# ประกาศกระทรวงอุตสาหกรรม

ฉบับที่ ๔๘๕๘ (พ.ศ. ๒๕๕๙)
ออกตามความในพระราชบัญญัติมาตรฐานผลิตภัณฑ์อุตสาหกรรม
พ.ศ. ๒๕๑๑
เรื่อง กำหนดมาตรฐานผลิตภัณฑ์อุตสาหกรรม
เต้าเสียบ เต้ารับ - จ่าย ตัวต่อยานยนต์ และเต้ารับยานยนต์ -
การประจุไฟฟ้าผ่านตัวนำของยานยนต์ไฟฟ้า
เล่ม ๒ ข้อกำหนด ความเข้ากันได้เชิงมิติ และการสับเปลี่ยนได้
สำหรับขาเสียบ และท่อหน้าสัมผัสของเต้าไฟฟ้ากระแสสลับ

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อาศัยอำนาจตามความในมาตรา ๑๕ แห่งพระราชบัญญัติมาตรฐานผลิตภัณฑ์อุตสาหกรรม พ.ศ. ๒๕๑๑ ซึ่งแก้ไขเพิ่มเติมโดยพระราชบัญญัติมาตรฐานผลิตภัณฑ์อุตสาหกรรม (ฉบับที่ ๗) พ.ศ. ๒๕๕๘ รัฐมนตรีว่าการกระทรวงอุตสาหกรรมออกประกาศกำหนดมาตรฐานผลิตภัณฑ์อุตสาหกรรม เต้าเสียบ เต้ารับ - จ่าย ตัวต่อยานยนต์ และเต้ารับยานยนต์ - การประจุไฟฟ้าผ่านตัวนำของยานยนต์ไฟฟ้า เล่ม ๒ ข้อกำหนด ความเข้ากันได้เชิงมิติ และการสับเปลี่ยนได้ สำหรับขาเสียบ และท่อหน้าสัมผัสของเต้าไฟฟ้ากระแสสลับ มาตรฐานเลขที่ มอก. 2749 เล่ม 2 - 2559 ไว้ ดังมีรายละเอียดต่อท้ายประกาศนี้

ทั้งนี้ ให้มีผลตั้งแต่วันที่ประกาศในราชกิจจานุเบกษาเป็นต้นไป

ประกาศ ณ วันที่ ๑๙ สิงหาคม พ.ศ. ๒๕๕๙
อรรชกา สีบุญเรือง
รัฐมนตรีว่าการกระทรวงอุตสาหกรรม

# มาตรฐานผลิตภัณฑ์อุตสาหกรรม
# เต้าเสียบ เต้ารับ-จ่าย ตัวต่อยานยนต์ และเต้ารับยานยนต์ – การประจุไฟฟ้าผ่านตัวนำของยานยนต์ไฟฟ้า
## เล่ม 2 ข้อกำหนด ความเข้ากันได้เชิงมิติ และการสับเปลี่ยนได้ สำหรับขาเสียบ และท่อหน้าสัมผัสของเต้าไฟฟ้ากระแสสลับ

### 0. บททั่วไป

มาตรฐานผลิตภัณฑ์อุตสาหกรรมนี้กำหนดขึ้นโดยรับ IEC 62196-2 Edition 2.0 (2016 -02) Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories มาใช้โดยวิธีพิมพ์ซ้ำ (reprint) ในระดับดัดแปร (modify) โดยใช้ IEC ฉบับภาษาอังกฤษเป็นหลัก โดยมีรายละเอียดการดัดแปรตามรายการดังนี้

0.1 ขอบข่าย

รายละเอียดให้เป็นไปตาม IEC 62196-2:2016 ข้อ 1 โดยเพิ่มเติมข้อความ ดังนี้

มาตรฐานผลิตภัณฑ์อุตสาหกรรมนี้ กำหนดผลิตภัณฑ์อุตสาหกรรมเต้าเสียบ เต้ารับ-จ่าย ตัวต่อยานยนต์ และเต้ารับยานยนต์ สำหรับการประจุไฟฟ้าผ่านตัวนำของยานยนต์ไฟฟ้า configuration type 2 เป็นมาตรฐานของประเทศไทย สำหรับรถโดยสารไฟฟ้าและรถยนต์ไฟฟ้า

