

TABLE EXPLANATION

Column 1

Type designation, for ex. OTF 550/123-0, E=1
550 – rated lightning impulse withstand voltage, full wave, 550kV
123 – rated voltage 123 kV
O – designation of central tube diameter
E=1– C.T. accommodation 100 mm

Column 2

Rated voltage

Column 3

Rated phase-to-earth voltage

Column 4

Power frequency withstand test voltage (AC) 50 Hz or 60Hz, 1 min., dry and wet

Column 5

Lightning impulse (BIL) withstand test voltage, full wave, positive and negative

Column 6

Extinction voltage with a limit of 10 pC

Column 7

Maximum operating current. Bolt with a penetrating depth of 11 mm

Column 9

Minimum creepage distance along-side sheds. Normal colour-brown in line with RAL 8014-8017. Protected creepage at 45° precipitation 74%, at 90° precipitation 43%.

Column 11

Cantilever test load, perpendicular to bushing axis applied at the middle of connecting bolt. Permissible operating load 60% of test load.

Column 12

Approx. weight without CT accommodation and without conductor bolt.

Column 14

All oil end parts in short design. Long oil ends available upon request.

Column 17

C.T. accommodations in steps of 100 mm, up to 600 mm and for OTF 750/170-A 100-300mm.

Column 19 & 33

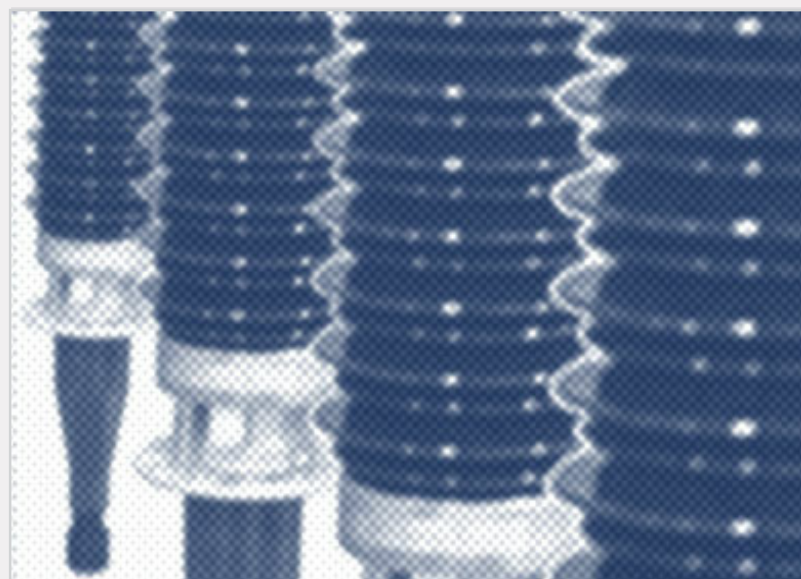
Widened mouth (entrance) at oil end to permit insertion of insulated rope.

Column 32

Inner diameter of central tube.

Column 34

Dimensions of air terminal. Terminal is made of electrolytic copper, top side with threaded bore M12x30 deep, cable bore for soldering of conductor cable must be provided.



Condenser Bushings - type OTF

DESCRIPTION

The insulating body of the PERTINOL condenser bushing is made of an oil impregnated insulating paper wound in wide rolls on the central tube.

Company Končar Power Transformers Ltd. produces this type of bushing based on long-term commercial and technical cooperation with German company HSP from Porz, with good reputation and great experience in this field.

During the winding process aluminium foil is integrated between layers of insulating paper to achieve uniform voltage distribution between the central tube and earthing flange. Condenser core is dried at higher temperature under vacuum and then impregnated with the treated mineral transformer oil.

The core is built into housing made up of the base, flange, porcelain and expansion vessel. All outdoor elements are adhered to each other by cement. The bushing base entering the transformer is firmly connected to the central tube and flange. This form of assembly makes the transformer side connection oil tight, even if the outdoor side housing is destroyed by outer influences.

The porcelain body is one-piece with alternating sheds without water drip hedges.

