



BSI Standards Publication

Road vehicles — Product data exchange between chassis and bodywork manufacturers (BEP)

Part 2: Dimensional bodywork exchange parameters

National foreword

This British Standard is the UK implementation of ISO 21308-2:2020. It supersedes BS ISO 21308-2:2006, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee AUE/13, Commercial and public service vehicles.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Published by BSI Standards Limited 2020

ISBN 978 0 539 04771 4

ICS 43.080.01

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 September 2020.

Amendments/corrigenda issued since publication

Date	Text affected
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**Road vehicles — Product data
exchange between chassis and
bodywork manufacturers (BEP) —**

**Part 2:
Dimensional bodywork exchange
parameters**

*Véhicules routiers — Échange de données de produit entre les
fabricants de châssis et de carrosseries (BEP) —*

Partie 2: Paramètres dimensionnels d'échange de carrosserie





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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 40, *Specific aspects for light and heavy commercial vehicles, busses and trailers*.

This second edition cancels and replaces the first edition (ISO 21308-2:2006), which has been technically revised.

The main changes compared to the previous edition are as follows:

- addition of several new codes based on the experiences from the first edition;
- addition of [Annex B](#) showing specific XML coding for this part.

A list of all parts in the ISO 21308 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Truck chassis manufacturers deal with configurations of chassis in infinite numbers of possible combinations, and bodywork manufacturers produce highly customized superstructures on these chassis. Bodywork manufacturers build their superstructures on chassis of several different truck brands.

The production efficiency of a specific truck chassis and its body combinations can be greatly improved by achieving the correct technical and commercial information about the specific chassis communicated with the bodywork manufacturer in advance. The information must be reliable and give the bodywork manufacturer confidence to prefabricate the body or the superstructure before the chassis is delivered. With uniform conditions, unambiguous dimensions and supplementary information can be established, transferred and correctly interpreted by the receiver. Increased information efficiency will improve the quality and reduce the lead times.

The ISO 21308 series specifies a generic system of codes for exchanging specific data between truck chassis manufacturers and bodywork manufacturers, providing a platform for efficient communication between the parties. It applies to commercial vehicles as defined in ISO 3833, having a maximum gross vehicle mass above 3 500 kg.

Exchanging codes in accordance with the ISO 21308 series is useful in various situations, for example, for design and manufacturing, technical specifications, technical drawings and leaflets.

The codes can be communicated via, for example spreadsheet or XML, or a data exchange system based on the STEP protocol.

Road vehicles — Product data exchange between chassis and bodywork manufacturers (BEP) —

Part 2: Dimensional bodywork exchange parameters

1 Scope

This document provides a set of codes for the exchange of dimensional data between truck chassis manufacturers and bodywork manufacturers.

The process of exchanging the above information can involve:

- chassis manufacturer;
- chassis importer;
- chassis dealer;
- one or more bodywork manufacturers; and
- bodywork component suppliers, e.g. manufacturers of demountable bodies, cranes and loading equipment, tipping equipment.

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.

ISO 612:1978, *Road vehicles — Dimensions of motor vehicles and towed vehicles — Terms and definitions*

ISO 1176, *Road vehicles — Masses — Vocabulary and codes*

ISO 7656:1993, *Commercial road vehicles — Dimensional codes*

ISO 21308-1:2018, *Road vehicles — Product data exchange between chassis and bodywork manufacturers (BEP) — Part 1: General principles*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 612, ISO 1176, ISO 7656 and the following apply.

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

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

3.1

BEP-code

code to identify a unique measurement on the truck, to make the information exchange between chassis manufacturers and bodywork manufacturers easier without any confusion with other systems

Note 1 to entry: BEP is an abbreviation of bodywork exchange parameter.

3.2

left and right side

left side in the driving direction and right side in the driving direction

3.3

driven axle

axle marked with an X in the drawings

3.4

front edge

most forward point of the truck as delivered from the chassis manufacturer

Note 1 to entry: Usually, the front edge is the bumper.

3.5

gross vehicle mass

GVM

gross vehicle weight

GVW

technical or legal gross vehicle mass (weight) according to the legislation or regulations for the applicable region

Note 1 to entry: See also ISO 21308-3 and ISO 1176.

4 Coding principles

4.1 BEP codes of truck chassis and bodywork

Each characteristic, related to truck chassis and bodywork, is assigned a code composed of the items given below. A prefix “BEP”, followed by a dash (-), shall be used to avoid confusion with other coding systems.

BEP codes are formatted according to the principles in [Table 1](#).

Table 1 — BEP coding principles

BEP-ppMccc.n.p.q.s.t		
Item	Assignment	Description
pp	Bodywork category	pp = None or 00 for codes related to vehicle chassis (this document and ISO 21308-3) pp = 01 for codes related to loader cranes (ISO 21308-5) pp = 02 for codes related to hook loaders (ISO 21308-6) pp = 03 for codes related to skip loaders (ISO 21308-7)
M	Measure type	A capital letter, which denotes the type of code: H = Z direction, coordinate system in accordance with ISO 4130 L = X direction, coordinate system in accordance with ISO 4130 W = Y direction, coordinate system in accordance with ISO 4130 C = Coordinate (x,y) or (x,y,z) in the Cartesian coordinate system M = Mass (m), or mass point (m,x,y,z) F = Force (static or dynamic) T = Moment (static or dynamic) R = Radius V = Angle G = General A = Administrative
ccc	BEP code number	Code number given by the respective part of the ISO 21308 series
.n	Index number	.n is used to designate object number <i>n</i>
.p	Entity number	.p is used to designate a certain set of object characteristics or entities (e.g. dimensions, coordinates, address information) Where both .n and .p are specified, they are given in the .n .p order.
.q	Corner number	.q is used to designate contour corner index number
.s	Side designator	L or R
.t	Type designator	Optional coding to describe the object type (e.g. fuel tank)

The centre of the first front axle is the reference zero point for the length measurements. In some cases where it is convenient to use the rear axle as a reference, the first driven rear axle is used.

The top of the chassis frame is the reference zero point for height measurements for objects connected to the chassis frame.

The centre-line of the chassis is the reference zero point for width measurements.

The height information, if dependent on the tyres, refers to the actual tyre equipment as described according to ISO 21308-3, if not otherwise stated.

NOTE 1 Dimensions, except for radius, can be positive or negative.

[Annex A](#) provides a comparison of BEP codes, according to this document, with codes used in ISO 612 and ISO 7656.

NOTE 2 Supplementary information and support tools of this document are available on the ISO Standards Maintenance Portal. This information can be found at the following URL: <https://standards.iso.org/iso/21308>.

4.2 Units of BEP code values

The following units are preferred when reporting values related to BEP codes:

- dimensions (L, W, H, R) and coordinates (x,y,z) in millimetres (mm);
- masses in kilograms (kg);
- forces in Newtons (N), or kN;
- moments in Newtonmetres (Nm), or kNm;
- angles in degrees (°).

4.3 Numbering

4.3.1 General

Each item has a unique BEP-code consisting of the dimension type letter (see 4.2) and a three-digit sequential number, starting from 001.

The dimension codes for repeated vehicle items of the same kind on one vehicle, e.g. axles, cross-members, frame-mounted objects, etc., are differed by an added sequential number beginning with .1 counted from the front of the vehicle and rearwards.

NOTE 1 .n is used to designate object number *n*.

NOTE 2 In this document, .p is used to designate a certain set of object characteristics or entities (e.g. dimensions, coordinates, address information).

NOTE 3 Where both .n and .p are specified, BEP codes are specified in the .n .p order.

For L codes, a positive value indicates that the item is located behind the axle. A negative value indicates that the item is located in front of the axle.