**หมายเหตุ** กรณียานยนต์ไฟฟ้าที่มีเต้ารับยานยนต์ (vehicle inlets) เป็นแบบอื่นๆ อนุญาตให้ใช้อุปกรณ์เสริมเพื่อปรับมาใช้กับ configuration type 2 ได้ หากผู้ทำยานยนต์หรือผู้ทำสถานีประจุไฟฟ้าเป็นผู้จัดเตรียมและรับรองอุปกรณ์เสริมนั้น

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

# PLUGS, SOCKET-OUTLETS, VEHICLE CONNECTORS AND VEHICLE INLETS – CONDUCTIVE CHARGING OF ELECTRIC VEHICLES –

## Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories

## FOREWORD

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International Standard IEC 62196-2 has been prepared by IEC subcommittee 23H: Plugs, socket-outlets and couplers for industrial and similar applications, and for electric vehicles, of IEC technical committee 23: Electrical accessories.

This second edition cancels and replaces the first edition published in 2011 and constitutes a technical revision.

This second edition includes the following significant technical changes with respect to the previous edition.

a) Standard sheets for configurations type 2 and type 3 have been updated.
b) Configuration type 2 is now available with optional shutter.

The text of this standard is based on the following documents:

| CDV | Report on voting |
|---|---|
| 23H/324/CDV | 23H/342/RVC |

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 62196 series, under the general title *Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles*, can be found on the IEC website.

This part of IEC 62196 is to be read in conjunction with IEC 62196-1:2014. The clauses of the particular requirements in Part 2 supplement or modify the corresponding clauses in Part 1. Where the text indicates "addition" to or "replacement" of the relevant requirement, test specification or explanation of Part 1, these changes are made to the relevant text of Part 1, which then becomes part of this standard. Where no change is necessary, the words "Clause X of IEC 62196-1:2014 is applicable" are used.

In this standard, the following print types are used:

– requirements proper: in roman type;
– *test specifications: in italic type;*
– notes: in smaller roman type.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

## INTRODUCTION

Responding to global challenges of $CO_2$ reduction and energy security, the automobile industries have been accelerating the development and commercialization of electric vehicles and hybrid electric vehicles. In addition to the prevailing hybrid electric vehicles, battery electric vehicles including plug-in hybrid electric vehicles are going to be mass-marketed. To support the diffusion of such vehicles, this standard provides the standard interface configurations of a.c. vehicle couplers and accessories to be used in conductive charging of electric vehicles, taking the most frequent charging situations into consideration.

IEC 62196 is divided into several parts:

Part 1: General requirements

Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories

Part 3: Dimensional compatibility and interchangeability requirements for d.c. and a.c./d.c. pin and contact-tube vehicle couplers

# PLUGS, SOCKET-OUTLETS, VEHICLE CONNECTORS AND VEHICLE INLETS – CONDUCTIVE CHARGING OF ELECTRIC VEHICLES –

## Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories

## 1 Scope

This part of IEC 62196 applies to plugs, socket-outlets, vehicle connectors and vehicle inlets with pins and contact-tubes of standardized configurations, herein referred to as accessories. They have a nominal rated operating voltage not exceeding 480 V a.c., 50 Hz to 60 Hz, and a rated current not exceeding 63 A three-phase or 70 A single phase, for use in conductive charging of electric vehicles.

This part of IEC 62196 covers the basic interface accessories for vehicle supply as specified in IEC 62196-1, and intended for use in conductive charging systems for circuits specified in IEC 61851-1:2010.

NOTE 1 Electric road vehicles (EV) implies all road vehicles, including plug-in hybrid road vehicles (PHEV), that derive all or part of their energy from RESS.

These accessories are intended to be used for circuits specified in IEC 61851-1:2010 which operate at different voltages and frequencies and which may include extra-low voltage (ELV) and communication signals.

These accessories may be used for bidirectional power transfer (under consideration).

This standard applies to accessories to be used in an ambient temperature between –30 °C and +50 °C.

NOTE 2 In the following country, other requirements regarding the lower temperature may apply: NO.

NOTE 3 In the following country, –35 °C applies: SE.

These accessories are intended to be connected only to cables with copper or copper-alloy conductors.

Vehicle inlet and vehicle connector to this standard are intended to be used for charging in modes 1, 2 and 3, cases B and C. The socket-outlets and plugs covered by this standard are intended to be used for charging mode 3 only, case A and B.

The modes and permissible connections are specified in IEC 62196-1:2014.

## 2 Normative references

Clause 2 of IEC 62196-1:2014 applies except as follows:

*Addition:*

IEC 62196-1:2014, *Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Part 1: General requirements*

## 3 Terms and definitions

Clause 3 of IEC 62196-1:2014 applies.

