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Şubat 2021

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ICS 29.220.20

RENKLİ İÇERİK

Kurşun asit akümülatörler - Yol verme için - Bölüm 4: Ağır taşıtlar için akümülatörlerin boyutları

Lead-acid starter batteries - Part 4: Dimensions of batteries for heavy vehicles

Batteries d'accumulateurs de démarrage au plomb - Partie 4: Dimensions des batteries pour poids lourds

Blei-Akkumulatoren-Starterbatterien - Teil 4: Maße von Nutzkraftwagen-Batterien

TSE Standard Hazırlama Merkezi Başkanlığı
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Bu standard, CENELEC/TC 21X “Secondary cells and batteries – Sekonder piller ve bataryalar” Teknik Komitesi tarafından hazırlanmış, CENELEC tarafından 26.10.2020 tarihinde onaylanmış ve Türk Standardları Enstitüsü Teknik Kurulu'nun 15.02.2021 tarihli toplantısında Türk Standardı olarak kabul edilerek yayımına karar verilmiştir.

Bu standardda kullanılan bazı kelimeler ve/veya ifadeler patent haklarına konu olabilir. Böyle bir patent hakkının belirlenmesi durumunda TSE sorumlu tutulamaz.

Bu standard yayınlandığında TS EN 50342-4:2010 tüm tadil ve düzeltmeleri (varsa) standardının yerini alır.

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TS EN 50342-4 : 2021 standardı, EN 50342-4:2020 standardı ile birebir aynı olup, Avrupa Standardizasyon Komitesi'nin (Rue de la Science 23, B-1040 Brussels) izniyle basılmıştır.

EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 50342-4

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Supersedes EN 50342-4:2009 and all of its amendments and corrigenda (if any)

English Version

Lead-acid starter batteries - Part 4: Dimensions of batteries for heavy vehicles

Batteries d'accumulateurs de démarrage au plomb - Partie 4: Dimensions des batteries pour poids lourds

Blei-Akkumulatoren-Starterbatterien - Teil 4: Maße von Nutzkraftwagen-Batterien

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

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European foreword

This document (EN 50342-4:2020) has been prepared by CLC/TC 21X “Secondary cells and batteries”.

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)	2021-10-26
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2023-10-26

This document supersedes EN 50342-4:2009 and all of its amendments and corrigenda (if any).

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

This document is applicable to lead-acid batteries used for heavy vehicles.

The object of this document is to specify the European requirements of the main dimensions of starter batteries.

For new and future developments of the above applications, it is expected that only batteries from the “Preferred Types” series be used.

Batteries of the series of “Other Types” exist under several national standards. They have been transferred from the previous standard EN 60095-4.

The preferred types A, B and C are newly introduced and correspond closely to the types D4, D5 and D6 with some differences in tolerances and dimensions.

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 50342-1, *Lead-acid starter batteries - Part 1: General requirements and methods of test*

EN 50342-2, *Lead-acid starter batteries - Part 2: Dimensions of batteries and marking of terminals*

EN 50342-5, *Lead-acid starter batteries - Part 5: Properties of battery housings and handles*

EN 61429, *Marking of secondary cells and batteries with the international recycling symbol ISO 7000-1135 and indications regarding directives 93/86/EEC and 91/157/EEC (IEC 61429)*

EN ISO 1043-1, *Plastics - Symbols and abbreviated terms - Part 1: Basic polymers and their special characteristics (ISO 1043-1)*

IEC 60050-482, *International Electrotechnical Vocabulary (IEV) — Part 482: Primary and secondary cells and batteries*

IEC 60417, *Graphical symbols for use on equipment*

ISO 11469, *Plastics — Generic identification and marking of plastics products*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-482 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 https://www.iso.org/obp

4 General requirements

4.1 Safety labelling

The batteries shall bear the six coloured safety symbols in accordance with EN 50342-1.

4.2 Marking

4.2.1 General

The batteries shall be marked with signs for both polarities that have to be positioned near to or on top face of the terminals.

4.2.2 Marking of positive terminals

This marking shall take the form of the symbol “+” either on the upper surface of the positive terminal or on the lid adjacent to the positive terminal.

4.2.3 Marking of negative terminals

This marking shall take the form of the symbol “-” either on the upper surface of the negative terminal or on the lid adjacent to the negative terminal.

4.2.4 Design and dimensions of marking of terminals

The symbols used for marking the terminals shall be in accordance with IEC 60417, symbol 5005a for the positive polarity and symbol 5006a for the negative polarity.

The dimensions of the marking shall be according Figure 1.

The polarity symbols may be either indented or embossed by 0,4 mm ± 0,1 mm.

Dimensions in millimetres

Figure 1 — Marking of polarity

4.3 Recycling

4.3.1 Recycling of lead

The batteries shall be marked with the symbols for recycling and separate collection regarding European directives in accordance with EN 61429.

4.3.2 Recycling of plastic material

Injection moulded battery components shall be marked according ISO 11469 and EN ISO 1043-1. The marking shall be placed on the bottom of the battery container or on one short side near the ledge.

According ISO 11469 and EN ISO 1043-1 the minimum marking for polypropylene-polyethylene copolymer is > PP < or > PP/PE < .

In addition it is possible to show the recycling symbol with number 7 (Unicode Character 'RECYCLING SYMBOL FOR TYPE-7 PLASTICS' (U+2679) according to ISO/IEC 10646) and the term “Other”.

