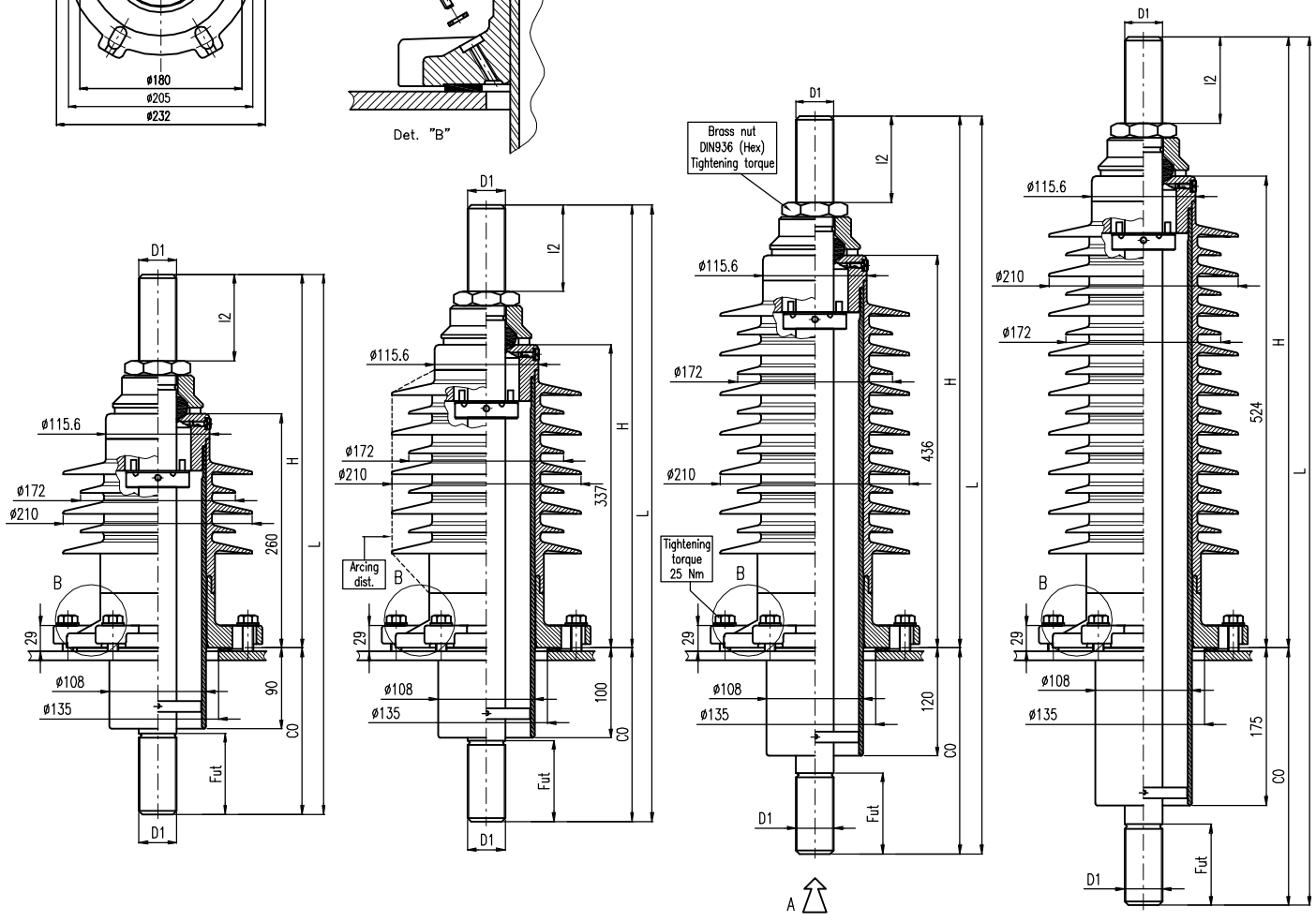


Flange
Vent Screw
(See Pag. "Installation Cautions")



Note:
Mounting hole : ø135 $^{+2}_{-0}$
Fixation bolt circle :
– ø Fix DIN "D": ø200 mm
Suggested round edges design (R)