For H codes, a positive value indicates that the item is located above the top of the chassis frame. A negative value indicates that the item is located below the top of the chassis frame.

4.3.2 Numbering and type designation of frame-mounted objects

The same .p number shall be applied to a specific frame-mounted object in terms of L, H and W dimensions.

EXAMPLE Frame-mounted objects can be a fuel tank, referred to as BEP-L030.4, BEP-H030.4, and BEP-W030.4, and a battery box, referred to as BEP-L030.5, BEP-H030.5, and BEP-W030.5.

For the frame-mounted objects, an optional coding (.t) may be added to describe the object type. The following abbreviation letters are reserved for the object types below:

- A — Air tank;
- B — Battery box;
- C — Cap/filler cap
- F — Fuel tank;
- H — Hydraulic tank;
- M — Exhaust muffler;
- S — Spare wheel;

- T — Tool box;
- U — Urea tank;
- O — Other (other objects, specified by the applicable G code in ISO 21308-3).

NOTE Letters can be combined (e.g. FC for fuel tank filler cap).

4.4 Code assignment and description

[Clauses 5, 6](#), and [7](#) show the assignment of each BEP-code together with a description of its applicability and limitations.

4.5 Priority

The column “Priority” shows the priority of the measurements, as follows:

- A — Essential;
- B — Useful.

4.6 Loading condition

The column “Loading” shows the load situation of the chassis, as follows:

- 1 — Unladen;
- 2 — Laden (design mass).

NOTE A dash (-) means that the field is not applicable.

4.7 Presented in

The column “Presented in” describes in which type of document the items can be presented, as follows:

- 2D — 2D drawing;
- 3D — 3D model;
- TD — Technical data sheet.

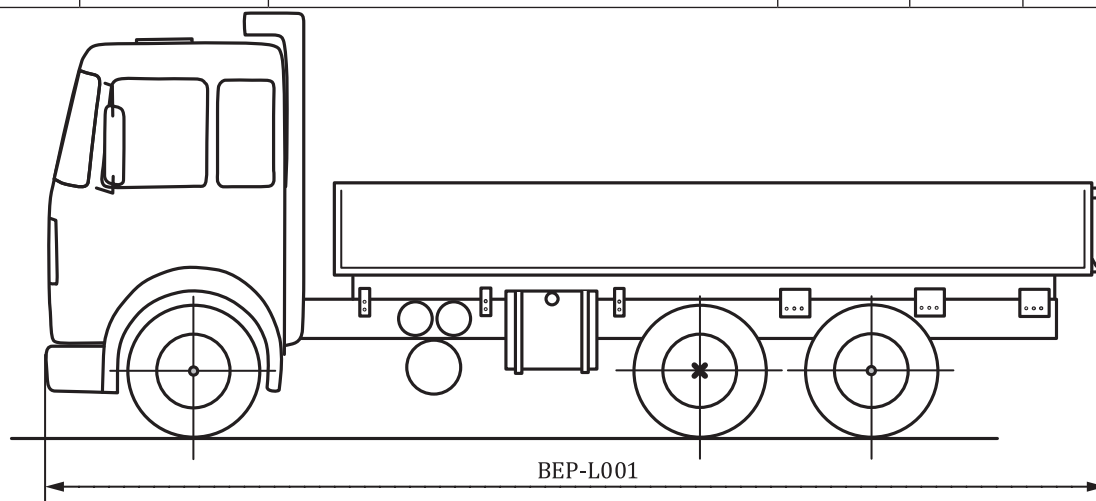
NOTE An empty field means that there is no specific recommendation for the presentation. It can be covered by any kind of document. A dash (-) means that the field is not applicable.

4.8 Related XML coding

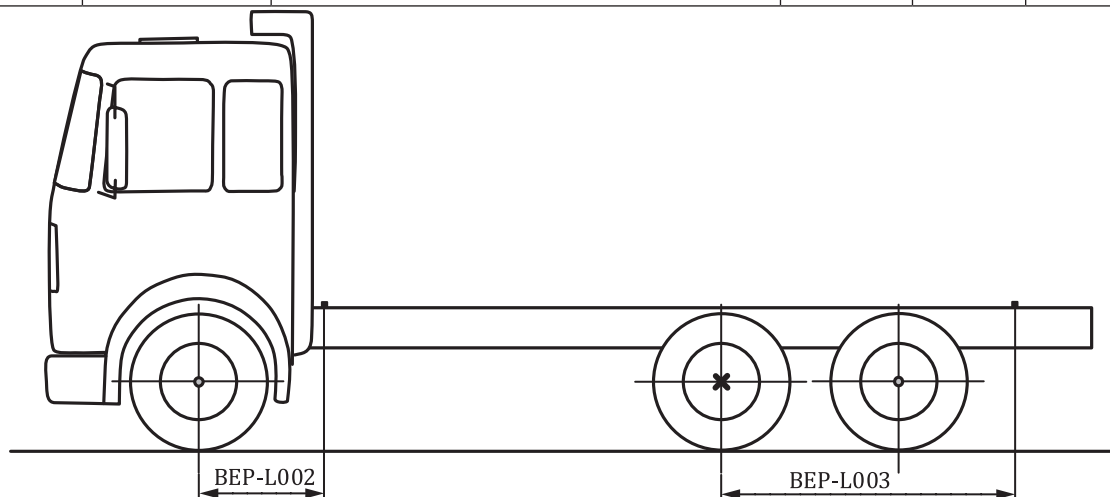
Any XML implementation for the communication of BEP codes shall follow the requirements given in ISO 21308-1. The XML coding related to this document shall be written according to the indications in [Annex B](#).

5 General dimensions

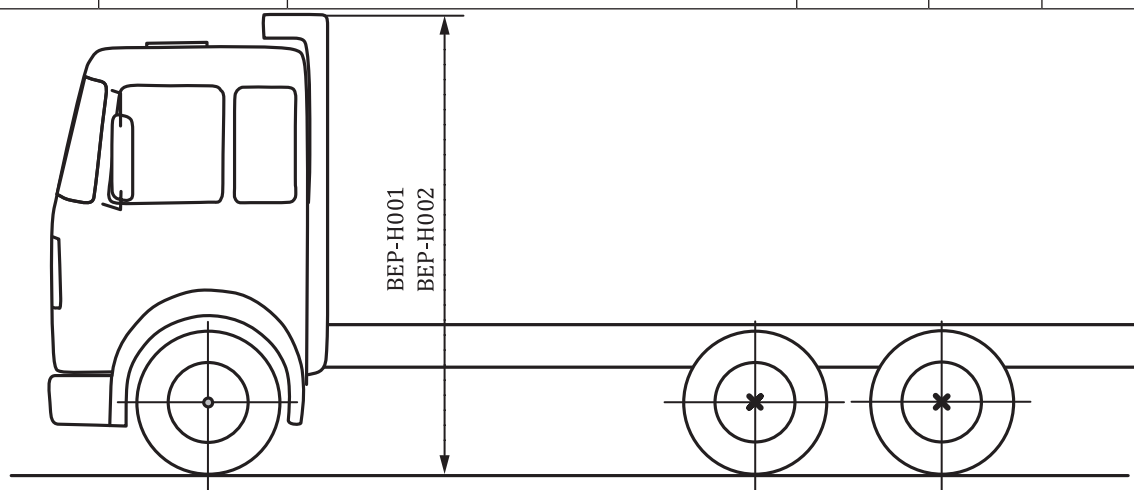
BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-L001	Overall length	Distance from front edge of vehicle to rear edge of vehicle, including accessories in both front and rear ends. NOTE See also ISO 612.	A	-	2D, 3D, TD