The recommended thickness is (0,3 ± 0,1) mm. The height of the marking characters shall be between 5 mm and 7 mm.

An example for this marking is shown in Figure 2.

Figure 2 — Marking of polypropylene-polyethylene copolymer battery components

4.4 Dimensions and design

All dimensions in this document are given in millimetres.

All dimensions given in this document correspond to room temperature of the polypropylene-polyethylene copolymer.

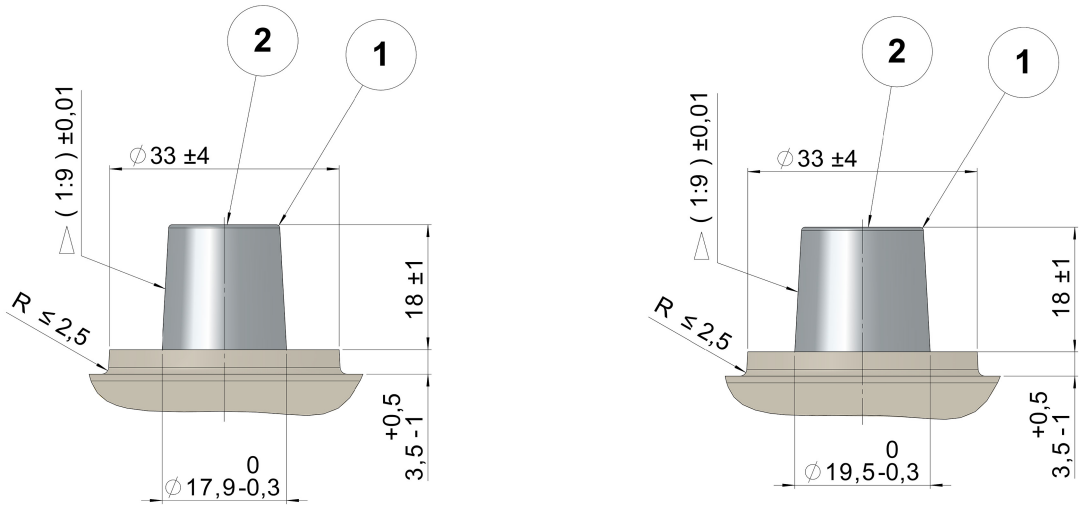
Details of the design that are not indicated in the generic drawings need to be chosen appropriately.

The generic drawings in this document are possible examples only. Especially the design of the lid, handles, ribs, ledges and vent caps are not mandatory in total.

4.5 Dimensions of terminals

The dimensions of the tapered positive and negative terminal shall be according Figure 3.

Dimensions in millimetres



a) Negative Terminal **b) Positive Terminal**

Key

1 Edge with radius

2 Convex or concave surface design permitted within height dimensions of (18 +1 / −2) mm related to the centre of the terminal

Figure 3 — Dimensions of positive and negative terminals

If the terminal has a base “ring” as shown above, it should conform to the dimensions given in drawing.

5 Preferred types

5.1 General

For new battery developments, only the preferred types shall be used.

5.2 Main dimensions of types A, B, C and D2

The main dimensions of the preferred battery types are shown in Table 1, Figure 4 and Figure 5

NOTE The schematics drawings do not show every design detail of the battery

Table 1 — Main dimension of preferred battery types A, B, C and D2

Dimensions in millimetres

Type	l	l_1	l_2	l_3	b	b_1	b_2	b_3	h	h_1
A	$513^{\ 0}_{-4}$	$475^{\ 0}_{-3}$	482^{+2}_{-2}	200^{+4}_{-4}	188^{+2}_{-2}	$178^{\ 0}_{-2}$	86^{+2}_{-2}	8 min.	223 max.	$195^{\ 0}_{-3}$
B	$513^{\ 0}_{-4}$	$475^{\ 0}_{-3}$	482^{+2}_{-2}	200^{+4}_{-4}	222^{+2}_{-2}	$210^{\ 0}_{-2}$	102^{+2}_{-2}	20 min.	223 max.	$195^{\ 0}_{-3}$
C	$518^{\ 0}_{-4}$	$475^{\ 0}_{-3}$	482^{+2}_{-2}	200^{+4}_{-4}	274^{+2}_{-2}	$265^{\ 0}_{-2}$	130^{+2}_{-2}	47 min.	242 max.	$216^{\ 0}_{-3}$
D2	$349^{\ 0}_{-5}$	$344^{\ 0}_{-8}$	–	–	$175^{\ 0}_{-4}$	162^{+4}_{-4}	–		$235^{\ 0}_{-4}$	$213^{\ 0}_{-4}$