Bushing 12kV | Bushing 24kV | Bushing 36kV | Bushing 52kV

Bushing type	Rated voltage (kV)	Rated current (A)	P.F. 1' (kV)	BIL (kV)	Creepage dist. (mm)	Arcing dist. (mm)	Tightening torque (Nm)	D1	Fut	I2	CO	H	L
SBC 12–M30/d(P4)	12	1250	30	75	505	210	(Hex46) 70	M30x2	65	75	160	385	545
SBC 24–M30/d(P4)	24		55	125	828	295					168	462	630
SBC 36–M30/d(P4)	36		77	170	1180	385					205	560	765
SBC 52–M30/c(P3)	52		105	250	1520	475					260	650	910
SBC 12–M42/d(P4)	12	2000	30	75	505	210	(Hex65) 115	M42x3	90	102	190	415	605
SBC 24–M42/d(P4)	24		55	125	828	295					198	492	690
SBC 36–M42/d(P4)	36		77	170	1180	385					235	590	825
SBC 52–M42/c(P3)	52		105	250	1520	475					292	680	972
SBC 12–M48/d(P4)	12	3150	30	75	505	210	(Hex75) 150	M48x3	95	105	205	420	625
SBC 24–M48/d(P4)	24		55	125	828	295					213	497	710
SBC 36–M48/d(P4)	36		77	170	1180	385					250	595	845
SBC 52–M48/c(P3)	52		105	250	1520	475					297	685	982

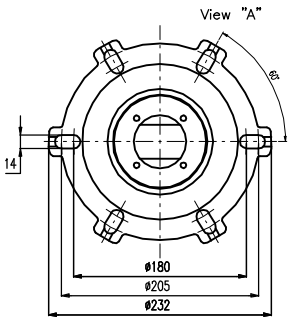
CEDASPE

Titolo
Silicon Composite Bushing CEDASPE

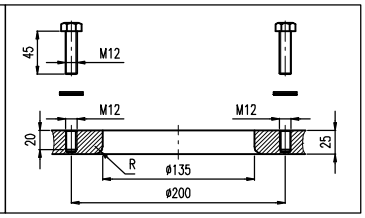
Data 16/10/13
Scala 1:8
Dis.
Visto

Dis. Nr
4500

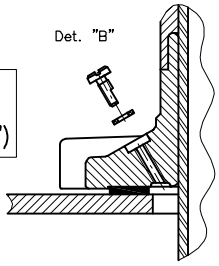
6

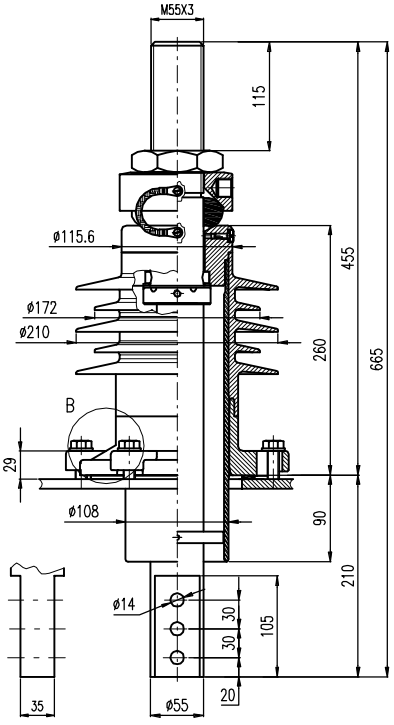


Note:
Mounting hole : ø135 $^{+2}_{-0}$
Fixation bolt circle :
– ø Fix DIN "D": ø200 mm
Suggested round edges design (R)

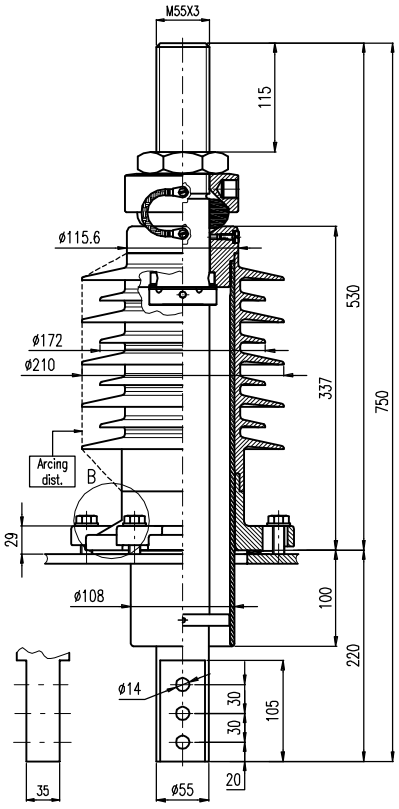


Flange
Vent Screw
(See Pag. "Installation Cautions")