## 4 General

Clause 4 of IEC 62196-1:2014 applies.

## 5 Ratings

Clause 5 of IEC 62196-1:2014 applies except as follows:

**5.1** *Replacement:*

Rated operating voltages:

30 V (signal or control purposes only);
250 V a.c.
480 V a.c.

**5.2** *Replacement:*

The rated currents are:

2 A (signal or control purposes only)
13 A single phase
16 A single and three-phase
20 A single and three-phase
30 A or 32 A single and three-phase
60 A or 63 A single and three-phase
70 A single phase only

NOTE 1 In the following countries, the branch circuit overcurrent protection device is based upon 125 % of the accessory rating: US.

NOTE 2 Reference to "30 A or 32 A" and "60 A or 63 A" rating is made in accordance with National requirements.

## 6 Connection between the power supply and the electric vehicle

Clause 6 of IEC 62196-1:2014 applies except as follows:

**6.1** *Replacement:*

This Clause provides a description of the physical conductive electrical interface requirements between the vehicle and the power supply, which allows the following design at the vehicle interface:

– a basic interface that provides for current ratings up to 63 A a.c. three-phase and up to 70 A a.c. single phase.

Different configuration types for the basic interface may allow different application of mode and current ratings. See introduction to relevant standard sheets for more details.

**6.2** *Replacement:*

There is one type of vehicle inlet:

– basic

**6.3** *Replacement:*

There is one type of vehicle connector:

– basic

**6.4** Not applicable.

**6.5** *Replacement:*

The basic interface may contain up to 7 power or signal contacts, with unique physical configurations of contact positions for single or three phases. The electrical ratings and their function are described in Tables 201 and 202. The electrical ratings and their function are described in the Standard Sheets.

Each vehicle inlet shall only mate with the corresponding type of vehicle connector. Each plug shall only mate with the corresponding type of socket-outlet.

The accessories, configuration types 1, 2 or 3 are rated as follows:

– configuration type 1 vehicle coupler is rated 250 V, 32 A single phase;
– configuration type 2 vehicle coupler, socket-outlet and plug are rated:
  • 250 V, 13 A or 20 A or 32 A or 63 A or 70 A single phase,
  • 480 V, 13 A or 20 A or 32 A or 63 A, three-phase.
– configuration type 3 vehicle coupler, socket-outlet and plug are rated:
  • 250 V, 16 A or 32 A, single phase,
  • 480 V, 32 A or 63 A three-phase.

**Table 201 – Overview of the basic vehicle interface, configuration type 1, single phase**

| Position number [a] | a.c. | Functions [c] |
|---|---|---|
| 1 | 250 V 32 A[b] | L1 (mains 1) |
| 2 | 250 V 32 A | L2 (mains 2) / N (neutral) |
| 3 | Rated for fault | PE (ground/earth) |
| 4 | 30 V 2 A | CP (Control pilot) |
| 5 | 30 V 2 A | CS (Connection switch) |

[a] Position number does not refer to the location and/or identification of the contact in the accessory.

[b] In the following countries, the branch circuit overcurrent protection is based upon 125 % of the device rating: US.

[c] For contacts 4 and 5, environmental conditions may demand larger conductor cross-sections.

**Table 202 – Overview of the basic vehicle interface, configuration types 2 and 3, three-phase or single phase**

| Position number [f] | $U_{max}$ | Three phase | | Single phase | | Functions |
|---|---|---|---|---|---|---|
| | | $I_{max}$ [a] | | $I_{max}$ [a] | | |
| | V a.c. | A | | A | | |
| | | Type 2 | Type 3 | Type 2 [b] | Type 3 | |
| 1 | 480 | 63 | | 70 | 63 | L1 (mains 1) [b] |
| 2 | 480 | 63 | | – [c] | – [c] | L2 (mains 2) |
| 3 | 480 | 63 | | – [c] | – [c] | L3 (mains 3) |
| 4 | 480 | 63 | | 70 | 63 | N (neutral) [b, e] |
| 5 | — | Rated for fault | | | | PE (ground/earth) |
| 6 | 30 | 2 | | | | CP (Control pilot) |
| 7 | 30 | 2 | | | | PP (Proximity) [d] or CS (Connection switch) [d] |

[a] In the following countries, the branch circuit overcurrent protection is based upon 125 % of the device rating: US.

[b] For single phase charging, contacts 1 and 4 shall be used.