Dimensions in millimetres

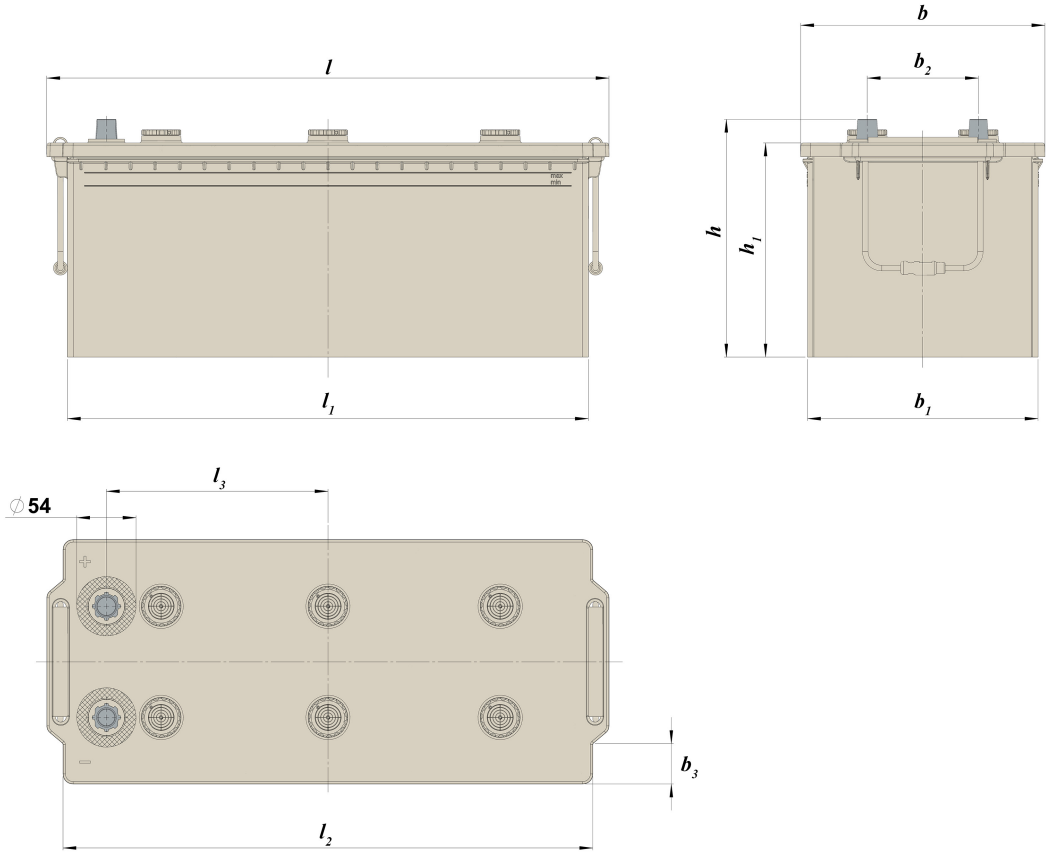


Figure 4 — Main dimensions of types A, B, C

Dimensions in millimetres

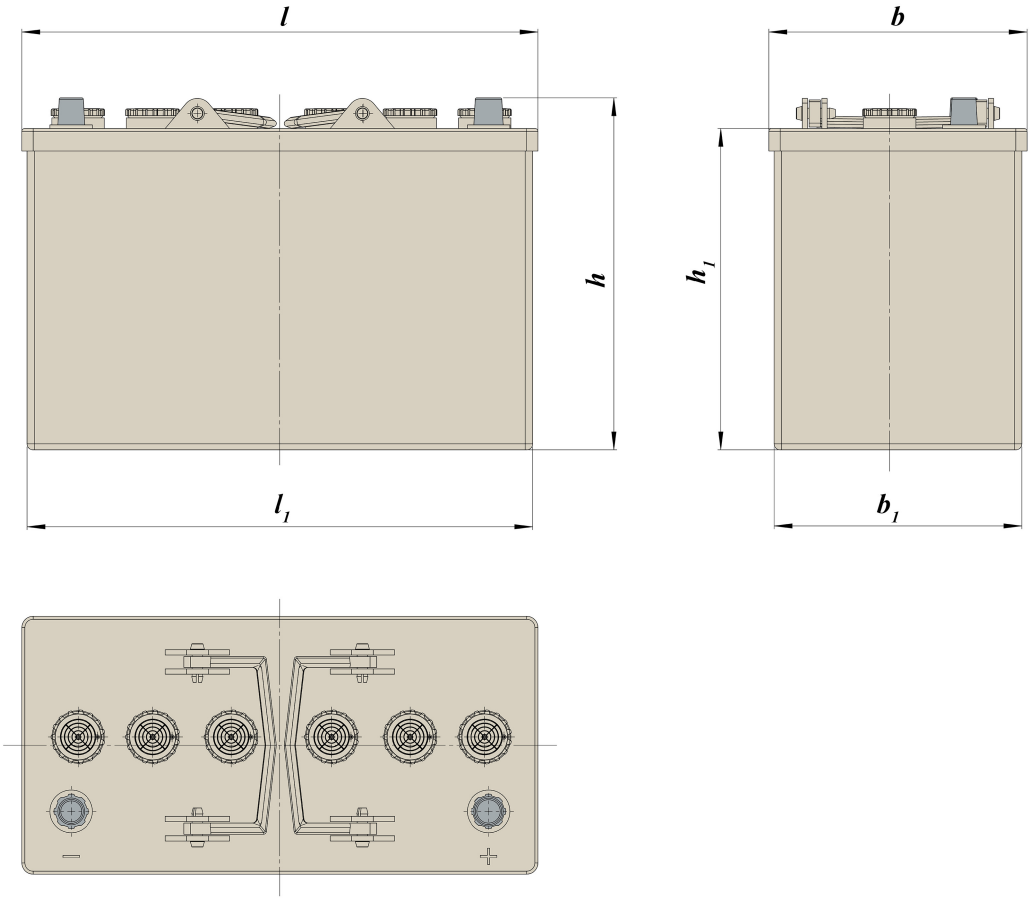


Figure 5 — Main dimensions of type D2

5.3 Handles for manual handling

Batteries with a weight of more than 20 kg shall have handles.