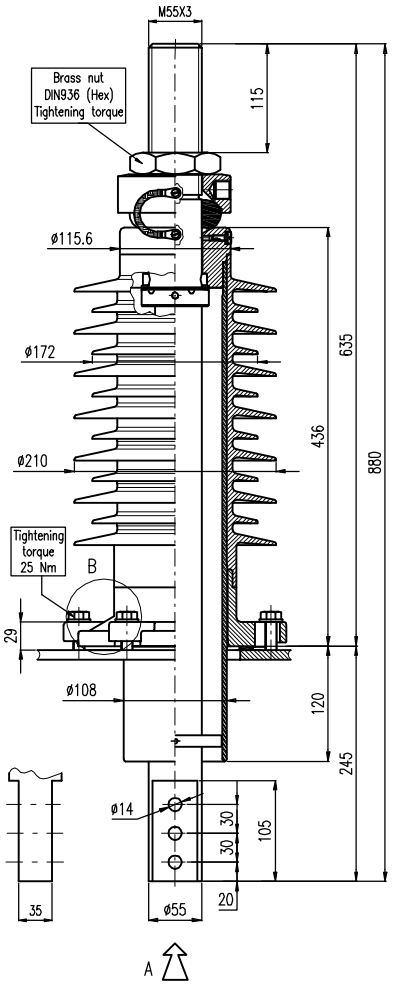




Bushing 12kV



Bushing 24kV



Bushing 36kV

Bushing type	Rated voltage (kV)	Rated current (A)	P.F. 1' (kV)	BIL (kV)	Creepage dist. (mm)	Arcing dist. (mm)
SBC 12-M55/d(P4)	12	4500	30	75	505	210
SBC 24-M55/d(P4)	24		55	125	828	295
SBC 36-M55/d(P4)	36		77	170	1180	385

CEDASPE

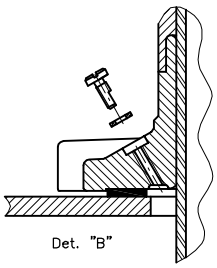
Titolo
Silicon Composite Bushing 4500 A

Data 27/08/14
Scala 1:8
Dis.
Visto

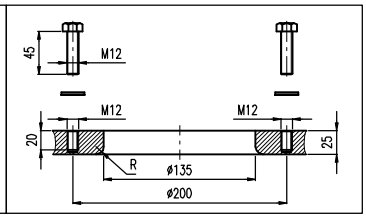
Dis. Nr
4501

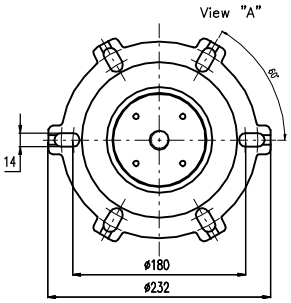
1 2 3 4

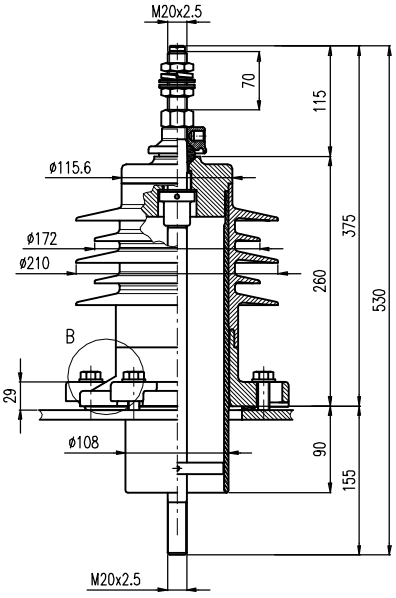
Flange
Vent Screw
(See Pag. "Installation Cautions")



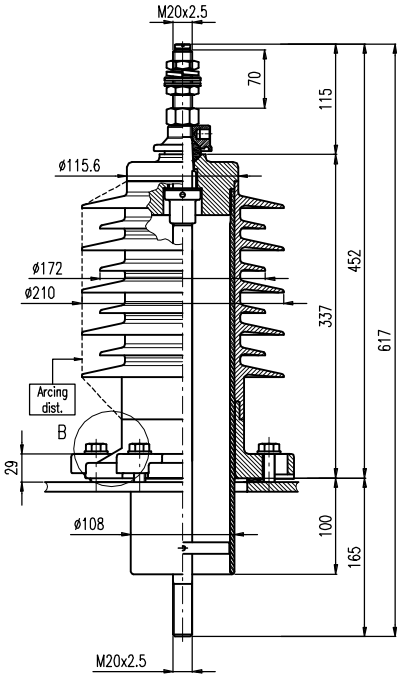
Note:
Mounting hole : ø135 $^{+2}_{-0}$
Fixation bolt circle :
– ø Fix DIN "D": ø200 mm
Suggested round edges design (R)



