

SLOVENSKI STANDARD**SIST EN 50588-4:2018****01-maj-2018****Nadomešča:****SIST EN 50464-2-3:2007**

Močnostni transformatorji srednje moči 50 Hz z najvišjo napetostjo naprave do 36 kV - 4. del: Transformatorji s kabelskimi ohišji na visokonapetostni oziroma nizkonapetostni strani - Kabelska ohišja tipa 2 za transformatorje, ki izpolnjujejo zahteve standarda EN 50588-2

Medium power transformers 50 Hz, with highest voltage for equipment not exceeding 36 kV - Part 4: Transformers with cable boxes on the high-voltage and/or low-voltage side - Cable boxes type 2 for use on transformers meeting the requirements of EN 50588-2

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Mittelleistungstransformatoren 50 Hz, mit einer höchsten Spannung für Betriebsmittel nicht über 36 kV - Teil 4: Verteiltransformatoren mit Kabelanschlusskästen auf der Ober- und/oder Unterspannungsseite - Kabelanschlusskästen Typ 2 für Verteiltransformatoren nach EN 50588-2

Transformateurs 50 Hz de moyenne puissance, de tension la plus élevée pour le matériel ne dépassant pas 36 kV - Partie 4: Transformateurs raccordés par boîtes à câble côté haute tension et/ou côté basse tension - Boîtes à câbles de type 2 pour utilisation pour transformateurs de distribution conformes aux exigences de la EN 50588-2

Ta slovenski standard je istoveten z: EN 50588-4:2018

ICS:

29.180 Transformatorji. Dušilke Transformers. Reactors

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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 50588-4

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ICS 29.180

Supersedes EN 50464-2-3:2007

English Version

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This European Standard was approved by CENELEC on 2017-12-25. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.[SIST EN 50588-4:2018](#)

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization
 Comité Européen de Normalisation Electrotechnique
 Europäisches Komitee für Elektrotechnische Normung

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European foreword

This document (EN 50588-4:2018) has been prepared by CLC/TC 14, "Power transformers".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2018-12-15
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2020-12-15

This document supersedes EN 50464-2-3:2007.

The EN 50588 series consists of the following parts, under the general title "Medium power transformers 50 Hz, with highest voltage for equipment not exceeding 36 kV":

- Part 1: General requirements
- Part 2: Transformers with cable boxes on the high-voltage and/or low-voltage side – General requirements for transformers with rated power less than or equal to 3150 kVA
- Part 3: Transformers with cable boxes on the high-voltage and/or low-voltage side – Cable boxes type 1 for use on transformers meeting the requirements of EN 50588-2
- Part 4: Transformers with cable boxes on the high-voltage and/or low-voltage side – Cable boxes type 2 for use on transformers meeting the requirements of EN 50588-2

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

1 Scope

Cable boxes described in this European Standard correspond to cable boxes Type 2 in EN 50588-2 and are suitable for assembly on the cover of oil-immersed distribution transformers meeting the requirements of EN 50588-2.

Cable boxes are air-filled, metal- or non-metal enclosed, for high- and/or low-voltage connections in the following variations:

1.1 High-voltage side

- a) Connection directly to bushings;
- b) Connection via busbar system.

1.2 Low-voltage side

- a) Connection directly to bushings (maximum of four connectors per bushing);
- b) Connection via busbar system.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50180, Bushings above 1 kV up to 36 kV and from 250 A to 3,15 kA for liquid filled transformers

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EN 50386:2002, Bushings up to 1 kV and from 250 A to 5 kA, for liquid filled transformers

EN 50588-3, Medium power transformers 50 Hz, with highest voltage for equipment not exceeding 36 kV - Part 3: Transformers with cable boxes on the high-voltage and/or low-voltage side - Cable boxes type 1 for use on transformers meeting the requirements of EN 50588-2

EN 60076-3, Power transformers - Part 3: Insulation levels, dielectric tests and external clearances in air (IEC 60076-3)

EN 60529:1991, Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50588-3 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obpapply>.