[c] Unused contacts need not to be installed. Not provided for standard sheets 2-IIIa and 2-IIIb.

[d] Not provided for standard sheet 2-IIIa.

[e] For single phase system supply phase to phase this contact can be used for L2 (mains 2).

[f] Position number does not refer to the location and/or identification of the contact in the accessory.

**6.6** *Not applicable.*

**6.7** *Not applicable.*

### 6.201 Communication and control pilot function

The control pilot and proximity detection or connection contacts are intended to be used in accordance with IEC 61851-1:2010.

## 7 Classification of accessories

Clause 7 of IEC 62196-1:2014 applies except as follows:

### 7.4 According to electrical operation

*Replacement:*

- Suitable for making and breaking an electrical circuit under load for 32 A configurations types 1 and 3;
- Not suitable for making and breaking an electrical circuit under load for configurations type 2;
- Not suitable for making and breaking an electrical circuit under load for 63 A configuration type 3.

NOTE Communication circuits according to this standard are deemed not to make or break load as a result of this clause.

### 7.5 According to interface

*Replacement:*

Interface is specified in Clause 6.

– Basic type.

**7.201 According to the Standard Sheet used**

– Configuration type 1;
– Configuration type 2;
– Configuration type 3.

## 8 Marking

Clause 8 of IEC 62196-1:2014 applies.

## 9 Dimensions

Clause 9 of IEC 62196-1:2014 applies except as follows:

**9.1** *Replacement:*

Accessories shall comply with the relevant standard sheets as specified below and in Table 203:

Configuration type 1

– 32 A, 250 V single-phase vehicle couplers: standard sheet 2-I.
– Optional latching system: standard sheet 2-Ia.

NOTE In the following countries, the standard sheets 2-I and 2-Ia may be applied to vehicle couplers with rated current up to 80 A: US.

Configuration type 2

– 63 A, 480 V three-phase or 250 V, 70 A single-phase accessories: standard sheets 2-II, IIa, IIb, IIc, IId, IIe, IIf, IIg and IIh.

Configuration type 3

– 16 A, 250 V single-phase accessories with one pilot: standard sheet 2-IIIa;
– 32 A, 250 V single-phase accessories with two pilots: standard sheet 2-IIIb;
– 63 A, 480 V three-phase accessories with two pilots: standard sheet 2-IIIc;
– Latching means and packaging room: standard sheet 2-IIId.

**Table 203 – Configuration types and standard sheets**

| Configuration type | Standard Sheet | Applicable accessories | Rated voltage V | Rated current A | Phase |
|---|---|---|---|---|---|
| 1 | 2-I | Vehicle couplers | 250 | 32 | Single-phase |
| 2 | 2-II | Accessories | 250 | 70 | Single-phase |
| | | | 480 | 63 | Three-phase |
| 3 | 2-III | Accessories | 250 | 16 | Single-phase |
| | | | 250 | 32 | Single-phase |
| | | | 480 | 63 | Three-phase |

## 10 Protection against electric shock

Clause 10 of IEC 62196-1:2014 applies.

## 11 Size and colour of protective earthing conductors

*Replacement:*

The core connected to the earthing terminal shall be identified by the colour combination green-and-yellow. The nominal cross/sectional area of the earthing conductor and of the neutral conductor, if any, shall be at least equal to that of the phase conductors.

NOTE In the following countries, the colour green may be used to identify the earthing conductor: JP, US, CA.

## 12 Provision for earthing

Clause 12 of IEC 62196-1:2014 applies.

## 13 Terminals

Clause 13 of IEC 62196-1:2014 applies except as follows.

*Additional subclause:*

**13.201** Wire connection of components, for example coding resistors may be rewirable or non-rewirable.

## 14 Interlocks

Clause 14 of IEC 62196-1:2014 applies.

## 15 Resistance to ageing of rubber and thermoplastic material

Clause 15 of IEC 62196-1:2014 applies.

## 16 General construction

Clause 16 of IEC 62196-1:2014 applies.

## 17 Construction of socket-outlets

Clause 17 of IEC 62196-1:2014 applies.

## 18 Construction of plugs and vehicle connectors

Clause 18 of IEC 62196-1:2014 applies.

## 19 Construction of vehicle inlets

Clause 19 of IEC 62196-1:2014 applies.

## 20 Degrees of protection

Clause 20 of IEC 62196-1:2014 applies.