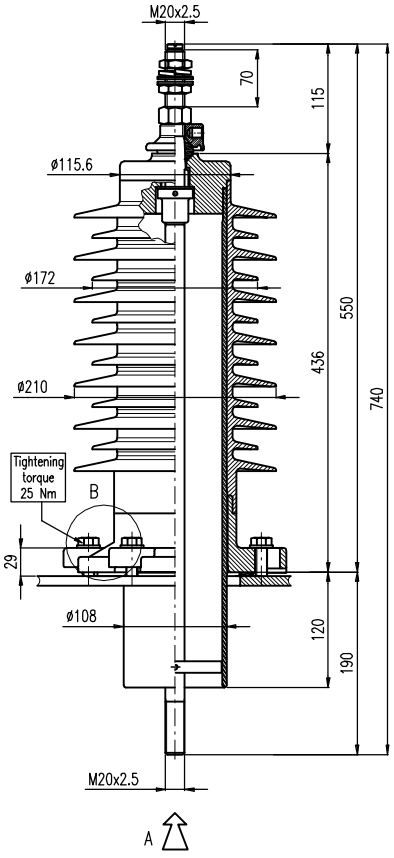




Bushing 12kV



Bushing 24kV



Bushing 36kV

Bushing type	Rated voltage (kV)	Rated current (A)	P.F. 1' (kV)	BIL (kV)	Creepage dist. (mm)	Arcing dist. (mm)
SBC 12–M20/d(P4)	12	630	30	75	505	210
SBC 24–M20/d(P4)	24		55	125	828	295
SBC 36–M20/d(P4)	36		77	170	1180	385

CEDASPE

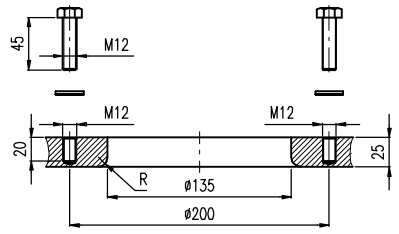
Titolo
Silicon Composite Bushing 12÷36/630 A

Data 17/04/15
Scala 1:8
Dis.
Visto

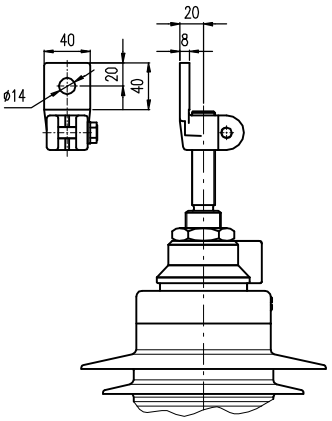
Dis. Nr
4504

1 2 3 4 5

Note:
Mounting hole : ø135 $^{+2}_{-0}$
Fixation bolt circle :
– ø Fix DIN "D": ø200 mm
Suggested round edges design (R)

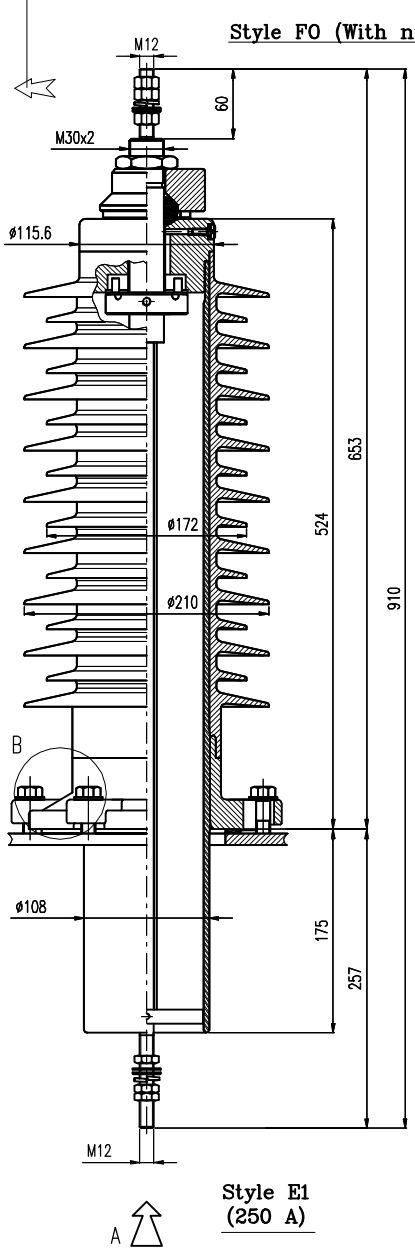


Style VD (With flag DP)