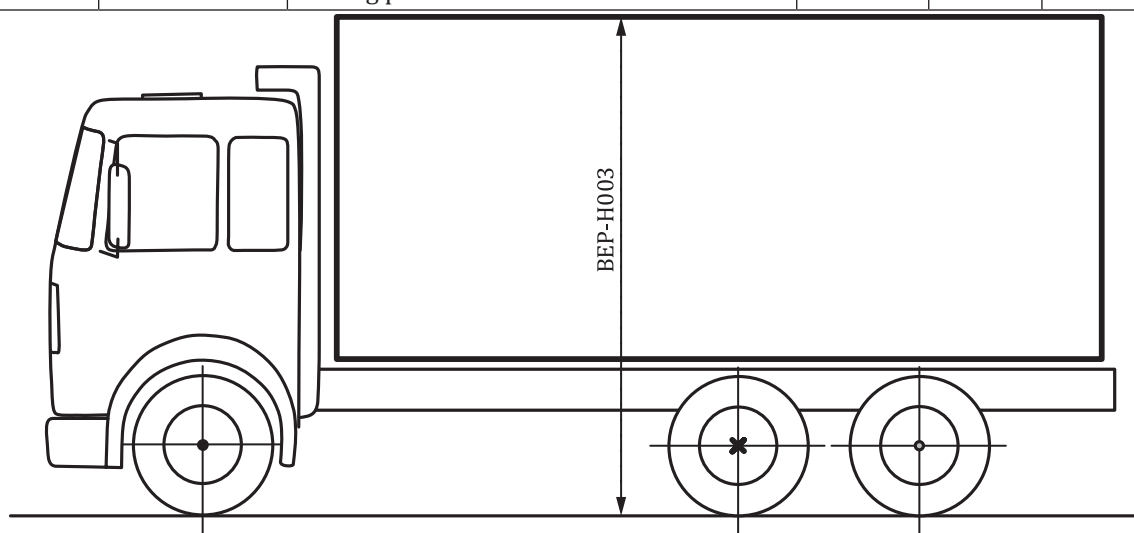
BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-L002	Front reference point for measuring	Distance from the centre of the first front axle to the front reference point for measuring. NOTE 1 .R or .L is added if the reference points for right and left side member differ. NOTE 2 If the position of the reference point is in front of the axle, the value is negative. NOTE 3 Front reference point(s) for measuring is (are) defined by the chassis manufacturer.	A	-	2D, 3D, TD
BEP-L003	Rear reference point for measuring	Distance from the first driven rear axle to the rear reference point for measuring. NOTE 1 .R or .L is added if the reference points for right and left side member differ. NOTE 2 If the position of the reference point is in front of the axle, the value is negative. NOTE 3 Rear reference point(s) for measuring is (are) defined by the chassis manufacturer.	A	-	2D, 3D, TD



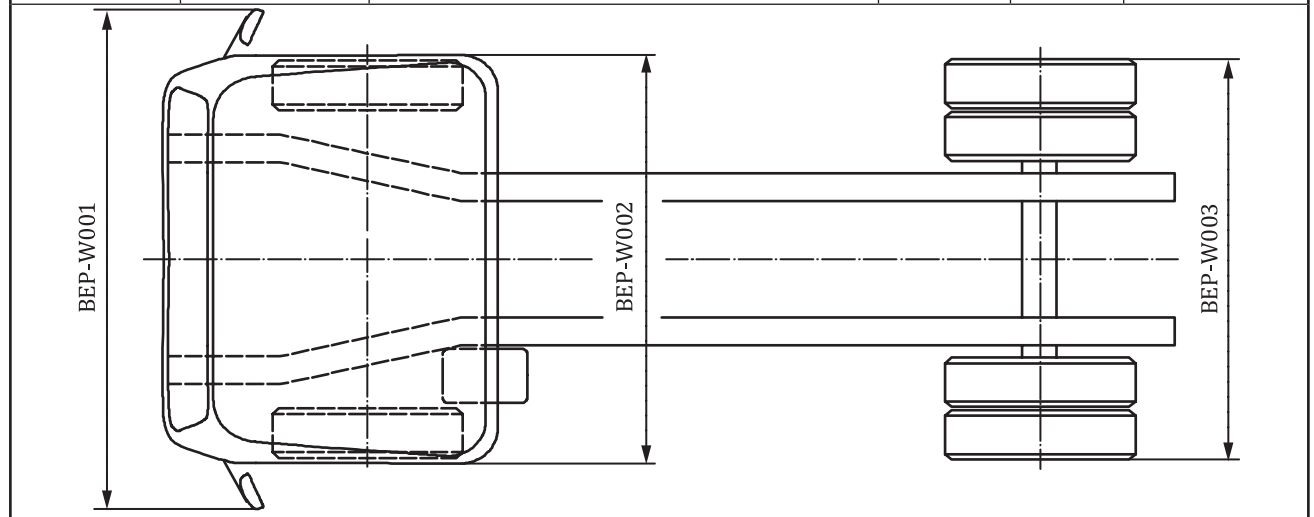
BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-H001	Maximum external height, unladen	Distance from ground to top of cab, including cab mounted parts, with the chassis unladen but in operating order. The roof hatch, if present, should be closed and all axles should be down. For pneumatic suspension, the highest driving position is assumed.	A	1	2D, 3D, TD
BEP-H002	Maximum external height, laden	Distance from ground to top of cab, including cab mounted parts, in laden condition. The roof hatch, if present, should be closed and all axles should be down. For pneumatic suspension, the highest driving position is assumed. The chassis is laden up to "Technical gross vehicle mass".	A	2	2D, 3D, TD



BEP-H003	Maximum overall height of vehicle, unladen	Distance from ground to the highest point of the vehicle including bodywork. For pneumatic suspension, the highest driving position is assumed.	A	1	2D, 3D, TD
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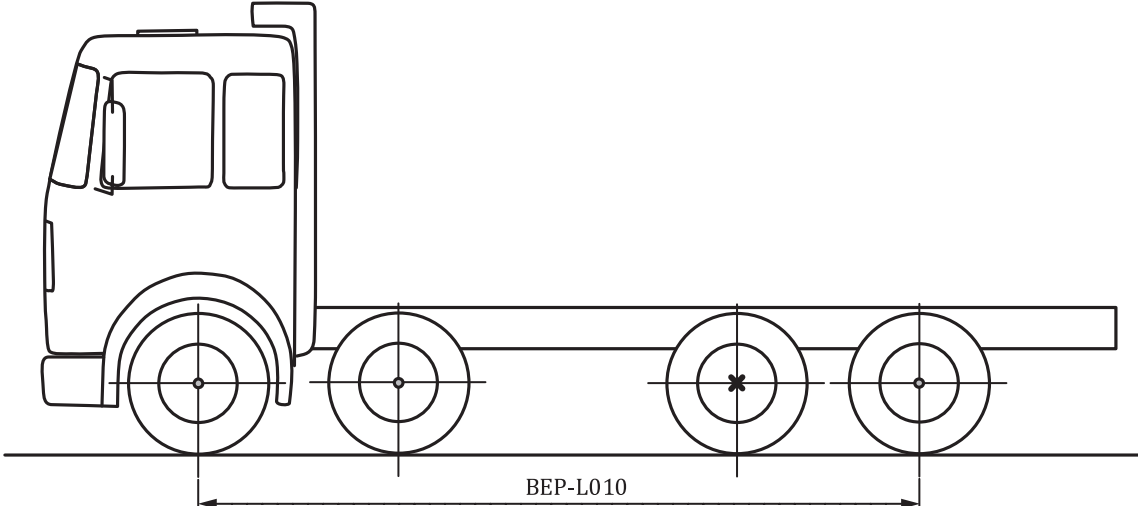
BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-W001	Overall width of chassis with cab	Maximum external width of the vehicle chassis. NOTE Rear-view mirrors in outermost position, lights, elastic mud flaps, tyre bulges in the road area and snow chains are included in the width stated. The bodywork is not taken into account.	A	-	2D, 3D, TD
BEP-W002	Width across cab	External width of cab. NOTE Mudguards and rear-view mirrors are disregarded.	A	-	2D, 3D, TD
BEP-W003.n	Width across wheels on <i>n</i> -th axle	External width across the wheels on the <i>n</i> -th axle. NOTE Projecting axle hubs and tyre bulges are disregarded.	A	-	2D, 3D, TD



