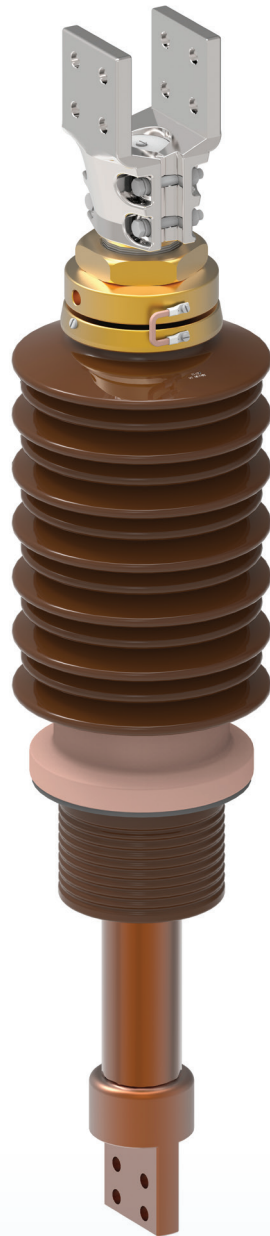


PORCELAIN BUSHINGS HC Series



The CEDASPE brand around the world: Innovative and reliable with a high level of available customizations



BUSHINGS: GENERAL INFORMATION

1.0 Electrical characteristics (I_r = rated current; U_r = rated voltage)

1.1 Standard insulation levels (IEC 60137 ed 6.0)

Rated voltage U _r kV (r.m.s.)	One minute power frequency withstand voltage wet (dry) kV (r.m.s.)	Dry lightning impulse withstand voltage dry (1,2/50 ms) kV
1	10	20
3,6	10 (15)	40
12	28 (30)	75
24	50 (55)	125
36	70 (77)	170
52	95 (105)	250

1.2 Standard values of rated thermal short time current (I_{th}) 25 times the rated current (I_r) for 2 s ; for I_r equal or greater than 4000A, I_{th} is always 100kA

1.3 Overload conditions (IEC 354): Bushing selected with I_r not less than 120% of the rated current of the transformers are considered to be able to withstand the overload conditions according to IEC 354.

2.0 Mechanical characteristic

2.1 Cantilever operating load (bushing installed less than 30° from vertical)

U _r kV	I _r			
	800 A	1600 A	2500 A	3150 A
36	500 N	625 N	1000 N	1575 N
52	500 N	625 N	1000 N	1575 N

2.2 Cantilever operating load (bushing installed more than 30° from vertical)

U _r kV	I _r			
	800 A	1600 A	2500 A	3150 A
36	300 N	375 N	600 N	945 N
52	300 N	375 N	600 N	945 N

2.3 Cantilever test load

U _r kV	I _r			
	800 A	1600 A	2500 A	3150 A
36	1000 N	1250 N	2000 N	3150 N
52	1000 N	1250 N	2000 N	3150 N

3.0 Tightening torque (suggested values, +/- 10% depending on the quality of the tank cover surface)

3.1 On the central conductor LV/HV in brass or copper




CEDASPE S.p.a
 S. Giuliano Milane (ITALY)

- ▶ Closing nut partially tightened for transport / storing
 ATTENTION: complete the tightening before testing / commissioning
- ▶ Die Mutter ist aus Transportgründen Und Lagergründen.
 ACHTUNG: Vor in Betrieb nahme sind alle Teile nochmals anzuziehen.
- ▶ Tuerca parcialmente serrada para transporte y para tenerlo en almacen
 ATENCION: completar el serraje de la tuerca antes de la puesta en marcha
- ▶ ATTENTION: Écrous partiellement vissé pour le transport et stockage.
 Le visser complètement avant essai/mise en service
- ▶ Dado parzialmente serrato per il trasporto / immagazzinamento.
 ATTENZIONE: completare il serraggio prima del collaudo / messa in servizio

Tightening Torque (+/-10%)

Current	Size	Torque
250 A	M12	13 Nm
630 A	M20	30 Nm
1250 A	M30x2	70 Nm
2000 A	M42x3	115 Nm
3150 A	M48x3	150 Nm
4500 A	M55x3	200 Nm
6300 A	M75x3	200 Nm
5000/8000 A	M90x4	200 Nm

3.2 On the steel fixing stud of HV bushings

Size	Torque
M10	15 Nm
M12	25 Nm
M16	40 Nm

3.3 On the locking bolts of the flags

Size	Torque
M10	25 Nm
M12	40 Nm
M16	90 Nm

4.0 Surface treatment of active metallic parts

Standard scope of supply does not include any surface treatment or plating.