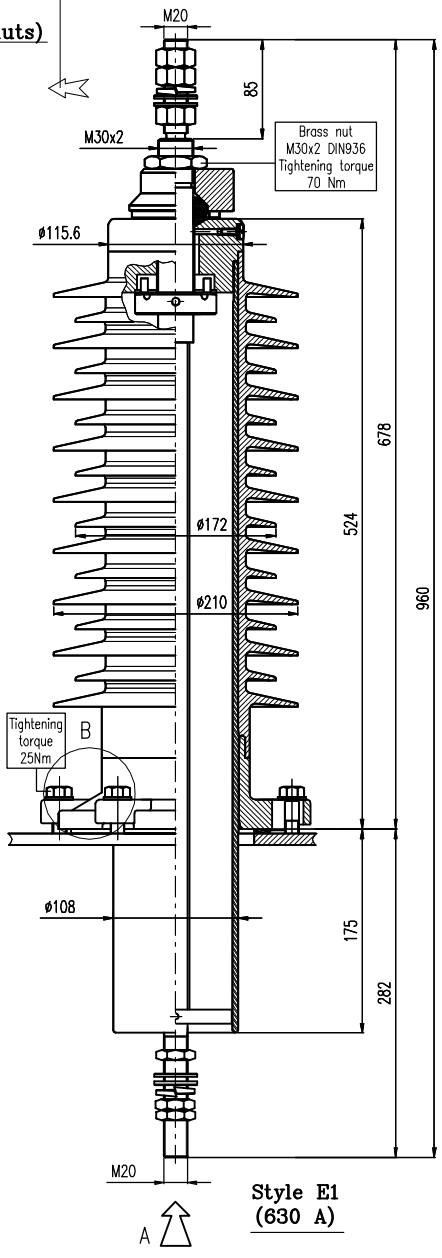


CANTILEVER OPERATING LOAD
– VERTICAL: 500 N
– INCLINED 30°: 300 N
– OPERATING TEST LOAD: 1000 N

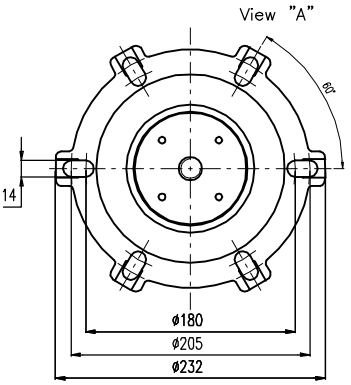
Style FO (With nuts)



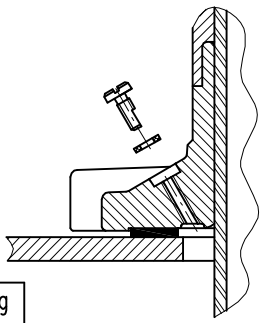
Style E1 (250 A)



Style E1 (630 A)



Flange
Vent Screw
(See Pag. "Installation Cautions")



Bushing type	Rated voltage (kV)	Rated current (A)	P.F. 1' (kV)	BIL (kV)	Creepage dist. (mm)	Arcing dist. (mm)
SBC 52–M12/c(P3)	52	250	105	250	1520	475
SBC 52–M20/c(P3)		630				