4 High-voltage connections

High-voltage bushings shall preferably be in accordance with EN 50180, pollution class II.

Dimension D, which is the minimum distance between live parts and between live parts and earth, is given in Table 1 and indicated in Figures 1 and 2. The value of D may be decreased by inserting barriers of insulating material. In this case, the insulation level shall be demonstrated by test.

Busbars in Figure 2 shall be dimensioned by reference to rated currents and short-circuit forces. Connection may be by single- or multi-core cables.

Figures 1 and 2 show typical arrangements; the actual design may vary.

Table 1 — Minimum distances in the cable box

U_M kV	Rated short duration power frequency withstand voltage (r.m.s.) kV	Rated lightning impulse withstand voltage (peak) kV		Minimum clearance D mm	
		List 1	List 2	List 1	List 2
3,6	10	20	40	-	60
7,2	20	40	60	60	90
12	28	60	75	90	125
17,5	38	75	95	125	170
24	50	95	125	170	225
36	70	145	170	275	315

NOTE Values in the table according to EN 60076-3, Table 2 and Table 3

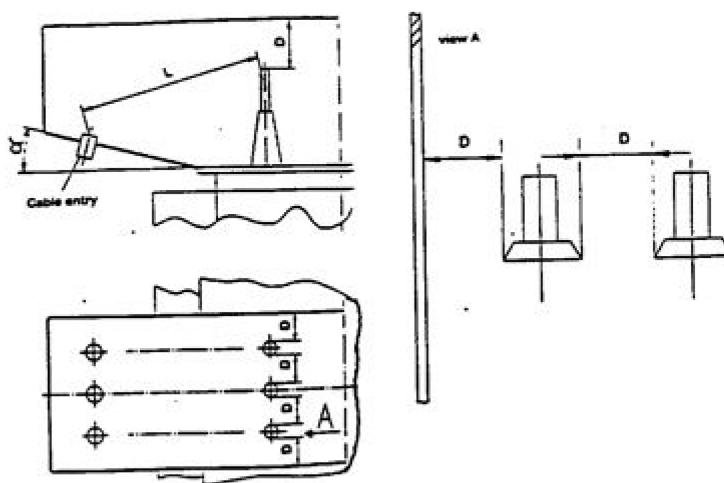
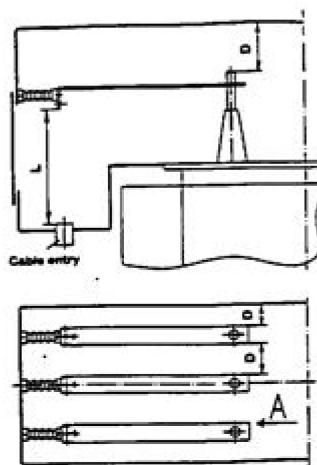


Figure 1 — High-voltage connection directly to bushings

The details of the cable entry, dimension L (distance between the cable entry and the bushing connection), angle α and other cable entry directions shall be subject to agreement between manufacturer and purchaser.



[View as in Figure 1](#)

Figure 2 — High-voltage connection via busbar system

The details of the cable entry, dimension L (distance between the cable entry and the busbar connection) and other cable entry directions shall be subject to agreement between manufacturer and purchaser.

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5 Low-voltage connections

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Low-voltage bushings shall be in accordance with EN 50386.1aaa3c-8076-42aa-b2af-

Dimension D, which is the minimum clearance between live parts and between live parts and earth, is indicated in Figures 3 and 4. The minimum value of D shall be 40 mm.

Busbars in Figure 3 shall be dimensioned by reference to rated currents and short-circuit forces.

Connection may be by single- or multi-core cables.

Figures 3 and 4 show typical arrangements. the actual design may vary.