One handle shall be able to carry two times the total weight of the battery (testing according EN 50342-5).

5.4 Fastening

Types A, B, C and D2 are intended for fastening by the upper part of the battery only. This fastening shall be effected at a level defined by dimensions h1 in the figures. The configuration shall permit the fitting of an angle-iron frame, both legs of which are 20 mm wide, for the major part of the lid's four sides.

Types A, B and C can be fastened by additional bars crossing the battery. Recommended areas are shown hatched in Figure 6 and Table 2.

Possible collisions with accessory parts like short circuit protection, handles, plugs, degassing connections need to be considered for individual battery designs.

The clamping forces of the fastening system should be chosen in such a way that no excessive deformations of the battery occur.

Table 3 shows typical clamping pressures and typical total loads of the fastening system to the battery.

Dimensions in millimetres

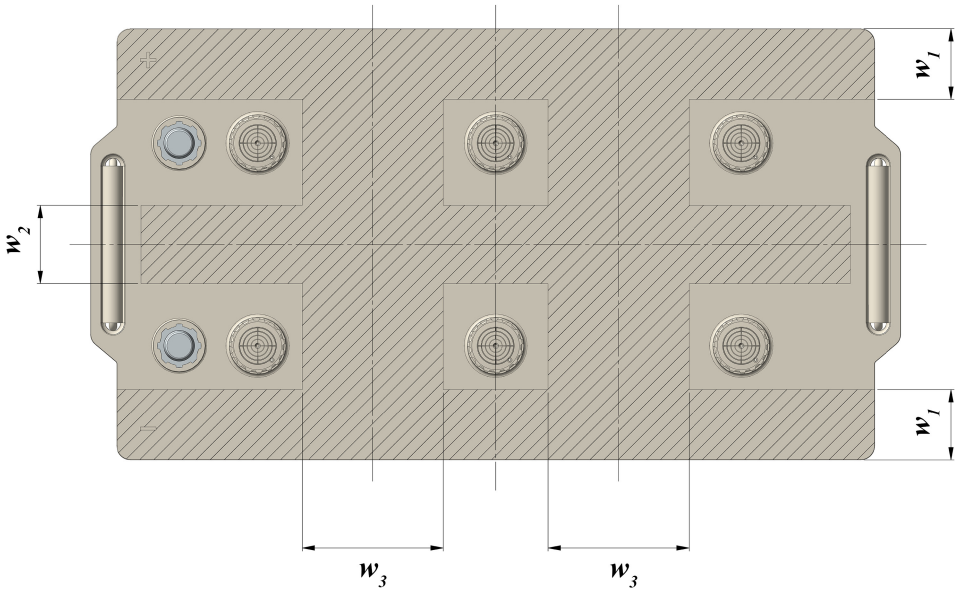


Figure 6 — Clamping area for types A, B, C

Table 2 — Dimension clamping areas for types A, B, C

Type	w_1	w_2	w_3
A	20	30	90
B	35	30	90
C	35	50	90

Table 3 — Typical clamping pressure and typical total loads for types A, B, C

Type	Clamping pressure N / mm^2	Total load N
A	0,45	2 000
B	0,45	2 500
C	0,62	3 000

5.5 Polarity

It is recommended that the polarity of the terminals is as shown in the figures.

5.6 Terminal clearance

For types A, B and C a minimum clearance with a 27 mm radius concentric to both terminals shall be kept clear for clamping purposes (see Figure 4).

5.7 Short circuit protection

Suitable short circuit protection might be needed. A possible solution for types A, B and C is shown in Figure 7. The separation shall be higher than the terminals itself.

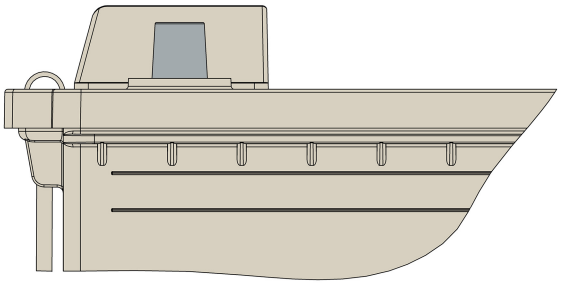


Figure 7 — Short circuit protection types A, B, C

5.8 Central degassing

For a central degassing system of types A, B and C the outlets at the lid should be located at the end of the battery away from the terminals. The dimensions of the outlets shall conform to EN 50342-2.