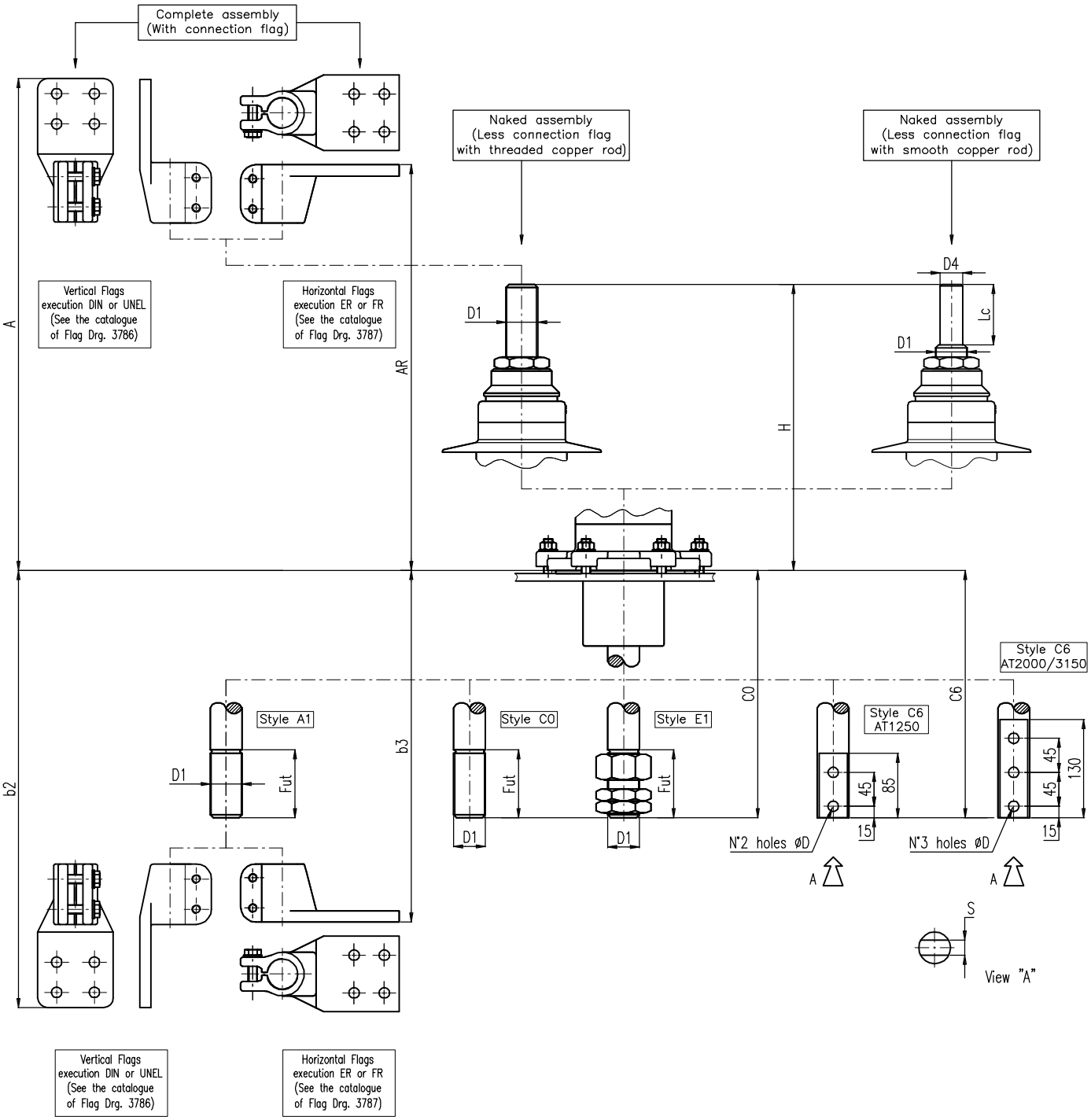
CEDASPE

Titolo
Silicon bushing type SBC 52–M12–M20/c(P3)

Data 02/04/14
Scala 1:6
Dis.
Visto

Dis. Nr
4496

1 2 3 4



Bushing type	D1 (mm)	D4 (mm)	Lc (mm)	H (mm)	A (mm)	AR (mm)	b2 (mm)	b3 (mm)	Fut (mm)	C0 (mm)	C6 (mm)	ØD (mm)	S (mm)
SBC 12-M30/d(P4)	M30x2	30	80	385	455	385	230	160	65	160	210	14	20
SBC 24-M30/d(P4)				462	532	462	240	168		168	220		
SBC 36-M30/d(P4)				560	630	560	275	205		205	245		
SBC 52-M30/c(P3)				650	720	650	330	260		260	295		
SBC 12-M42/d(P4)	M42x3			415	525	415	300	190	90	190	260	14	20
SBC 24-M42/d(P4)				492	602	492	308	198		198	270		
SBC 36-M42/d(P4)				590	700	590	345	235		235	290		
SBC 52-M42/c(P3)				680	790	680	402	292		292	345		
SBC 12-M48/d(P4)	M48x3			420	550	420	335	205	95	205	260	18	25
SBC 24-M48/d(P4)				497	627	497	345	213		213	270		
SBC 36-M48/d(P4)				595	725	595	380	250		250	290		
SBC 52-M48/c(P3)				685	815	685	425	297		297	345		

CEDASPE

Titolo
Accessories for Silicon Composite bushing

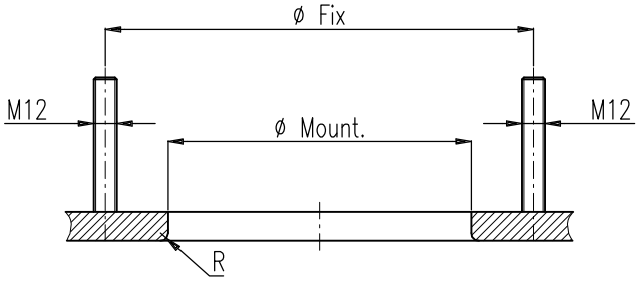
Data 16/10/13
Scala 1:8
Dis.
Visto

Dis. Nr
4510
1 2

On existing units in case of replacement of old porcelain type bushing, SBC can enter also mounting hole & Studs arrangement :

- DIN42533 Ref. "C & D"
- EN50180/1250A
- EN50180/2000–3150A

EN50180/3150A	ø205	ø135
EN50180/1250A	ø185	ø110
DIN42533 Ref."D"	ø200	ø135
DIN42533 Ref."C"	ø180	ø110
Bushing	ø Fix	ø Mount.