## 21 Insulation resistance and dielectric strength

Clause 21 of IEC 62196-1:2014 applies.

## 22 Breaking capacity

Clause 22 of IEC 62196-1:2014 applies.

## 23 Normal operation

Clause 23 of IEC 62196-1:2014 applies.

## 24 Temperature rise

Clause 24 of 62196-1:2014 applies except as follows:

**24.1** *Addition, after the seventh paragraph:*

*For accessories dependent upon a resistor coding to define the accessory's assigned current rating, the test shall be repeated using a set of samples for each resistor coding value and tested at the maximum current corresponding to that resistor coding value.*

## 25 Flexible cables and their connection

Clause 25 of IEC 62196-1:2014 applies.

## 26 Mechanical strength

Clause 26 of IEC 62196-1:2014 applies.

## 27 Screws, current-carrying parts and connections

Clause 27 of IEC 62196-1:2014 applies.

## 28 Creepage distances, clearances and distances

Clause 28 of IEC 62196-1:2014 applies.

## 29 Resistance to heat, to fire and to tracking

Clause 29 of IEC 62196-1:2014 applies.

## 30 Corrosion and resistance to rusting

Clause 30 of IEC 62196-1:2014 applies.

## 31 Conditional short-circuit current withstand test

Clause 31 of IEC 62196-1:2014 applies.

## 32 Electromagnetic compatibility (EMC)

Clause 32 of IEC 62196-1:2014 applies.

## 33 Vehicle driveover

Clause 33 of IEC 62196-1:2014 applies except as follows:

**33.3** Not applicable.

**33.4** Not applicable.

## 201 Components

NOTE This clause will be transferred to Part 1, Clause 4 in its next revision.

### 201.1 Ratings

A component shall be used in accordance with its rating established for the intended conditions of use.

*Compliance is checked by inspection.*

### 201.2 Mechanical assembly

Loosening of parts in an accessory as a result of vibration due to storage, handling and operation shall not result in a risk of fire, electric shock, injury to persons.

*Compliance is checked by inspection.*

### 201.3 Current-carrying parts of incorporated components

Any component uninsulated live part shall be so secured to the base or mounting surface, or otherwise insulated that the part does not turn or shift in position resulting in a reduction of creepage distances, clearances and distances below the minimum required values of IEC 62196-1:2014, Clause 28.

*Compliance is checked by inspection.*

### 201.4 Electrical connections

**201.4.1** The requirements described in 201.4.2 to 201.4.4 apply to connections of internal wiring that are factory installed in the accessory.

*Compliance is checked by inspection.*

**201.4.2** A splice or connection shall be mechanically secure and shall make electrical contact.

*Compliance is checked by inspection.*

**201.4.3** A soldered connection is determined to be mechanically secure when the lead is

- wrapped one full turn around a terminal,
- bent at a right angle after being passed through an eyelet or opening, except on printed wiring boards where components are inserted or secured (as in a surface-mounted component) and wave- or lap-soldered, or
- twisted with other conductors;
- or an equivalent means.

*Compliance is checked by inspection.*

**201.4.4** A splice shall be provided with insulation equivalent to that of the wires involved unless permanent clearance and creepage distances are maintained between the splice and other metal parts. Insulation over the splice is not prohibited from having

- a splicing device such as a pressure wire connector, having suitable voltage and temperature ratings,
- insulating tubing or sleeving used to cover a splice.

*Compliance is checked by inspection.*

## 202 Resistor coding

The vehicle connector and plug of configurations type 2 and type 3b and 3c shall be provided with coding resistors ($R_c$) to define the maximum current capability of the cable assembly and vehicle connector and plug.

The resistor values and tolerances shall be as specified in IEC 61851-1:2010, Clause B.5, "System for simultaneous proximity detection and current coding for vehicle connectors and plugs".

*Compliance is checked by inspection.*

# STANDARD SHEETS

## CONFIGURATION TYPE 1

## STANDARD SHEETS 2-I

## 32 A, 250 V A.C. VEHICLE COUPLER

### Overview

The standard sheets 2-I apply to configuration type 1: 32 A, 250 V a.c. single-phase vehicle couplers.

For configuration type 1, Annex A "Pilot function through a control pilot circuit using PWM modulation and a control pilot wire" and Clause B.2 "Circuits diagrams for mode 1, mode 2 and mode 3, using a basic single phase vehicle coupler" of IEC 61851-1:2010 shall be applied. +V d.c. of Table B.2 of IEC 61851-1:2010 shall be a +5 V regulated supply.