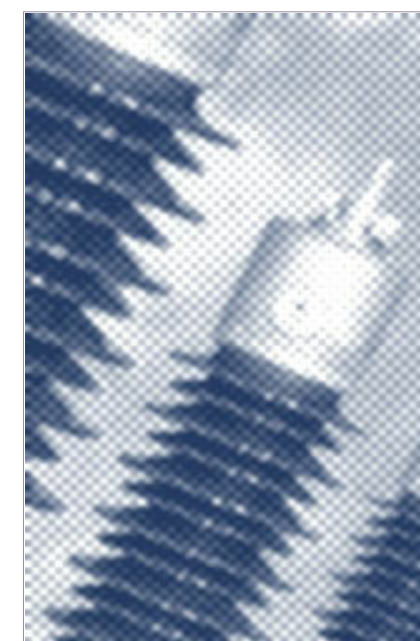
The housing head contains the expansion vessel filled with nitrogen cushions for the compensation of oil volume changes caused by the temperature variations. This vessel is hermetically sealed and provided with the oil level indicator. Tilt safety device permits transportation of the

bushing in the horizontal position.

For long-term storage we recommend positioning of the head above the flange.

The expansion vessel and flange are made of weather-resistant aluminium alloy. Seals are of oil-resistant Perbunan N. All bushing flanges are equipped with a test tap. When the cap is screwed on, contact is made with the last layer of the core. The test tap is equipped with a 4-mm insulated pin, which can be plugged into a spring socket for measuring purposes.

The bushings also have M12 earth bore as well as hole with gooves for disassembling and bolt on the bushing flange for transformer venting.



CONNECTIONS

The air terminal consists of a clamp mounted at the upper end of the expansion vessel, through which the conductor or cable bolt can be set in required position. The clamp is of bronze alloy. A stainless steel plate is inserted between bronze clamp and aluminium head to prevent voltage corrosion. All screws are of stainless steel.

The bolts are equipped at the top with a threaded bore so that a draw wire can be screwed in, and the bolt pulled through the central tube. The bolt is delivered in two pieces for easier transportation.

The bushing oil end is equipped with an internal electrode barrier cast in the araldite and widened mouth for the entrance of insulated conductor.

OTHER CHARACTERISTICS

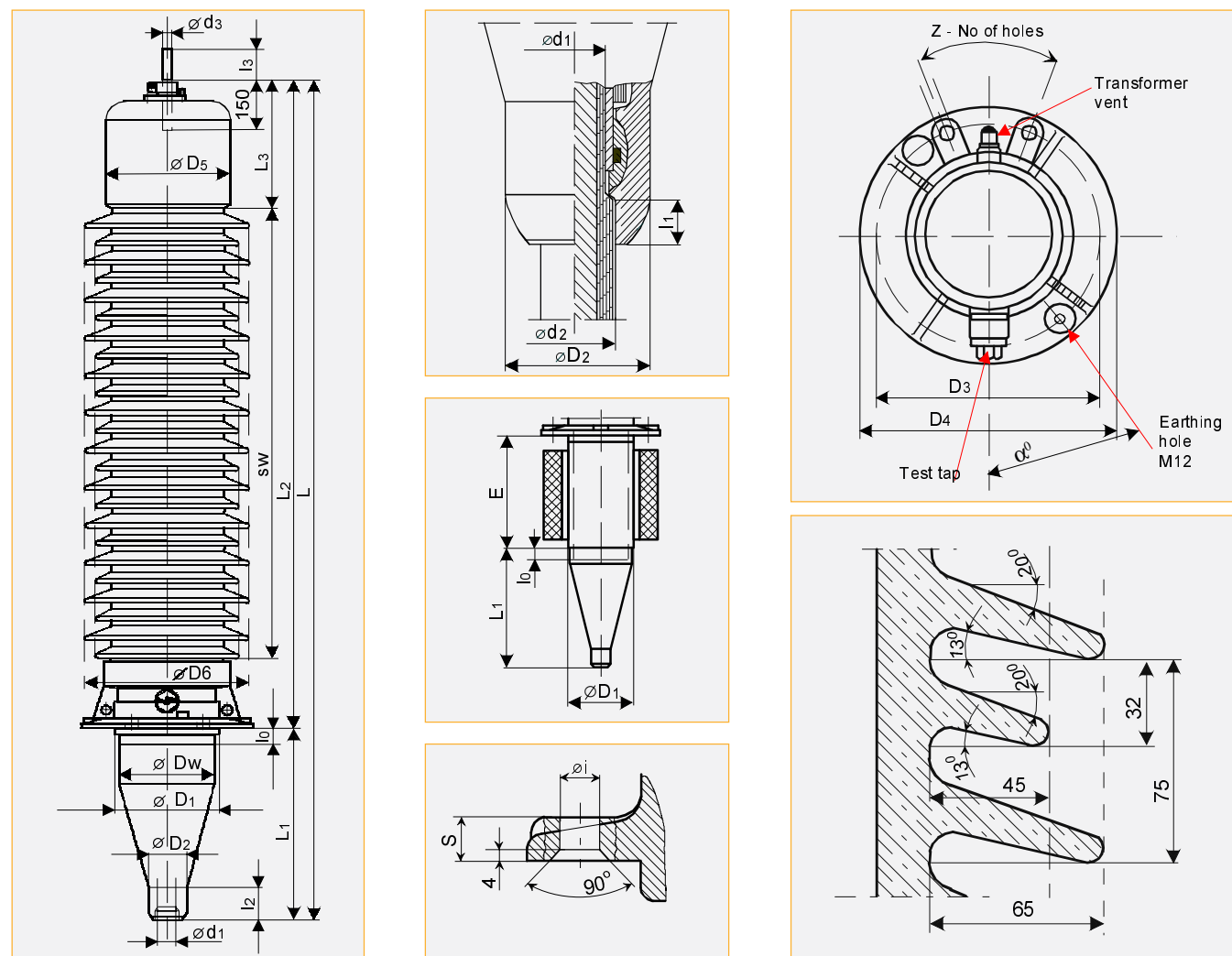
- Bushings are in accordance with requirements of the Standard IEC 60137.
- Inclined assembly up to 30° from vertical is allowed.
- Ambient air temperature range: -25°C to 40°C
- Transformer oil temperature
 - maximum for normal load 100°
 - maximum daily mean 90°
- Test voltage of the test tap 2 kV, 50 Hz, 1 min.
- Archings are available upon request