6 Chassis related dimensions

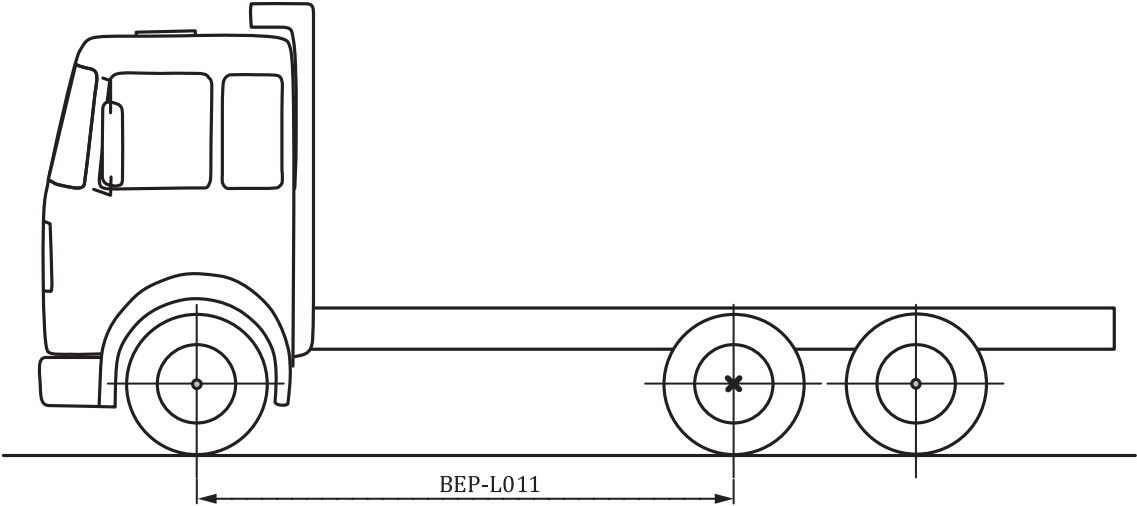
6.1 Axle and wheel related dimensions

BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-L010	Total wheel-base	Distance between centre of first front axle to the centre of the last axle.	A	-	2D, 3D, TD

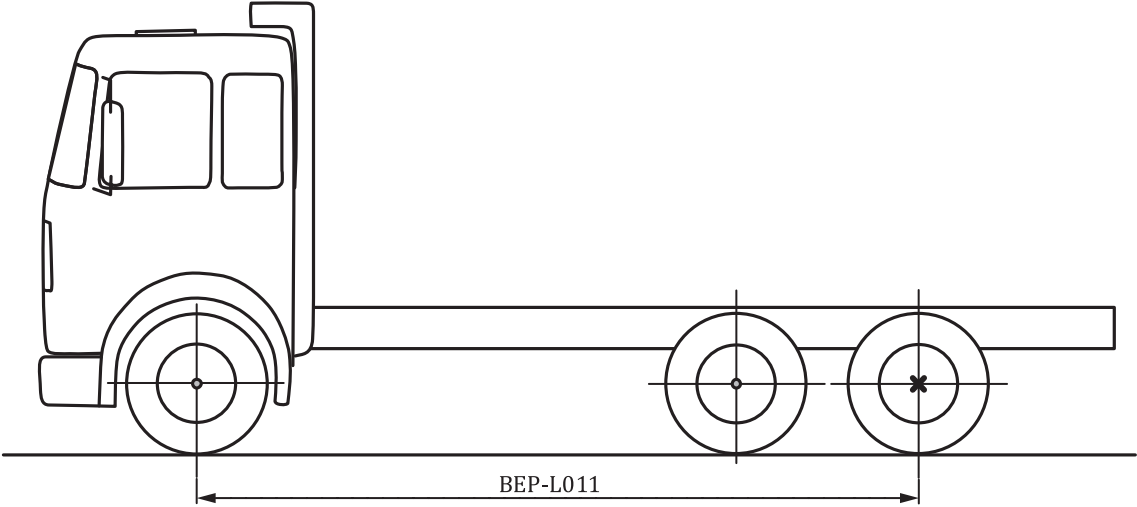


The diagram illustrates a side view of a truck chassis. It features a cab at the front, followed by a front axle, a steering axle, and a rear axle assembly consisting of two wheels. A dimension line labeled 'BEP-L010' spans the distance from the center of the front axle to the center of the last axle (the right wheel of the rear axle assembly).

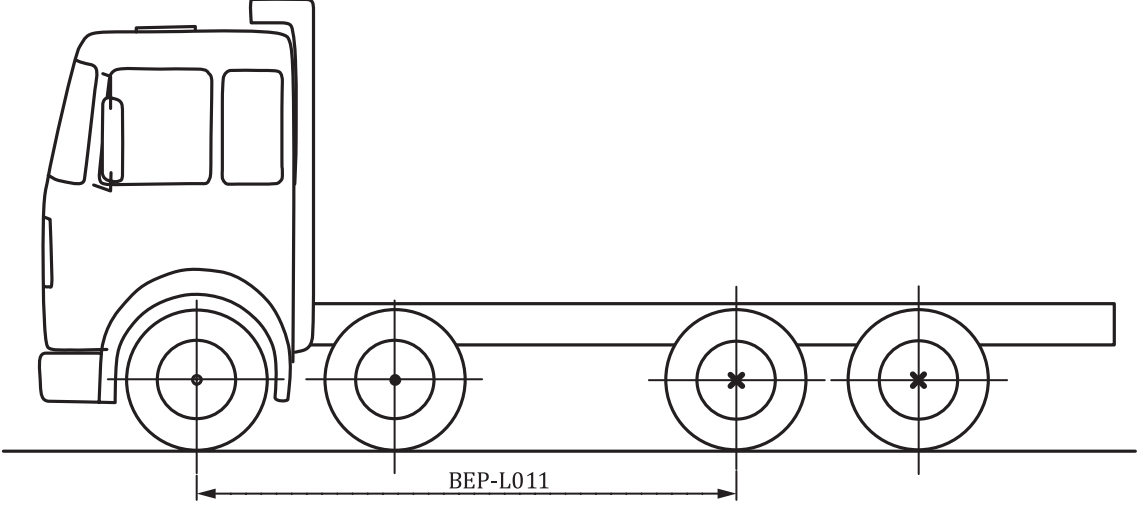
BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-L011	Configuration wheelbase	Distance between centre of first front axle to the centre of first driven rear axle. NOTE .R or .L is added if the vehicle is not symmetrical and different values for right and left hand side apply.	A	-	2D, 3D, TD



The diagram shows a side profile of a truck chassis. A horizontal dimension line with arrows at both ends is drawn below the chassis. The left arrow points to the center of the front wheel. The right arrow points to the center of the first driven rear wheel, which is marked with an asterisk (*). The dimension line is labeled "BEP-L011".