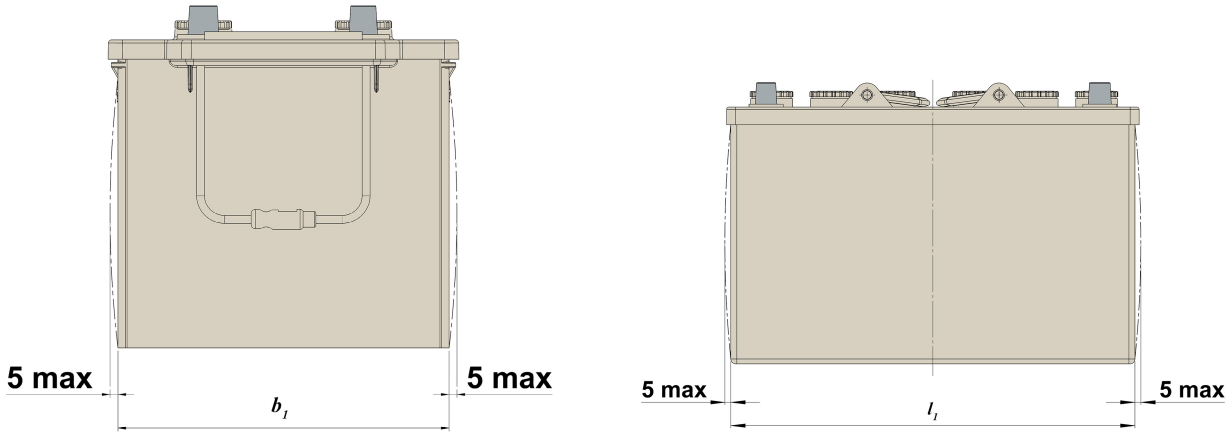
5.9 Bulging of battery side walls

The maximum bulging of battery side walls shall not exceed the maximum tolerance of 5 mm as shown in Figure 8.

All dimensions are referring to new batteries at the start of electrical testing according EN 50342-1 and not to aged batteries.

Reinforced side walls might be needed for certain types of starter batteries (e.g. VRLA batteries) to prevent excessive bulging. This can be realized by means of thicker side walls or additional ribs.

Dimensions in millimetres



a) Types A, B, C **b) Type D2**

Figure 8 — Bulging of battery side walls

6 Other types

6.1 Fastening

Types D3, D4, D5, D6 and D7 are intended for fastening by the upper part of the battery only.

This fastening shall be effected at a level defined by dimensions h1 in the figures. The configuration shall permit the fitting of an angle-iron frame, both legs of which are 20 mm wide, for the major part of the lid's four sides.

However, types D1, D2a, D3a, D4a, D5a, D8, D9 and ATM may be fastened either by the base of the battery container or by the upper part of the battery.

Fastening by the base of the case on the long sides is effected by fixing ledges over the full length of the long sides and providing notches to prevent movement of the battery lengthwise as shown.

Fastening by the base of the case on the short sides is effected by fixing lugs with notches to prevent movement of the battery crosswise.

The arrangement of the lugs and notches shall be in accordance with the figures.

6.2 Main dimension for other types

The main dimensions of other battery types are shown in Table 4 and Figures 8 to 17.

NOTE The schematics drawings do not show every design detail of the battery

Where applicable, the dimension z shown in the figures shall be z = 50 mm ± 0,5 mm.

Table 4 — Main dimensions of other types

Dimensions in millimetres

Type	l	l_1	l_2	b	b_1	b_2	h	h_1	c	$l + 2c$
D1	$386^{\ 0}_{-5}$	$377^{\ 0}_{-5}$	$390^{\ 0}_{-5}$	$175^{\ 0}_{-4}$	$175^{\ 0}_{-4}$	-	$205^{\ 0}_{-4}$	$184^{\ 0}_{-4}$	10 max.	406 max.
D2a	$349^{\ 0}_{-5}$	$344^{\ 0}_{-8}$	-	$175^{\ 0}_{-4}$	$162^{\ 0}_{-4}$	$175^{\ 0}_{-4}$	$235^{\ 0}_{-4}$	$213^{\ 0}_{-4}$		
D3	$349^{\ 0}_{-5}$	$344^{\ 0}_{-8}$	-	$175^{\ 0}_{-4}$	$162^{\ 0}_{-4}$	-	$285^{\ 0}_{-10}$	$263^{\ 0}_{-4}$		
D3a	$349^{\ 0}_{-5}$	$344^{\ 0}_{-8}$	-	$175^{\ 0}_{-4}$	$162^{\ 0}_{-4}$	$175^{\ 0}_{-4}$	$285^{\ 0}_{-10}$	$263^{\ 0}_{-4}$		
D4	$513^{\ 0}_{-5}$	$475^{\ 0}_{-5}$	-	$189^{\ 0}_{-4}$	$178^{\ 0}_{-4}$	-	$223^{\ 0}_{-8}$	$195^{\ 0}_{-4}$		515 max.
D4a	$513^{\ 0}_{-5}$	$475^{\ 0}_{-5}$	$489^{\ 0}_{-5}$	$189^{\ 0}_{-4}$	-	$175^{\ 0}_{-4}$	$223^{\ 0}_{-8}$	$195^{\ 0}_{-4}$		
D5	$513^{\ 0}_{-5}$	$475^{\ 0}_{-5}$	-	$189^{\ 0}_{-4}$	$210^{\ 0}_{-4}$	-	$223^{\ 0}_{-8}$	$195^{\ 0}_{-4}$		515 max.
D5a	$513^{\ 0}_{-5}$	$475^{\ 0}_{-5}$	$489^{\ 0}_{-5}$	$223^{\ 0}_{-4}$	-	$218^{\ 0}_{-4}$	$223^{\ 0}_{-8}$	$195^{\ 0}_{-4}$		
D6	$518^{\ 0}_{-5}$	$475^{\ 0}_{-5}$	-	$291^{\ 0}_{-4}$	$265^{\ 0}_{-4}$	-	$242^{\ 0}_{-4}$	$216^{\ 0}_{-4}$		520 max.
D7	$286^{\ 0}_{-5}$	$254^{\ 0}_{-7}$	$256^{\ 0}_{-6}$	$270^{\ 0}_{-4}$	$267^{\ 0}_{-4}$	-	$230^{\ 0}_{-4}$	$208^{\ 0}_{-4}$		286 max.
D8	$510^{\ 0}_{-6}$	$476^{\ 0}_{-5}$	$489^{\ 0}_{-5}$	$175^{\ 0}_{-4}$	-	$175^{\ 0}_{-4}$	$235^{\ 0}_{-5}$	$210^{\ 0}_{-5}$		515 max.
D9	$510^{\ 0}_{-6}$	$476^{\ 0}_{-5}$	$489^{\ 0}_{-5}$	$218^{\ 0}_{-5}$	-	$218^{\ 0}_{-5}$	$235^{\ 0}_{-5}$	$210^{\ 0}_{-5}$		515 max.
ATM	$489^{\ 1,5}_{-1,5}$	$481^{\ 1}_{-2}$	-	$168^{\ 1}_{-1}$	$160^{\ 0}_{-2}$	$174^{\ 0}_{-2}$	$209^{\ 0}_{-3}$	$188^{\ 0}_{-3}$	10 max.	515 max.
As an alternative to the base hold-down features shown for types D2a and D3a, external buttressing of the container side is permitted.										