Upon request, particularly for use in highly polluted environmental conditions or in tropical climate, all metal parts (in copper or brass) air side can be supplied with 6-8 micron thickness electrolytic tinplating

5.0 Gaskets

During the impregnation of the transformer it is possible to reach the max temperature of 110°C in oil and 120°C in air for 24 hours, without damaging the gaskets.

Unless contrary request, the material normally used for the gaskets is NBR (nitrile rubber) suitable for use with mineral oils with MIN ambient temperature of -30°C and MAX temperature of +120°C (up to 130°C during drying process/vapour phase).

Upon request available cork rubber impregnated gaskets, or in Viton, or in silicon rubber.

NBC (Cork TD1120): Temp. range: -30°C/+120°C (up to 130°C during drying process/vapour phase).

Cork TD7000: Temp. range: -45°C/+120°C (up to 130°C during drying process/vapour phase)

VITON: Temp. range: -20°C/+150°C (recommended when bushing is installed inside a cable box or a cable duct)

Fluoro Silicone: Temp. range: -60°C/+150°C

6.0 Centering ring

All our bushings HV 1000 to 4500 A are fit by default with a ring to center the conductor in the lower part,

The advantages offered by this solution are a better distribution of the electric field in the fixation area and a better release of the mechanical stress due to the connections under oil

This ring is made by default in nylon PA6; on demand we can supply it in pressboard

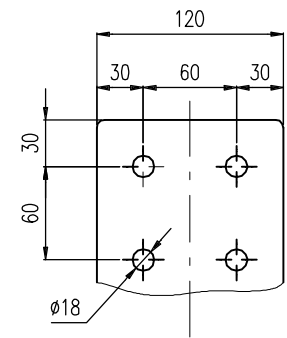
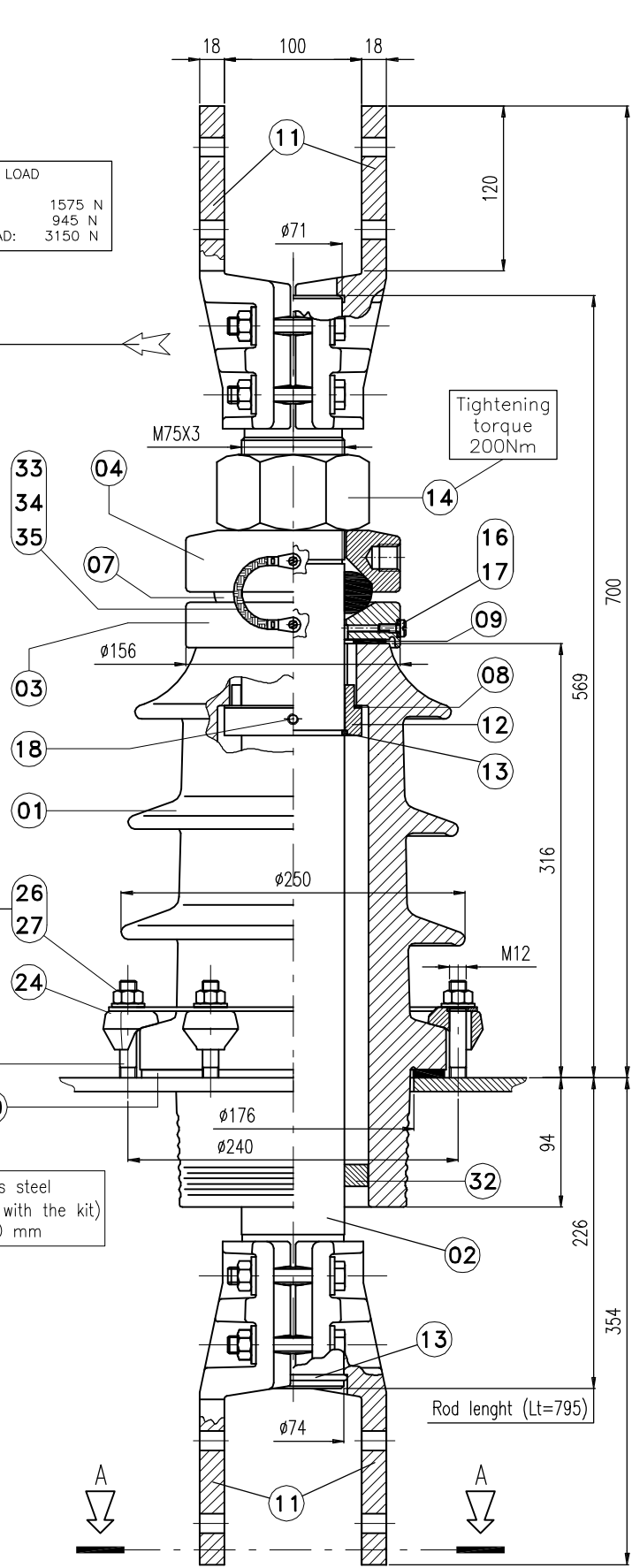
For high current bushings 5 to 12,5kA the ring is always in pressboard