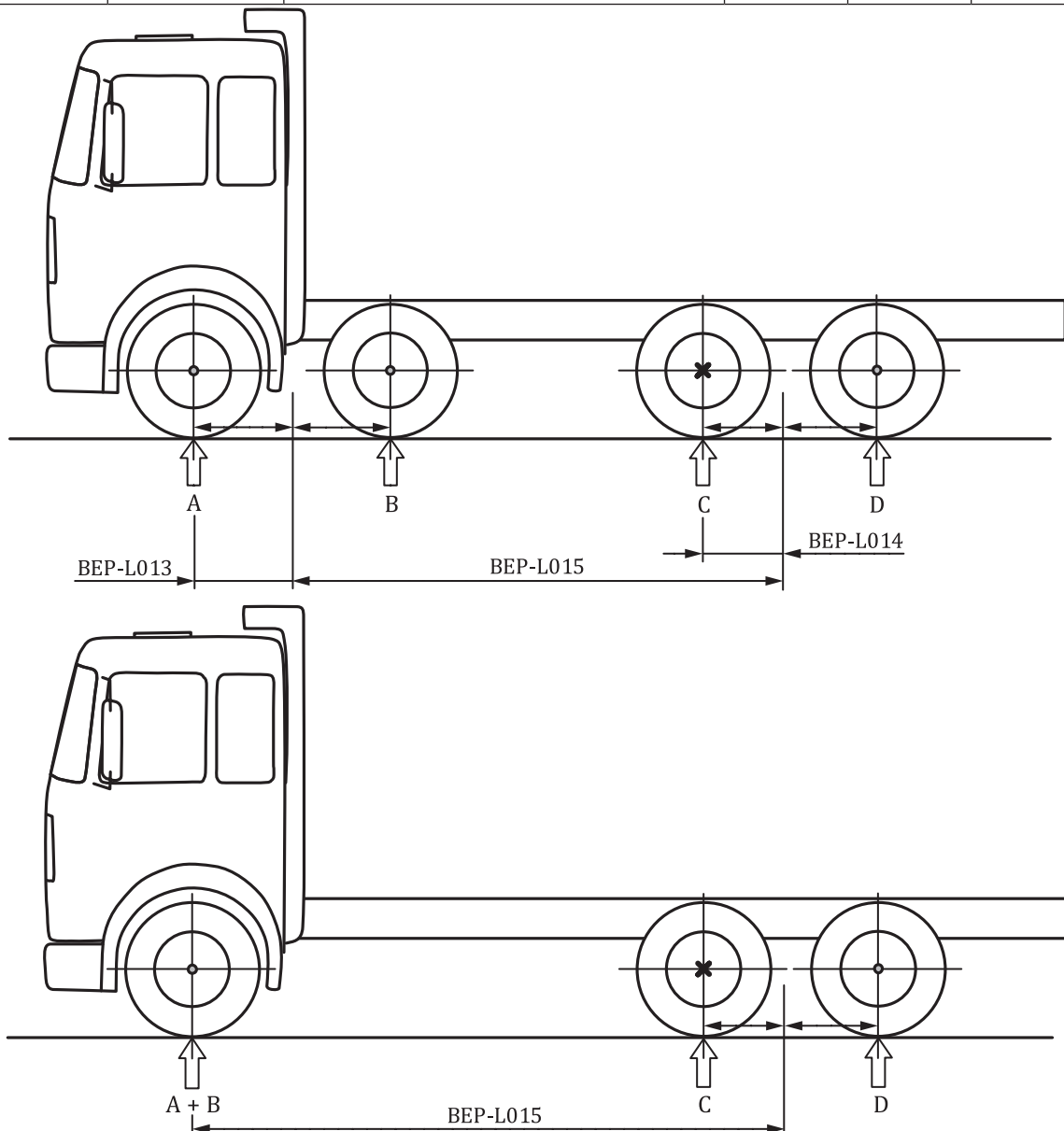
The diagram shows a side profile of a truck chassis. A horizontal dimension line with arrows at both ends is drawn below the chassis. The left arrow points to the center of the front wheel. The right arrow points to the center of the first driven rear wheel, which is marked with an asterisk (*). The dimension line is labeled "BEP-L011".



The diagram shows a side profile of a truck chassis. A horizontal dimension line with arrows at both ends is drawn below the chassis. The left arrow points to the center of the front wheel. The right arrow points to the center of the first driven rear wheel, which is marked with an asterisk (*). The dimension line is labeled "BEP-L011".

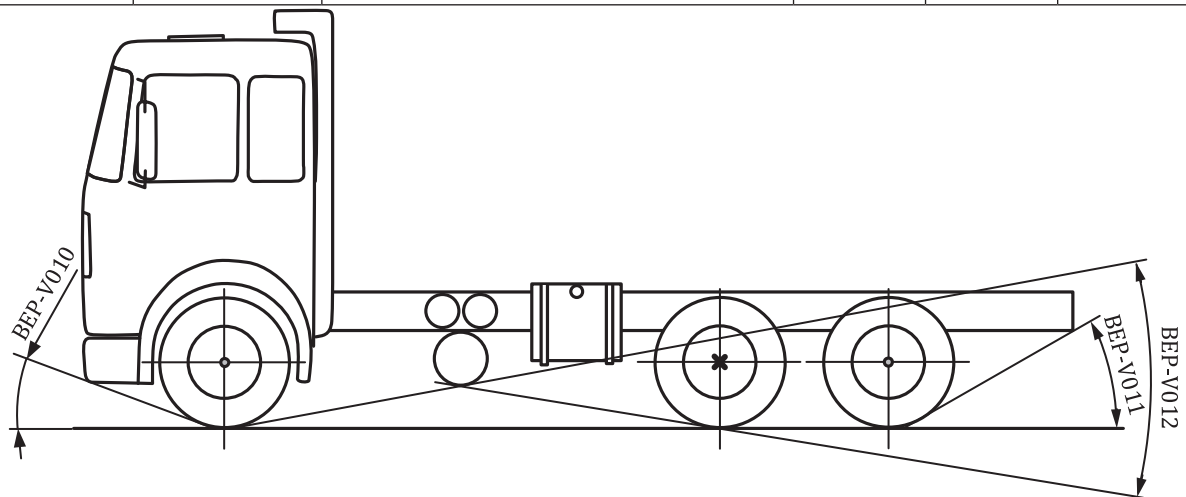
BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-L012.n	Wheel space from n to $n+1$ axle	Distance between centre of wheels on n -th and $(n+1)$ -th axles.	A	-	2D, 3D, TD
BEP-L013	Theoretical wheelbase of front axle combination	Distance between first front axle to calculated mass line of front axle combination.	A	2	2D, TD
BEP-L014	Theoretical wheelbase of rear axle combination	Distance between first driven rear axle to calculated mass line of rear axle combination.	A	2	2D, TD

BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-L015	Theoretical wheelbase	Distance between the calculated mass lines of front and rear axle combinations. NOTE 1 For a single axle, either in the front or in the rear, the calculated mass line is identical to the axle centre line. NOTE 2 If there is an axle combination either in the front or rear, the calculated mass line is the calculated line between the axles where the load from the axles is focused. NOTE 3 For air suspension systems with electronic control, the calculated mass line is variable while driving. EXAMPLE A, B, C, D can have the following distribution, shown in the figures below: A = 50 %, B = 50 %, C = 60 %, D = 40 %	A	2	2D, TD