TYPE	Ur					Max. permissible current for cross section (mm ²)								Flashover distance SW	Creepage distance	No of shed pairs	Cantilever test load	
	line	line/earth	line/earth	line/earth	line/earth	A												
	kV	kV	kV	kV	kV	mm												mm
OTF 250/52-O	52	30	105	250	70	110	220	290	420	490	780	-	-	800	450	1435	6	3000
OTF 250/52-A	52	30	105	250	70	100	200	240	350	500	730	920	-	1470	450	1435	6	4000
OTF 325/73 - O	73	42	140	325	95	110	210	280	410	480	760	-	-	1250	600	1920	8	3000
OTF 325/73 - A	73	42	140	325	95	100	200	290	350	500	730	920	-	1470	600	1920	8	4000
OTF 380/73 - O	73	42	140	380	95	110	210	280	410	480	760	-	-	1250	750	2470	10	2000
OTF 380/73 - A	73	42	140	380	95	100	200	240	350	500	730	920	-	1470	750	2470	10	4000
OTF 550/123-S*	123	71	230	550	160	250	300	360	500	-	-	-	-	800	1050	3430	14	2000
OTF 550/123-O	123	71	230	550	160	100	200	250	360	430	680	-	-	1150	1050	3430	14	3000
OTF 550/123-A	123	71	230	550	160	-	-	250	360	430	760	960	-	1550	1050	3430	14	4000
OTF 550/123-B**	123	71	230	550	160	-	-	-	-	-	-	960	1450	2000	1050	3430	14	5000
OTF 550/123-C	123	71	230	550	160	-	-	-	-	-	-	960	1450	2000	1050	3430	14	5000
OTF 550/145-A	145	84	230	550	160	-	-	250	360	430	760	960	-	1550	1050	3430	14	4000
OTF 550/145-B**	145	84	230	550	160	-	-	-	-	-	-	960	1450	2000	1050	3430	14	5000
OTF 550/145-C	145	84	230	550	160	-	-	-	-	-	-	960	1450	2000	1050	3430	14	5000
OTF 650/145-O	145	84	275	650	190	100	200	260	360	430	680	-	-	1150	1350	4390	18	3000
OTF 650/145-A	145	84	275	650	190	-	-	260	360	430	760	960	-	1550	1350	4390	18	4000
OTF 750/170-A	170	98	325	750	220	-	-	260	360	430	760	960	-	1550	1500	4940	20	4000