Dimensions in millimetres

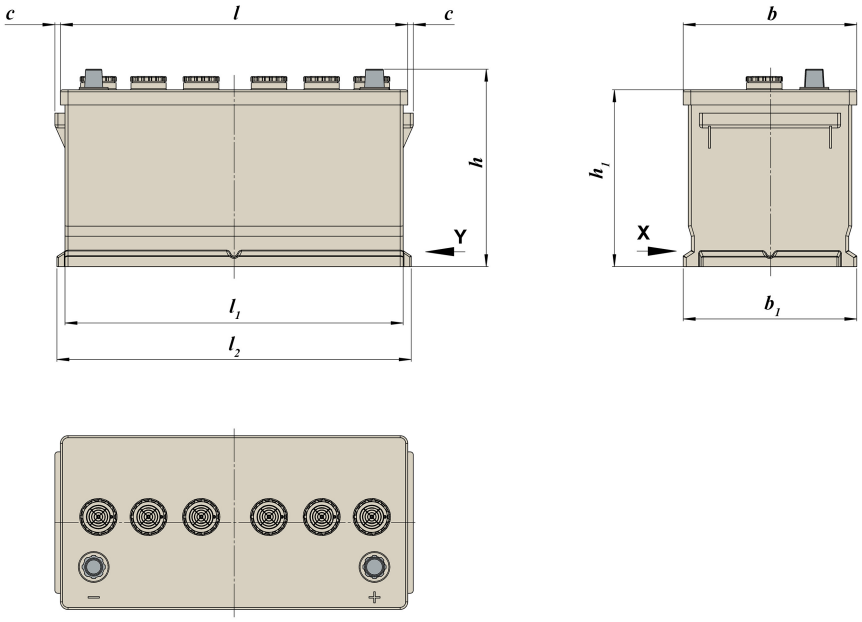


Figure 9 — Type D1

Dimensions in millimetres

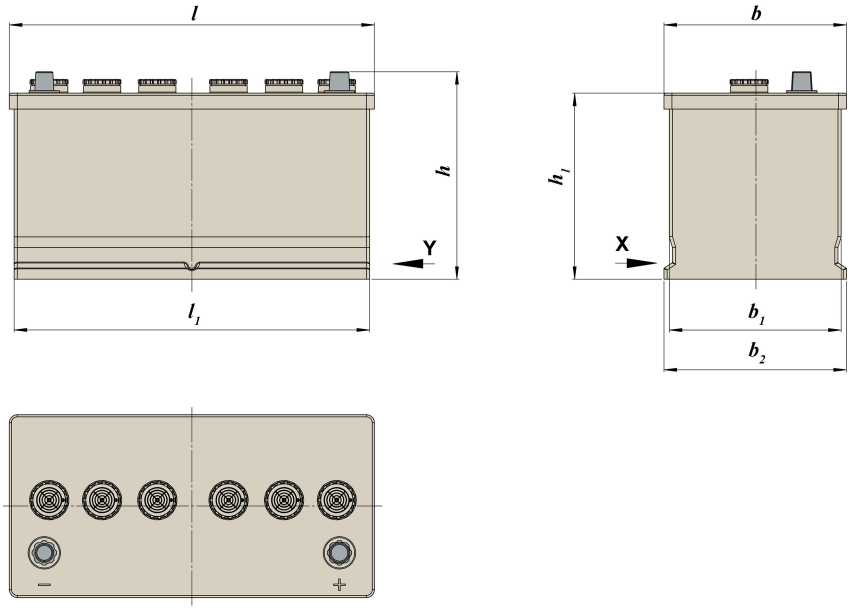


Figure 10 — Type D2a, D3a

Dimensions in millimetres

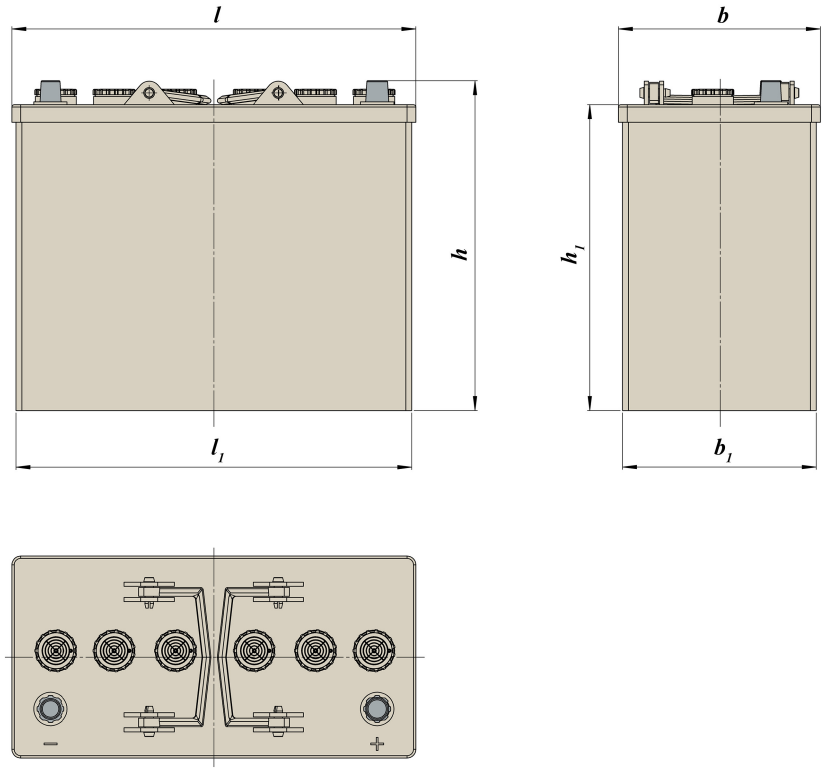


Figure 11 — Type D3

Dimensions in millimetres