CANTILEVER OPERATING LOAD
 - VERTICAL: 1575 N
 - INCLINED 30°: 945 N
 - OPERATING TEST LOAD: 3150 N

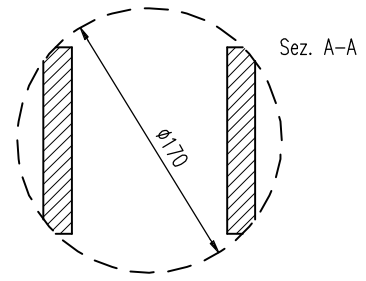
Tightening torque 200Nm

Tightening torque 25Nm

n° 6 fixing studs steel M12x70 (not supplied with the kit) Bolt circle 240 mm

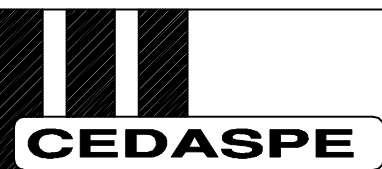


Pos.	Description
1	Porcelain
2	Copper rod
3	Brass cap "E"
4	Brass top washer "F"
7	NBR ring gasket "J"
8	Gasket "O"
9	NBR gasket "M"
10	NBR Flange gasket "N"
11	Brass Flag
12	Brass ring "P"
13	Copper ring "S"
14	Brass nut M75 DIN 934
16	Fiber gasket
17	Vent/screw "R"
18	Locking screw
24	S/S fixing ring
25	Alluminium clamping piece "F"
26	Nuts M12 DIN934 (AISI304)
27	Washer ø13 (AISI304)
28	Fixing stud M12x70 (not supplied)
32	Center ring
33+35	Equipotential link



Bushing	Voltage kV	Current A	Creepage distance mm	PF 1'	BIL kV	Z n° of sheds	G.W. Kg
20/6300	24	6300	440	55	125	3	80

Bushing Acc. to IEC 60137 ed. 6.0



Titolo
**OUTDOOR TRANSFORMER
 BUSHING TYPE 20/6300**

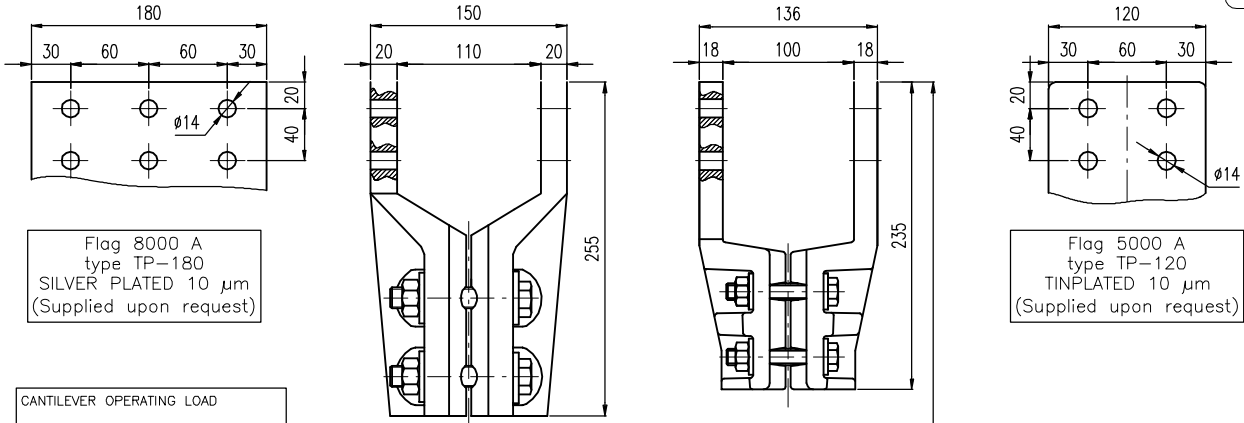
Data	11/03/13	Dis. Nr
Scala	1:5	
Dis.		3812
Vista		