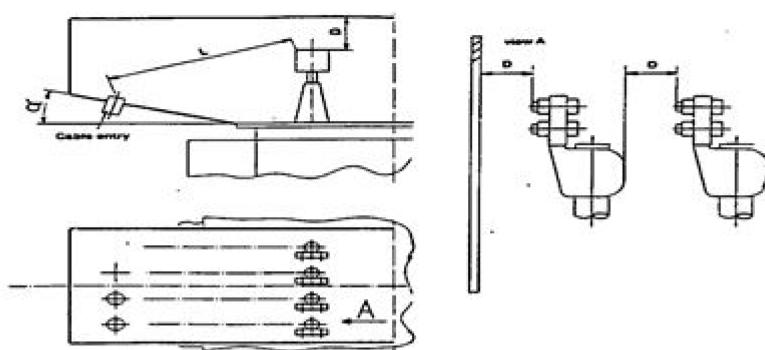
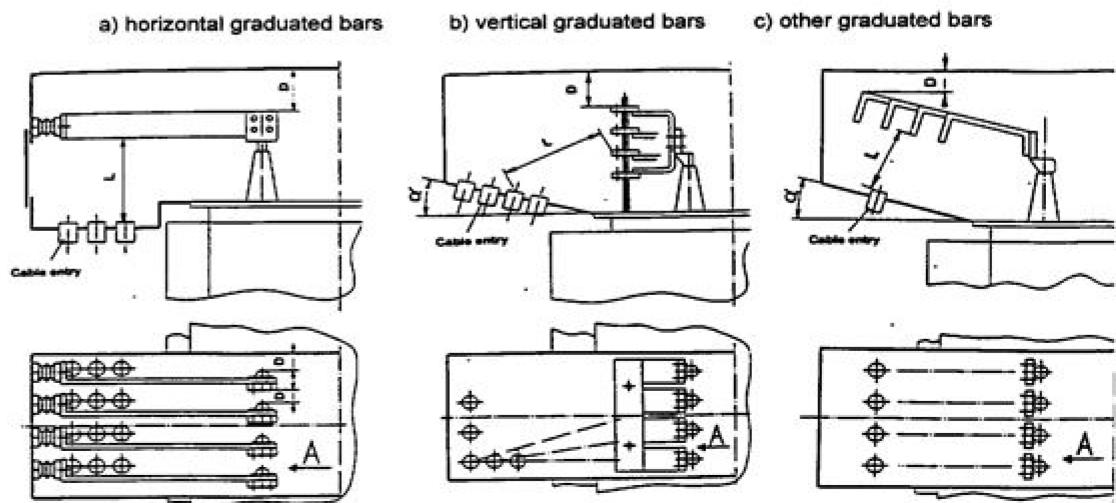


Figure 3 — Low-voltage connection directly to bushings

The details of the cable entry, dimension L (distance between the cable entry and the bushing connection), angle α and other cable entry directions shall be subject to agreement between manufacturer and purchaser.



View as in Figure 3

Figure 4 — Low-voltage connection to busbar system

The arrangement of the cable entry, dimension L (distance between the cable entry and the busbar connection), angle α and other cable entry directions shall be subject to agreement between manufacturer and purchaser.

6 Design

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Cable boxes shall be fastened on ~~transformer~~ covers by screws or by welding. For convenient cable access, cable boxes shall be provided with covered openings with handles.

The protection class shall be IP33 to IP55 in accordance with EN 60529. Suitable ventilation shall be provided.

The assembly of cable boxes to the transformer covers may be achieved using flanges.

Means of earthing the cable box to the transformer cover shall be provided.

Cable entry surfaces shall be prepared for easy assembly. The type and quantity of cable entries shall be subject to agreement between manufacturer and purchaser. Earthing bosses for cable armour shall be provided.

For single-core cable connections at the appropriate current, cable entry surfaces shall be of non-magnetising material.

The following cable box arrangements shall be available:

- a) high-voltage bushings only;
- b) low-voltage bushings only;
- c) common for high- and low-voltage bushings;
- d) common for high- and low-voltage bushings, with segregation between high- and low-voltage bushings.

NOTE The positions of the tap-changer drive and lifting lugs, and whether they are inside or outside the cable box, should be subject to agreement between manufacturer and purchaser.