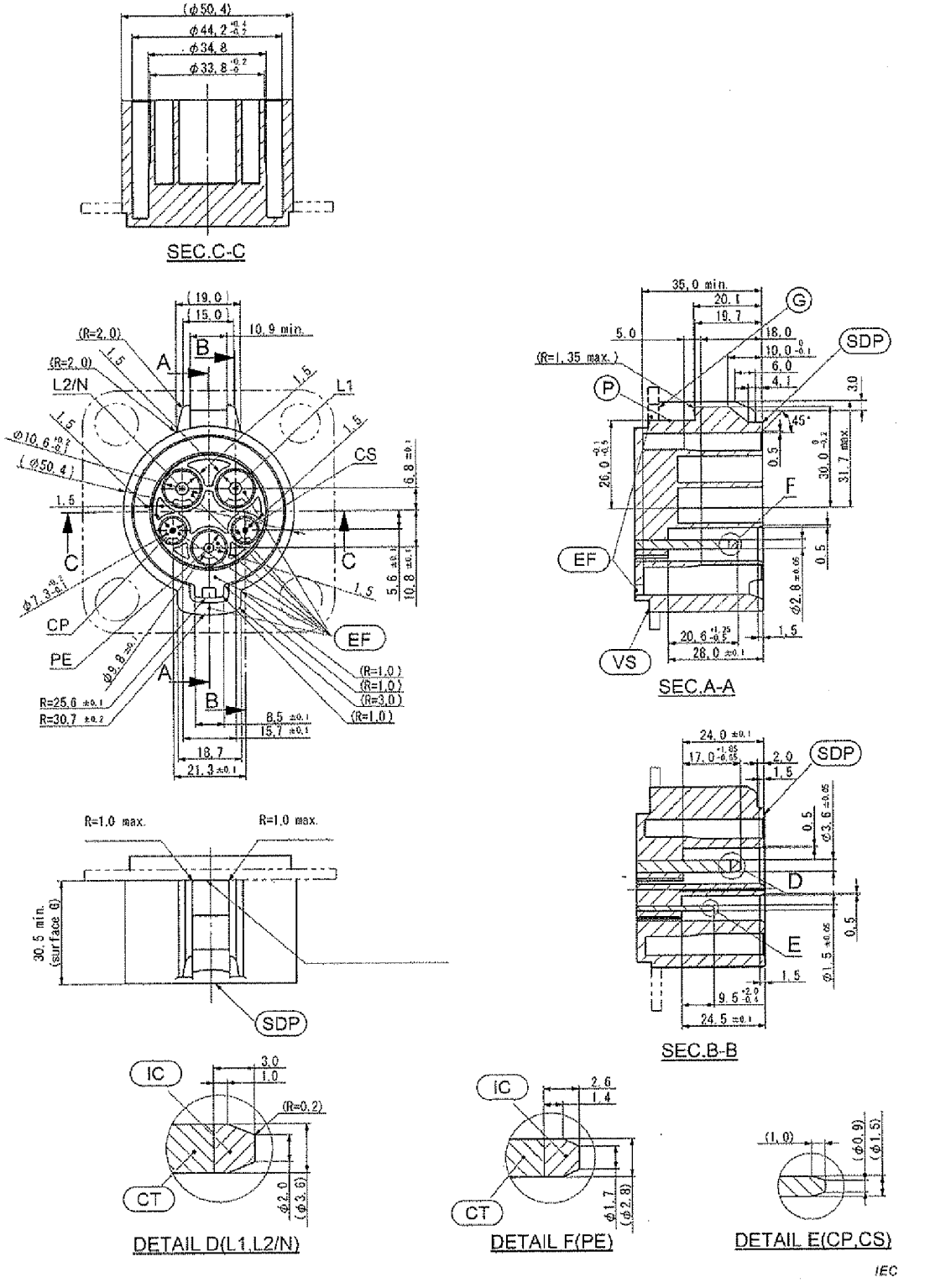
The standard sheets 2-Ia defines the optional locking system.

This configuration shall not be used for mode 1 above 150 V line-to-earth.