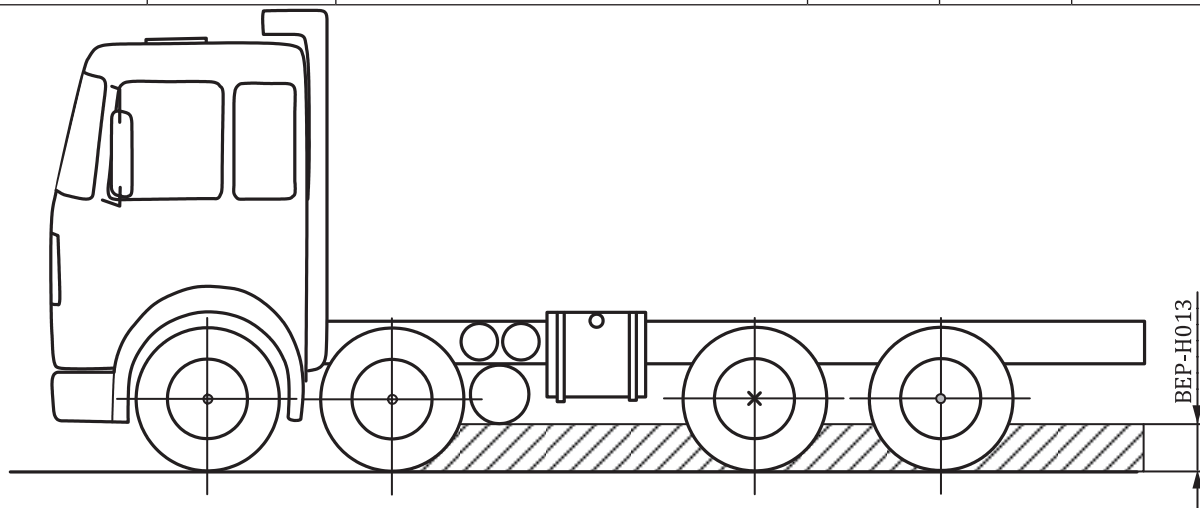


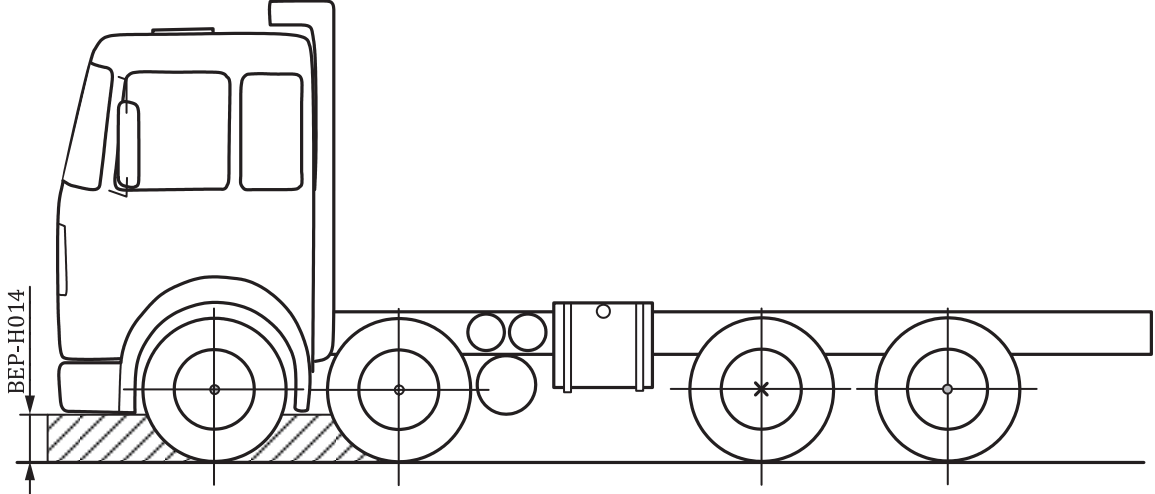
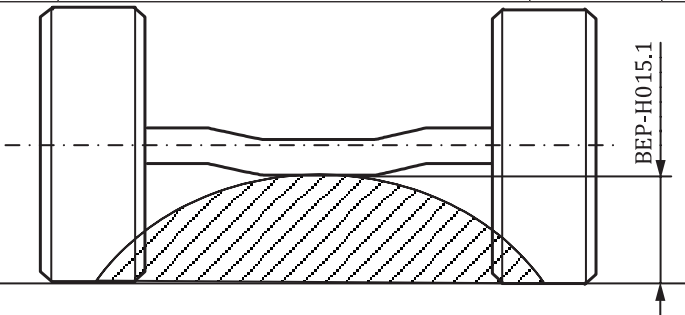
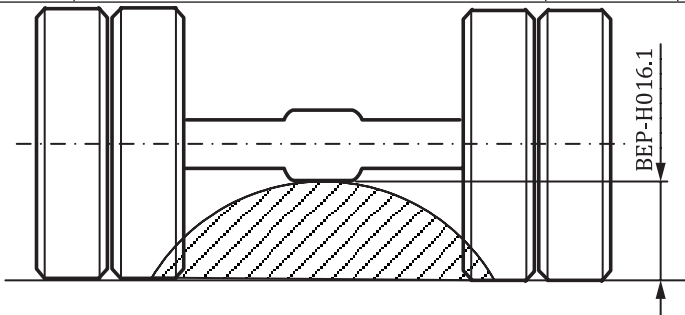
BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-L016	Front vehicle overhang	Distance between front edge of vehicle and centre of wheel on first axle.	A	-	2D, 3D, TD
BEP-L017	Rear vehicle overhang	Distance between centre of last axle and rearmost part of vehicle.	A	-	2D, 3D, TD
BEP-L018	Front frame overhang	Distance from foremost edge of front frame to centre of first front axle.	A	-	2D, 3D, TD
BEP-L019	Rear frame overhang	Distance between the centre of last axle to rearmost edge of frame side member.	A	-	2D, 3D, TD
BEP-L020	Rear frame overhang from first driven rear axle	Distance between the centre of first driven rear axle to rearmost edge of frame side member.	A	-	2D, 3D, TD
BEP-L021	Technical overhang length	Distance between calculated mass lines of rear axle combination and rearmost edge of vehicle or bodywork. EXAMPLE A and B can have the following distribution: A = 60 %, B = 40 %	B	2	2D, 3D, TD
BEP-V010	Approach angle	Angle between the tangent of the rolling radius of the tyres and the lowest fixed point of the vehicle in front of the axle, for technical front axle mass. NOTE Chassis loaded to permitted axle masses. For pneumatic suspension, the drive position is assumed. CAUTION — Code BEP-V010 replaces BEP-H010 from ISO 21308-2:2006, with identical definition. Both codes shall not be used simultaneously.	B	2	2D, 3D, TD