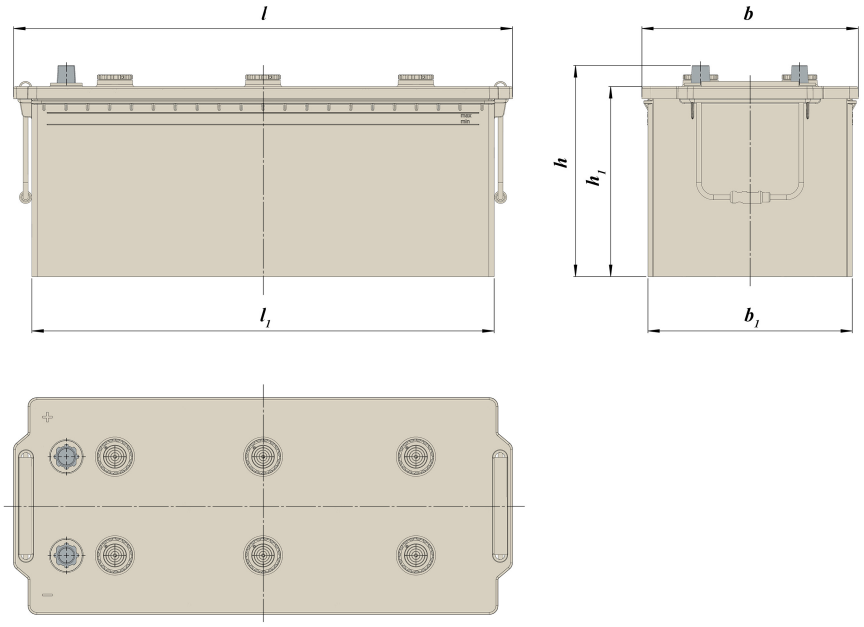


Figure 12 — Types D4, D5, D6

Dimensions in millimetres

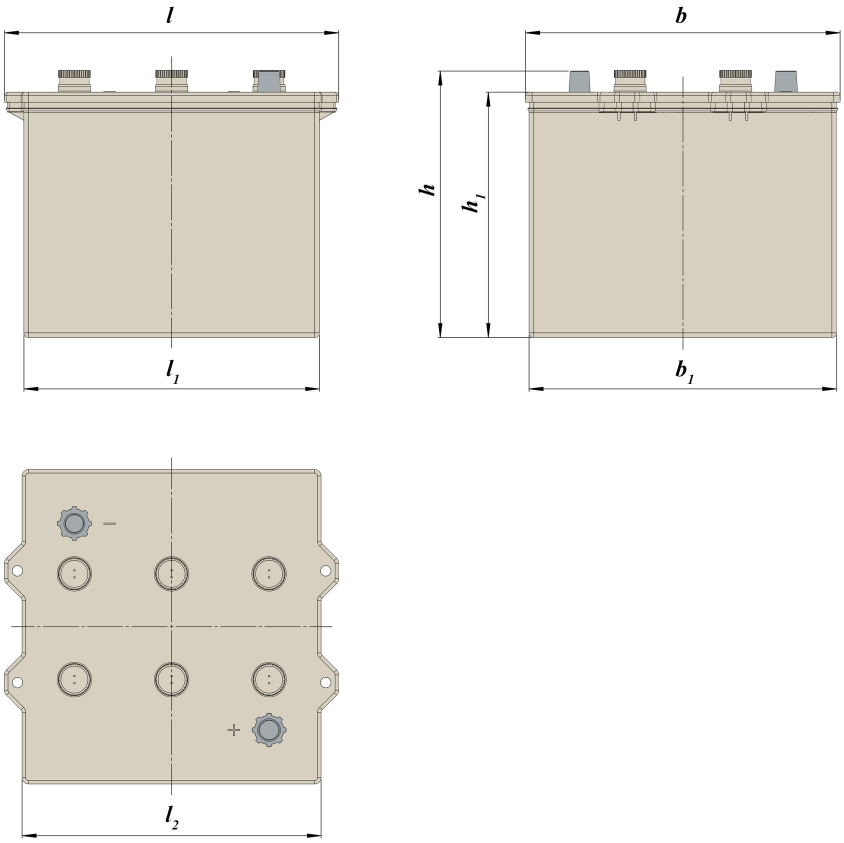


Figure 13 — Type D7

Dimensions in millimetres

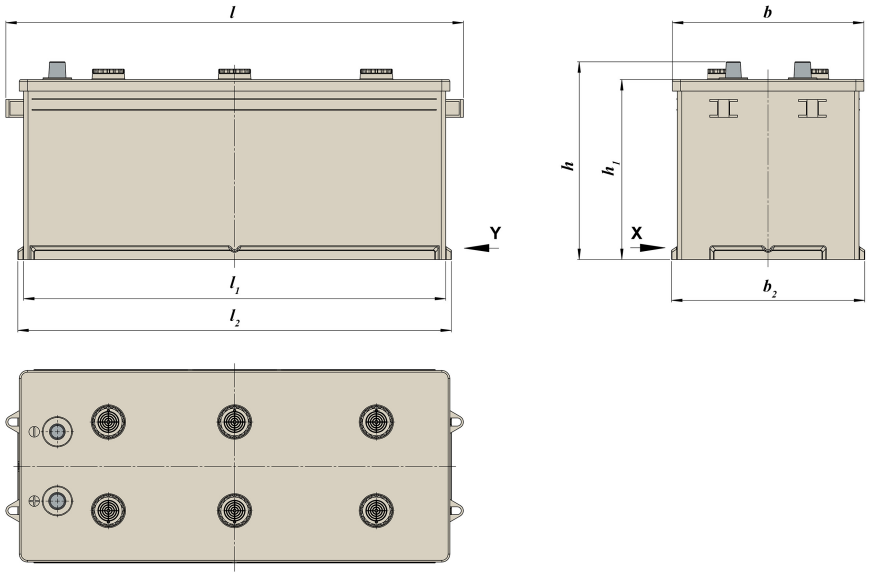


Figure 14 — Types D4a, D5a, D8, D9

Dimensions in millimetres

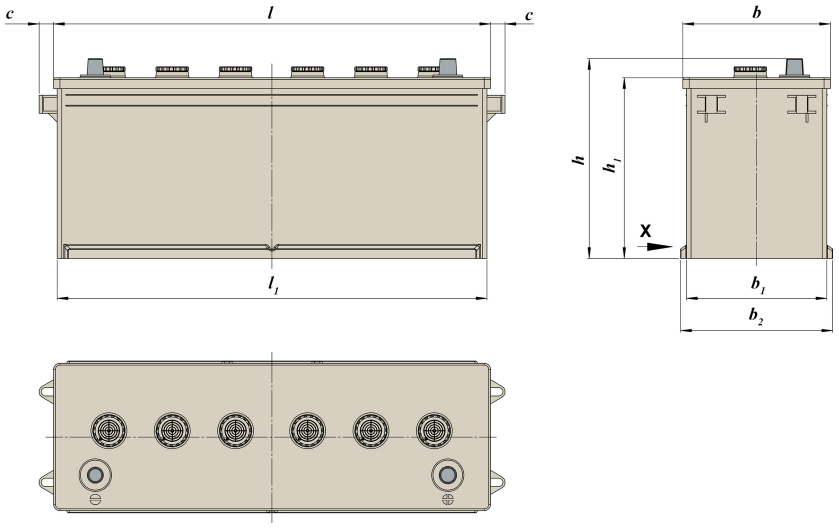


Figure 15 — Type ATM

Dimensions in millimetres

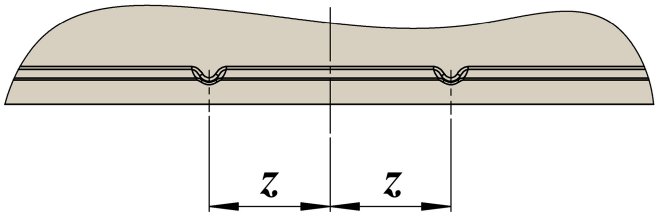


Figure 16 — Detail X

Dimensions in millimetres

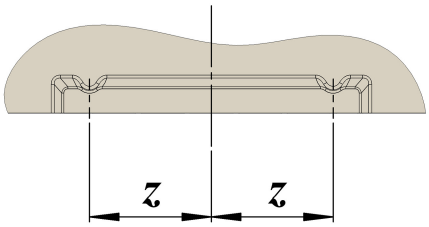


Figure 17 — Detail Y

Bibliography

[1] ISO/IEC 10646, *Information technology - Universal Coded Character Set (UCS)*