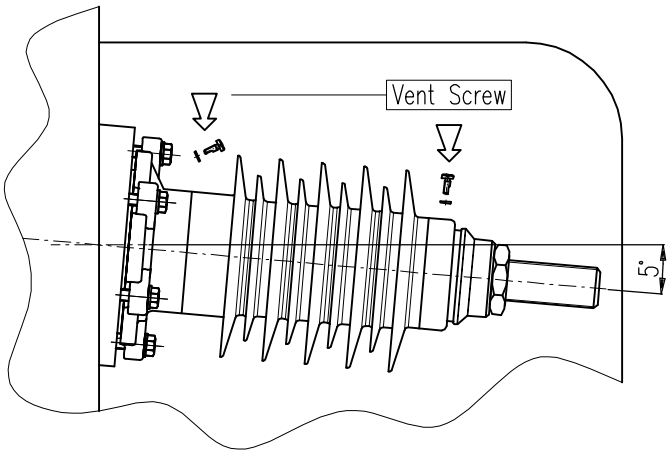


Suggested round edges desing (R)

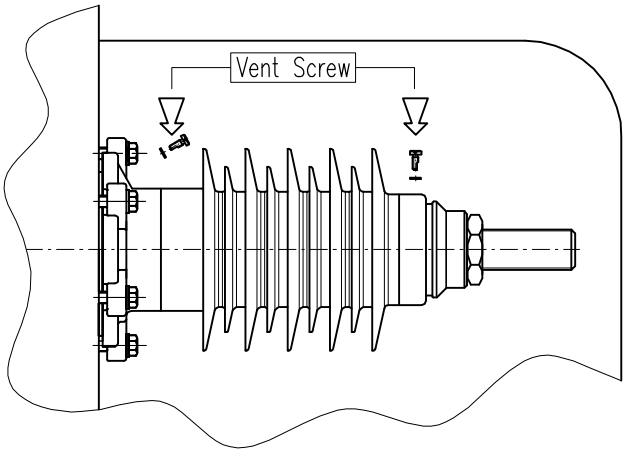
Horizontal Mounting

IMPORTANT: Precaution to be taken in order to avoid air to remain trapped inside the bushing

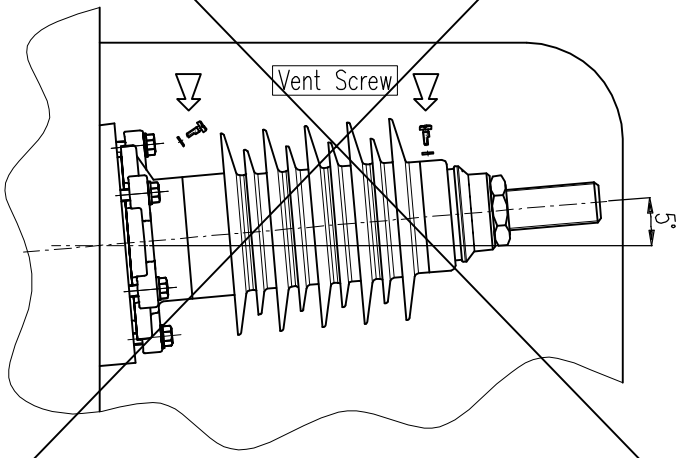
Suggested solution



Possible solution
but there is RISK of having
air bubbles
trapped inside the bushing



Solution to be avoided



CEDASPE

Titolo
Mounting instructions for SBC bushing

Data	03/09/15
Scala	====
Dis.	
Visto	

Dis. Nr
4511

1 2

FILE = 4511 .DWG LMT [(0,0) (196,286)] A4 (210x297)

REV. 02 DTD 06/02/2017

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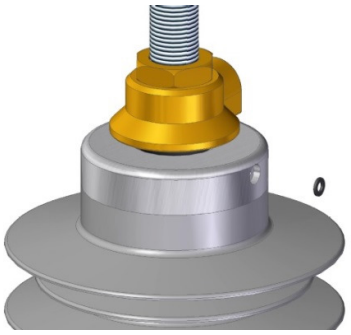
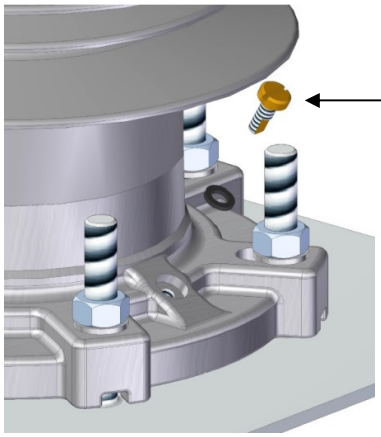
INSTALLATION CAUTIONS