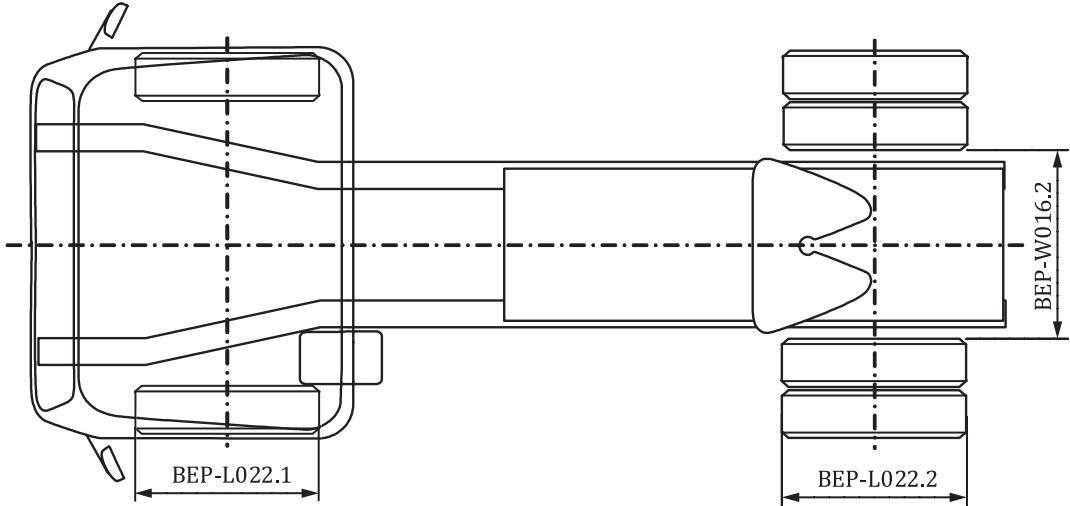
BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-V011	Departure angle	Angle between the tangent of the rolling radius of the tyres and the lowest fixed point of the vehicle behind the axle, for technical rear axle mass. NOTE Chassis loaded to permitted axle masses. For pneumatic suspension, the drive position is assumed. CAUTION — Code BEP-V011 replaces BEP-H011 from ISO 21308-2:2006, with identical definition. Both codes shall not be used simultaneously.	B	2	2D, 3D, TD
BEP-V012	Ramp angle	See ISO 612 and ISO 7656. CAUTION — Code BEP-V012 replaces BEP-H012 from ISO 21308-2:2006, with identical definition. Both codes shall not be used simultaneously.	B	2	2D, 3D, TD



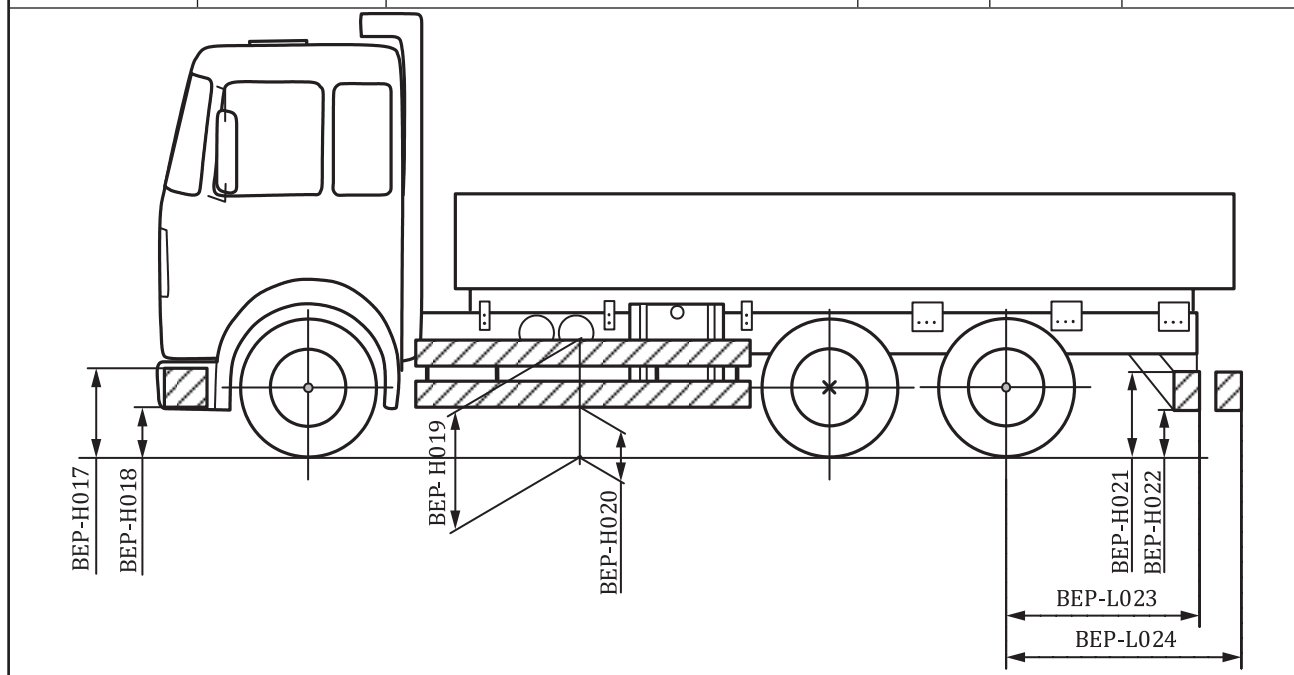
BEP-H013	Ground clearance, rear part	Distance between the ground and the lowest fixed point between the centre of the last front axle and the rearmost part of the chassis. NOTE Chassis loaded to permitted axle masses. For pneumatic suspension, the drive position is assumed.	A	2	2D, 3D, TD
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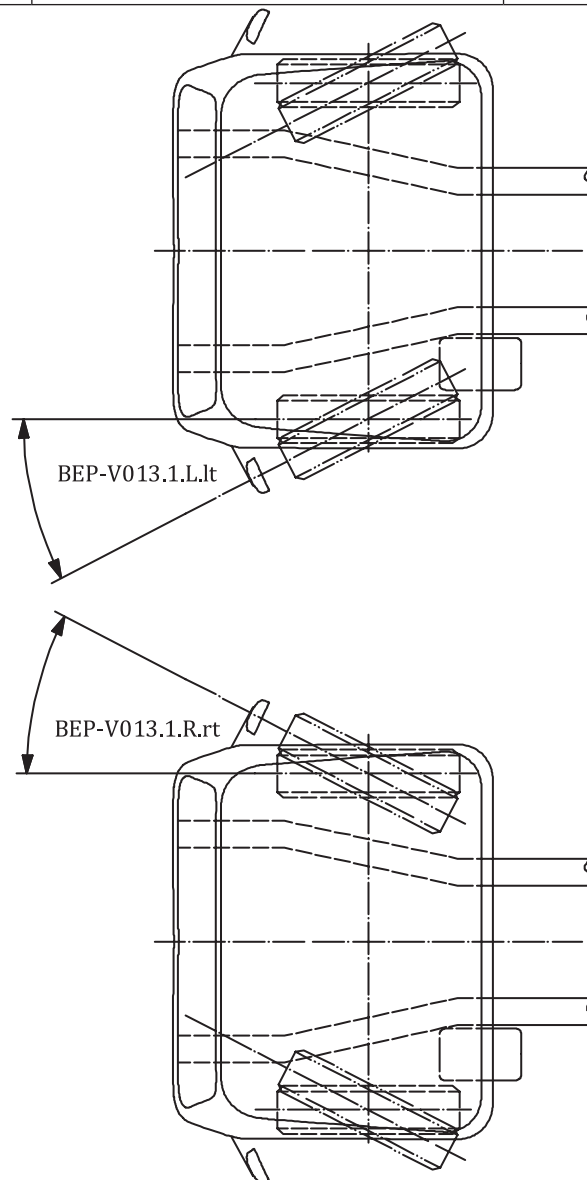
BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-H014	Ground clearance, front part	Distance between the ground and the lowest fixed point between the front part of the chassis and the centre of the last front axle. NOTE Chassis loaded to permitted axle masses. For pneumatic suspension, the drive position is assumed.	A	2	2D, 3D, TD
					
BEP-H015.n	Ground clearance, front axle(s)	Smallest vertical dimension between vehicle front axle(s) and ground level. NOTE Chassis loaded to permitted axle masses. For pneumatic suspension, the drive position is assumed.	A	2	2D, 3D, TD
					
BEP-H016.n	Ground clearance, rear axle(s)	Smallest vertical dimension between vehicle rear axle(s) and ground level. NOTE Chassis loaded to permitted axle masses. For pneumatic suspension, the drive position is assumed.	A	2	2D, 3D, TD
					

BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-L022.n	Tyre diameter on <i>n</i> -th axle	Tyre, free diameter, on <i>n</i> -th axle.	A	1	2D, 3D, TD
BEP-W016.n	Distance between tyre inner edges on <i>n</i> -th axle	Distance between tyre inner edges on <i>n</i> -th axle NOTE Projecting axle hubs and tyre bulges are disregarded.	A	-	2D, 3D, TD
 The diagram illustrates a side view of a vehicle chassis. A horizontal dashed line represents the ground level. On the left, a wheel assembly is shown with a vertical dashed line through its center. A horizontal dimension line labeled 'BEP-L022.1' indicates the distance from the ground to the center of the wheel. On the right, another wheel assembly is shown with a vertical dashed line through its center. A horizontal dimension line labeled 'BEP-L022.2' indicates the distance from the ground to the center of the wheel. A vertical dimension line labeled 'BEP-W016.2' indicates the distance between the inner edges of the two wheels.					
BEP-H017	Front underrun protection, upper	Distance between the ground and the uppermost part of the front underrun protection.	A	1	2D, 3D, TD
BEP-H018	Front underrun protection, lower	Distance between the ground and the lowest part of the front underrun protection.	A	1	2D, 3D, TD
BEP-H019.n	Side underrun protection(s), upper	Distance between the ground and the uppermost part of the side underrun protection. NOTE The distance is measured at the centreline of the side underrun protection.	A	1	2D, 3D, TD
BEP-H020.n	Side underrun protection(s), lower	Distance between the ground and the lowest part of the side underrun protection. NOTE The distance is measured at the centreline of the side underrun protection.	A	1	2D, 3D, TD
BEP-H021	Rear underrun protection, upper	Distance between the ground and the uppermost part of the rear underrun protection.	A	1	2D, 3D, TD
BEP-H022	Rear underrun protection, lower	Distance between the ground and the lowest part of the rear underrun protection.	A	1	2D, 3D, TD

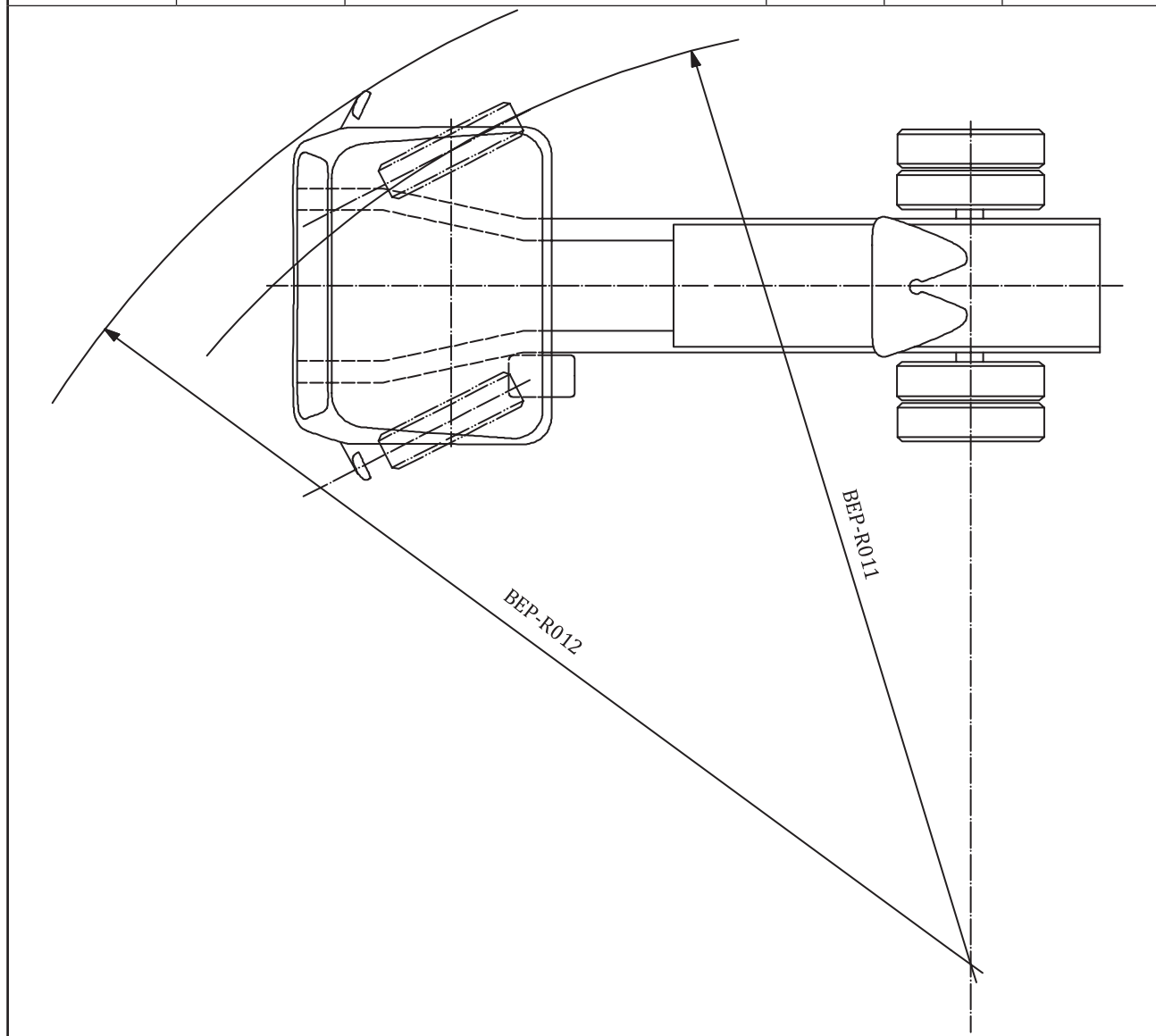
BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-L023	Rear underrun protection, longitudinal position	Distance between the last axle and the rear face of the rear underrun protection, minimum and fixed position.	A	1	2D, 3D, TD
BEP-L024	Rear underrun protection, longitudinal position	Distance between the last axle and the rear face of the rear underrun protection, maximum position of adjustable underrun protection. NOTE 1 The code applies to adjustable underrun protection only. NOTE 2 Relationship to rear end of bodywork can be expressed as a combination of L017 and L024.	A	1	2D, 3D, TD



BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-V013.n.s	Steering angle	Maximum steering angle of wheels. NOTE .n for <i>n</i>-th steerable axle, L/R for left or right side, lt/rt for left or right turn. EXAMPLE BEP-V013.1.R.rt means first steerable axle, right side, right turn. CAUTION — Code BEP-V013 replaces BEP-W010 from ISO 21308-2:2006, with identical definition. Both codes shall not be used simultaneously.	B	1	2D, 3D, TD



BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-R011	Turning circle radius	The radius of the circle described by the centre of the tyre of the outer steered wheel at the first front axle at maximum steering angle. NOTE .R or .L is added if there is a difference between left hand and right hand turning circle. EXAMPLE BEP-R011.L.	A	2	TD
BEP-R012	Clearance circle radius	The radius of the circle described by the outer edge of the vehicle at maximum steering angle. NOTE 1 The outer edge includes external equipment, e.g. mirrors. NOTE 2 .R or .L is added if there is a difference between left hand and right hand turning circle. EXAMPLE BEP-R012.L.	A	2	TD



BEP-code	Assignment	Description	Priority	Loading	Presented in
BEP-W013.n	Track	Distance between centres of the tyres of the n -th axle. NOTE In case of twin tyres, the centre between the two centres of the tyres on the same side is used.	A	1	2D, 3D, TD