**STANDARD SHEETS 2-I**

**Sheet 1**

**32 A, 250 V A.C. VEHICLE INLET**



Value in parenthesis is for reference

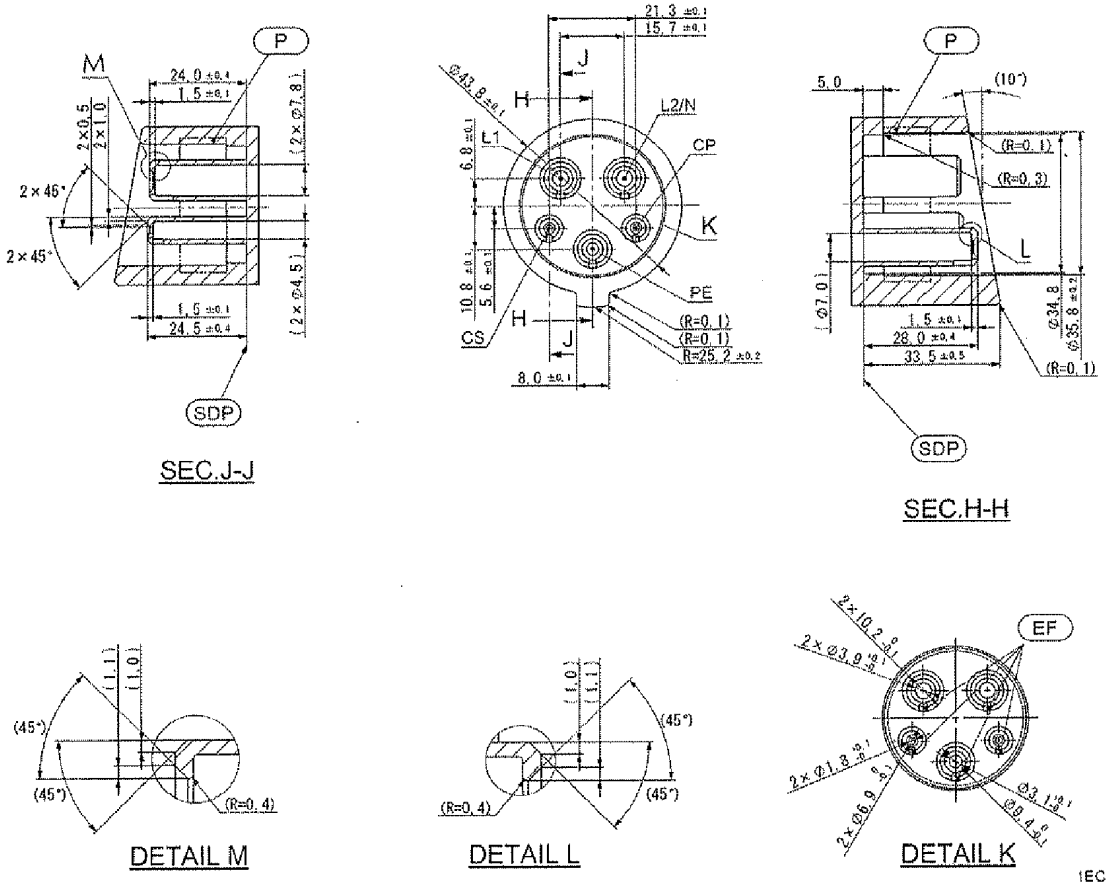
| General tolerance | | | |
|---|---|---|---|
| 0 Max: ±0,15 | 50 Max: ±0,2 | 100 Max: ±0,3 | Angle: ±30' |

| Key | Description |
|---|---|
| SDP | Standard datum plane |
| G | Surface G (if any) |
| P | Surface P |
| IC | Isolated cap (if necessary) |
| CT | Contact |
| EF | Egress of fluids (if necessary) |
| VS | Vehicle surface |

**STANDARD SHEET 2-I**

**Sheet 2 *(continuation of Sheet 1)***

**32 A, 250 V A.C. VEHICLE CONNECTOR**




*Dimensions in millimetres*

Value in parenthesis is for reference

| General tolerance | | | |
|---|---|---|---|
| 10 Max: ±0,15 | 50 Max: ±0,2 | 100 Max: ±0,3 | Angle: ±30' |

| Key | Description |
|---|---|
| EF | Egress of fluids (if necessary) |
| P | Packing (if necessary) one of sealing method for IP44 when coupled with vehicle inlet |
| SDP | Standard datum plane of vehicle connector |