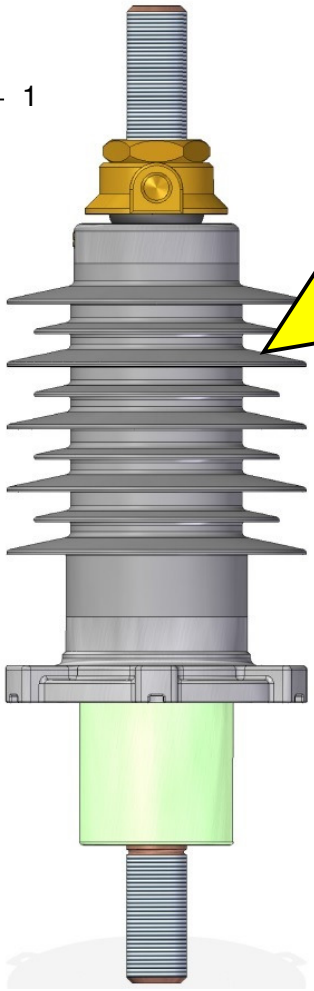
To vent air unscrew the screw **1** with a screwdriver

Per spurgare l'aria allentare la vite **1**



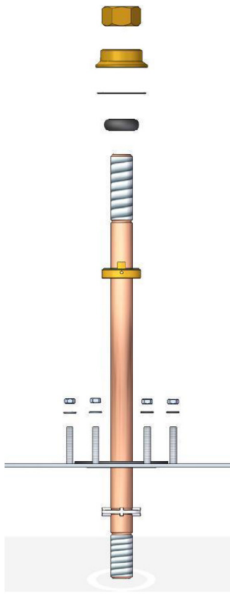
To vent air under cover unscrew the screw **2** with a screwdriver

Per spurgare l'aria sotto coperchio allentare la vite **2**



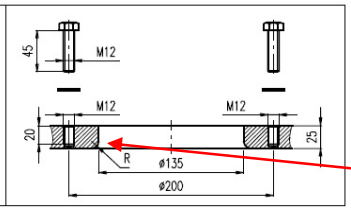
WARNING!!!
During venting of the bushing please take all the cautions necessary to prevent that oil will get in touch with the silicone cover. In case silicone gets in contact with oil, to clean immediately the surface with a soft-cloth and mild-detergent (water soap 5%)

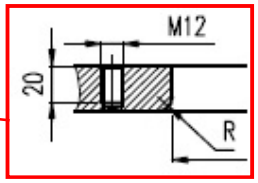
ATTENZIONE!!!
Durante lo spurgo dell'aria prendere tutte le precauzioni necessarie per prevenire che l'olio venga a contatto con l'involucro in silicone.
In caso di contatto pulire immediatamente la parte interessata con uno straccio e detergente (acqua sapone 5%)



Metal work
Armatura

Note:
Mounting hole : ø135 $^{+2}_{-0}$
Fixation bolt circle :
– ø Fix DIN "D": ø200 mm
Suggested round edges design (R)



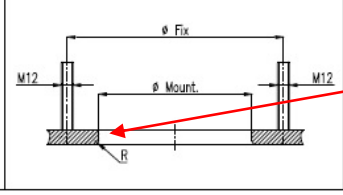


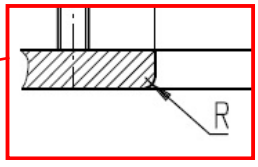
On existing units in case of replacement of old porcelain type bushing, SBC can enter also mounting hole & Studs arrangement :

– DIN42533 Ref. "C & D"
– EN50180/1250A
– EN50180/2000–3150A

EN50180/3150A	ø205
EN50180/1250A	ø185
DIN42533 Ref."D"	ø200
DIN42533 Ref."C"	ø180
Bushing	ø Fix

Suggested round edges desing (R)





NOTE: to minimize risk of facing discharges to round the edge of mounting hole as shown in figure above
NOTA: per minimizzare il rischio di scariche arrotondare lo spigolo del foro di montaggio come mostrato nell'immagine sopra

ORDER FORM

System Rated Voltage (kV):

12 ☐ 24 ☐ 36 ☐ 52 ☐

Rated Current (A):

630 ☐ 1250 ☐ 2000 ☐ 3150 ☐ 4500 (Only for 12;24;36kV) ☐

Creepage distance:

..... mm OR ..... mm/kV

Airside components:

Nuts (Only for 630A) ☐ DIN Flag ☐ UNEL Flag ☐ NEMA Flag ☐ SPECIAL ☐

Oil side components:

Style C0 ☐ Style C6 ☐ Style E1 ☐ Style A1 (Flag .....) ☐ SPECIAL ☐

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 (VITON) (-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) ☐

CT accomodation:

CT150 ☐ CT300 ☐ CT500 ☐ SPECIAL C0=..... ☐

Notes:

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CEDASPE	Titolo: Composite Bushings SBC Order sheet	Data 05/12/17 Scala ==== Dis. Visto	Dis. Nr 4404

A4 (210x297) LMT [(0,0) (196,286)] .DWG FILE = 4404 REV. 00 DTD 05/12/17