LMT [(00) (196,286)]

FILE = 3813.DWG

REV. 05 DTD 17/11/16

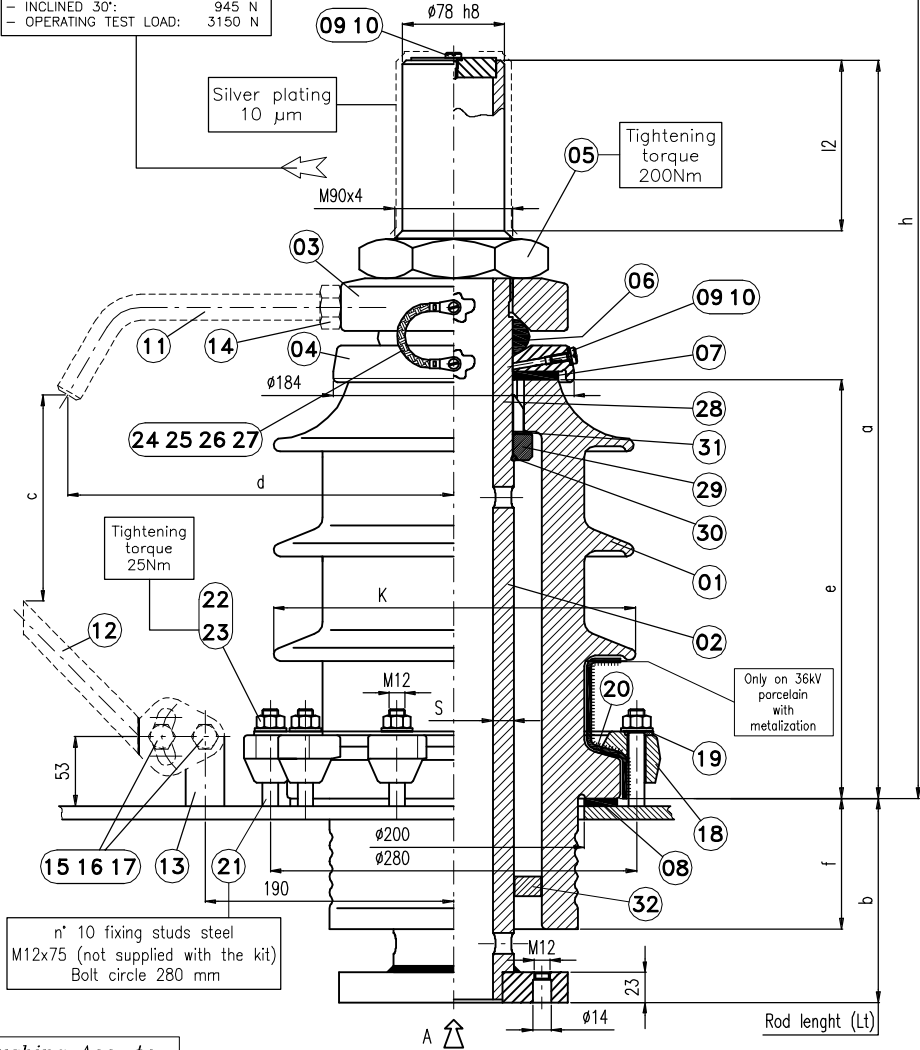
La CEDASPE S.p.A. si riserva o termini di legge la proprietà del presente disegno con divieto di riprodurlo o comunicarlo a terzi senza sua autorizzazione.