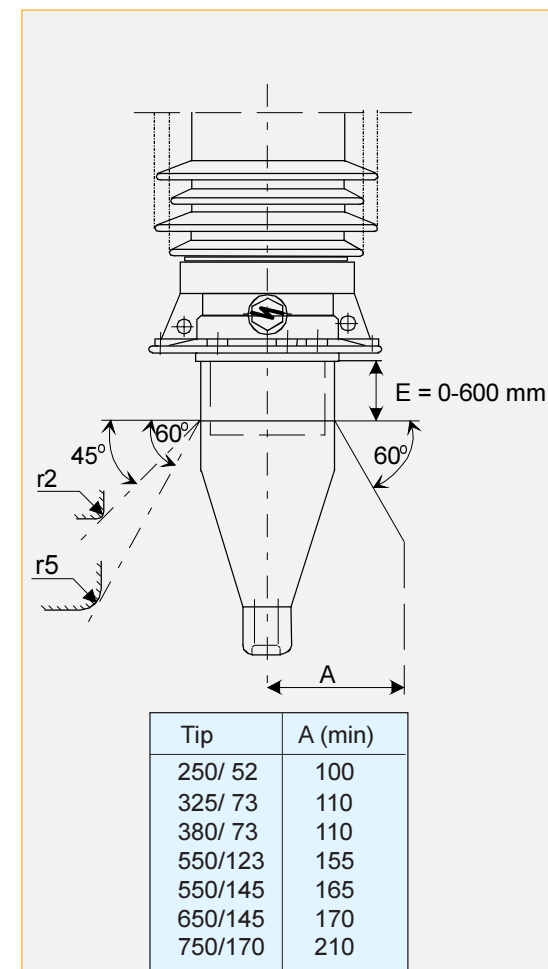
*on request ** for old design only

Weight approx.	L	L1	L2	L3	E	I ₀	I ₁	I ₂	D _w	D ₁	D ₂	D ₃	D ₄	S	∅i	Z	α ⁰	D ₅	D ₆	d1	d2	d3x13	
	kg	mm																					
29	1120	260	860	245	35	52	105	105	125	80	250	290	15	15	8	0	185	260	36	45			
30	1120	260	860	245	35	52	105	120	140	100	250	290	15	15	8	0	200	275	50	65			
42	1280	260	1020	245	35	52	105	105	125	80	250	290	15	15	8	0	185	260	36	45			
45	1280	260	1020	245	35	52	105	120	140	100	250	290	15	15	8	0	200	275	50	65			
47	1470	310	1160	245	35	52	105	105	125	80	250	290	15	15	8	0	185	260	36	45			
50	1470	310	1160	245	35	52	105	120	140	100	250	290	15	15	8	0	200	275	50	65			
75	1810	340	1470	245	35	52	105	105	125	70	250	290	15	15	8	0	185	260	22	31			
80	1810	340	1470	245	35	52	105	120	140	80	250	290	15	15	8	0	200	275	36	45			
110	1850	340	1510	285	35	52	105	150	170	100	250	290	15	15	8	90	230	305	50	65			
140	1930	340	1590	320	35	52	105	180	200	120	250	290	15	15	8	90	260	330	68	85			
140	1930	340	1590	320	35	52	105	180	200	120	290	335	20	20	12	30	260	330	68	85			
110	1850	340	1510	285	35	52	105	150	170	100	250	290	15	15	8	90	230	305	50	65			
140	1930	340	1590	320	35	52	105	180	200	120	250	290	15	15	8	90	260	330	68	85			
140	1930	340	1590	320	35	52	105	180	200	120	290	335	20	20	12	30	260	330	68	85			
120	2160	390	1770	245	35	52	105	120	200	80	290	335	20	20	12	30	200	275	36	45			
150	2200	390	1810	285	35	52	105	150	140	100	290	335	20	20	12	30	230	305	50	65			
140	2490	450	2040	320	35	52	105	180	170	100	290	335	20	20	12	30	260	330	50	65			
														200									

up to 600 mm in steps of 100mm up to 300 mm up to 2000A up to 1600 A up to 1250 A



RECOMMENDATIONS FOR POSITIONING



CONDENSER BUSHING - DETAILS