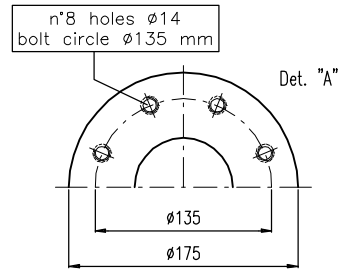
CANTILEVER OPERATING LOAD
 - VERTICAL: 1575 N
 - INCLINED 30°: 945 N
 - OPERATING TEST LOAD: 3150 N

Flag 8000 A
 type TP-180
 SILVER PLATED 10 µm
 (Supplied upon request)

Flag 5000 A
 type TP-120
 TIN PLATED 10 µm
 (Supplied upon request)



Pos.	Description
1	Porcelain
2	Copper tube
3	Tightening ring
4	Cap disc
5	Brass nut
6	Ring gasket
7	Flat gasket
8	Flange gasket
9+10	Vent/screw & gasket
11+17	Arcing horns assembly
18	Clamping piece
19	Fixing ring
20	Copper spacer ring
21	Fixing stud M12x75 (not supplied)
22+23	Nut & washer M12
24+27	Equipotential link
28+30	Antirotating and stopper device
31	Fiber gasket
32	Center ring



Bushing Acc. to IEC 60137 ed. 6.0

Bushing	Voltage kV	Current A	Creepage distance mm	PF 1' kV	BIL kV	a mm	b mm	c mm	d mm	e mm	f mm	h mm	l2 mm	s mm	k mm	(Lt) mm	Z n° of sheds	G.W. Kg							
24/5-P2	24	5000	480 *	55	125	540	150	155	295	320	100	678	100	16	285*	690	3	60							
24/8-P2		8000				570						698	130	21		720		70							
24/5-P4	36	5000	744	77	170	635	175	220	320	415	125	770	100	16	320	810	5	80							
36/5-P2						8000						155	295	800		130		21	840	90					
24/8-P4		24				8000						55	125	665	220	320	415	125	800	130	21	320	840	5	90
36/8-P2														36						8000	77		170		220

NOTE *: It replaces the old DIN42541 with creepage 470 mm & φ "K"=275 mm.

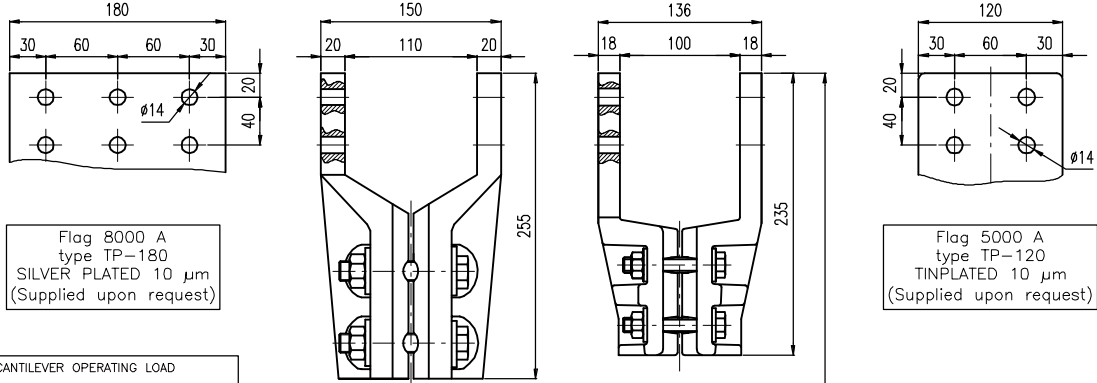
THE FIGURE SHOWS THE BUSHING 24/8-P2 (1:5 SCALE)



Titolo
COMPLETE BUSHING
 24 - 36 KV
 5000 - 8000 A
 EN 50243:2002-04

Data 11/03/13
 Scala 1:5
 Dis.
 Visto

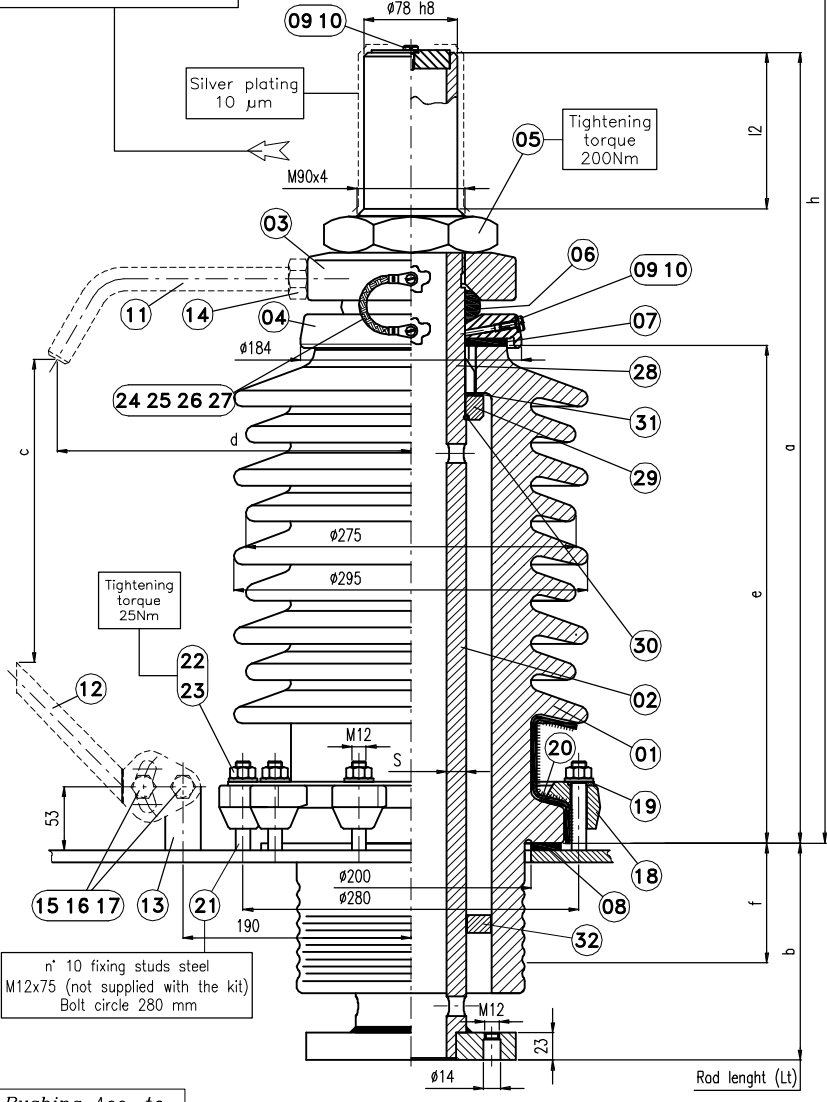
Dis. Nr
3813
 1 2 3 4 5



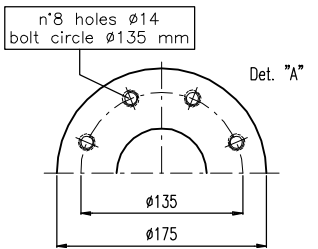
Flag 8000 A
type TP-180
SILVER PLATED 10 µm
(Supplied upon request)

Flag 5000 A
type TP-120
TINPLATED 10 µm
(Supplied upon request)

CANTILEVER OPERATING LOAD
- VERTICAL: 1575 N
- INCLINED 30°: 945 N
- OPERATING TEST LOAD: 3150 N



Pos.	Description
1	Porcelain
2	Copper tube
3	Tightening ring
4	Cap disc
5	Brass nut
6	Ring gasket
7	Flat gasket
8	Flange gasket
9+10	Vent/screw & gasket
11+17	Arcing horns assembly
18	Clamping piece
19	Fixing ring
20	Copper spacer ring
21	Fixing stud M12x75 (not supplied)
22+23	Nut & washer M12
24+27	Equipotential link
28+30	Antirotating and stopper device
31	Fiber gasket
32	Center ring



Bushing Acc. to IEC 60137 ed. 6.0

Bushing	Voltage kV	Current A	Creepage distance mm	PF 1' kV	BIL kV	a mm	b mm	c mm	d mm	e mm	f mm	h mm	l2 mm	s mm	(Lt) mm	Z n° of sheds	G.W. Kg	Note	
36/5-P3	36	5000	900	77	170	635	175	220	320	415	125	770	100	16	810	9	80	Acc. EN50243:2002-04	
36/8-P3		8000				790						130	21	840					
36/5-P4		5000	1100*			701	199	286		481	149	839	100	16	900	11	85		Special design
36/8-P4		8000				731						859	130	21	930		95		

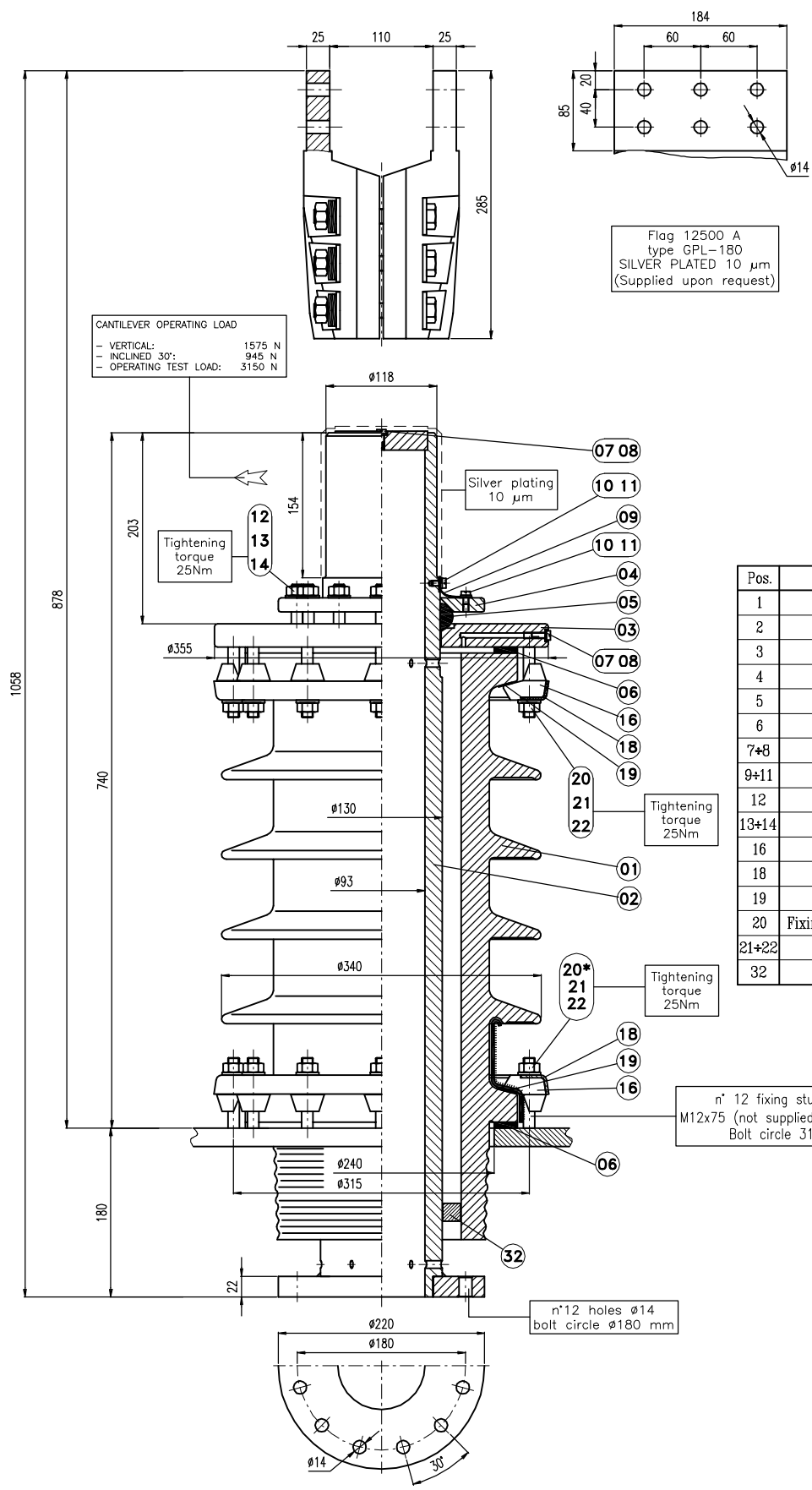
*On demand available also special solution with 1360&1560 mm Creepage Distance

THE FIGURE SHOWS THE BUSHING 24/8-P2 (1:5 SCALE)



Titolo
COMPLETE BUSHING 36 KV
- PROFILE ANTIFOG
5000 - 8000 A
EN 50243:2002-04

Data	11/03/13	Dis. Nr	3814
Scala	1:5		
Dis.			
Visto		1	2



Flag 12500 A
type GPL-180
SILVER PLATED 10 μm
(Supplied upon request)

CANTILEVER OPERATING LOAD

- VERTICAL:	1575 N
- INCLINED 30°:	945 N
- OPERATING TEST LOAD:	3150 N

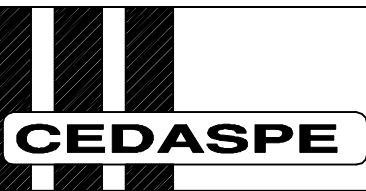
Pos.	Description
1	Porcelain
2	Copper tube
3	Closing flange
4	Tightening ring
5	Ring gasket
6	Flange gasket
7+8	Vent/screw & gasket
9+11	Equipotential link
12	Stud M12x40
13+14	Nut & washer M12
16	Clamping piece
18	Alu fixing ring
19	Copper spacer ring
20	Fixing stud M12x75 (not supplied)
21+22	Nut & washer M12
32	Center ring

n° 12 fixing studs steel
M12x75 (not supplied with the kit)
Bolt circle 315 mm

n°12 holes ø14
bolt circle ø180 mm

Bushing	Voltage kV	Current A	Creepage distance mm	Arcing distance	PF 1'	BIL kV	Z n° of sheds	G.W. Kg
36/12500	36	12500	710	350	77	170	4	165

Bushing Acc. to
IEC 60137 ed. 6.0



Titolo
BUSHING 36kV 12500A
DIN 42537-1983

Data 11/03/13
Scala 1:6
Dis.
Visto

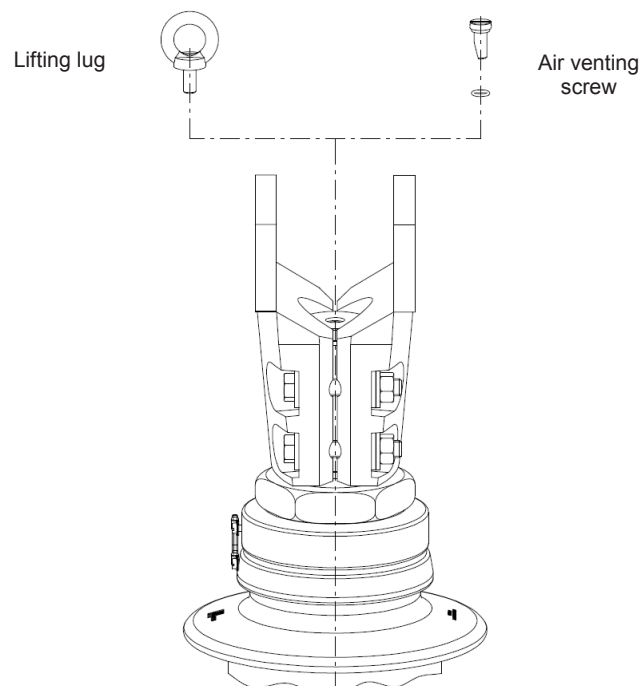
Dis. Nr
3815

1	2			
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LIFTING LUG USE INFORMATION

Bushings 8000A and 12500A

CEDASPE high current, 8000A and 12500A rated, bushings come equipped with a steel lug, screwed in top of conductor upper end, to help user with lifting and handling operations during installation or dismantling of the bushing off transformer.



CAUTION: Before oil filling operation to dismantle the lug and fit in the air venting screw supplied with the bushing.

ORDER FORM

AA (210x297)

System Rated Voltage (kV):

24

36

LMT [(0,0) (196,286)]

Rated current (A):

5000

6300
(Only for 24kV)

8000

12500
(Only for 36kV)

.DWG

Creepage distance:

..... mm OR

..... mm/kV OR

Pollution level IEC 60815
(b;c;d;e / 1;2;3;4)

FILE = 4403

Airside components:

Naked

Flag

SPECIAL

Oil side components:

6300 A: A1 C6 SPECIAL

5000/8000 A: A1 Round Base SPECIAL

12500 A: A1 Round Base SPECIAL

REV. 00 DTD 05/12/17

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)

Arcing horns:

NO

YES (DIN STYLE)

YES (UNEL STYLE)

Material of fixation Flange:

Aluminium

Stainless steel

Notes:

.....



La CEDASPE Power S.r.l. si riserva a termini di legge la proprietà del presente disegno con divieto di riproduzione o comunicarlo a terzi senza sua autorizzazione.



Titolo
HC Bushings
Order sheet

Data **05/12/17**
 Scala **====**
 Dis.
 Visto

Dis. Nr
4403