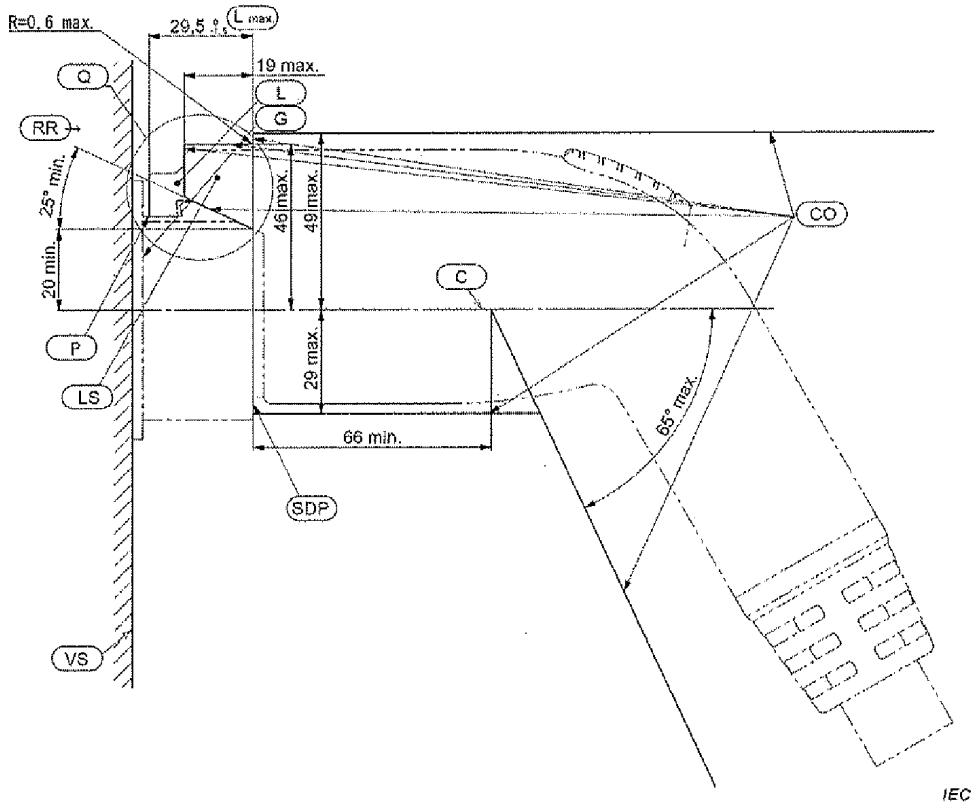
## STANDARD SHEET 2-I

### Sheet 3 *(continuation of Sheet 2)*

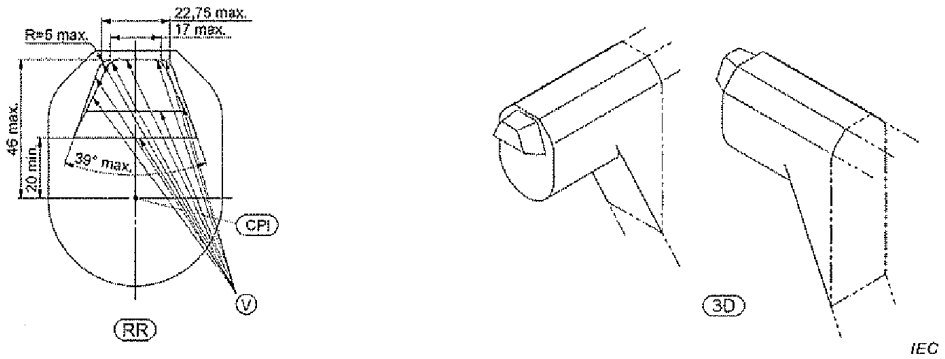
### VEHICLE CONNECTOR
### RETAINING MEANS FOR IP44 VEHICLE COUPLER
### MAXIMUM DIMENSIONS OF BODY OUTLINE

Latch shown in latched position

*Dimensions in millimetres*




Side view of vehicle coupler



| Key | Description |
|---|---|
| CO | Vehicle connector body shape shall be within these solid lines |
| $L_{max.}$ | Restriction of latch length |
| C | Centre line of vehicle inlet |
| CPI | Centre point of vehicle inlet |
| SDP | Standard datum plane of vehicle inlet |
| LS | Shroud of latch (if any). |
| VS | Vehicle surface |
| L | Latch |
| P | Surface P |
| G | Surface G |
| V | Shroud of latch shape (if any) shall be within these solid lines. Latch shall not extend beyond this profile when it is in fully "open" position. |
| Q | See continuation |
| RR | View RR indicates the shroud shape, if any |
| 3D | 3D view |
| NOTE | Shroud is not mandatory. |

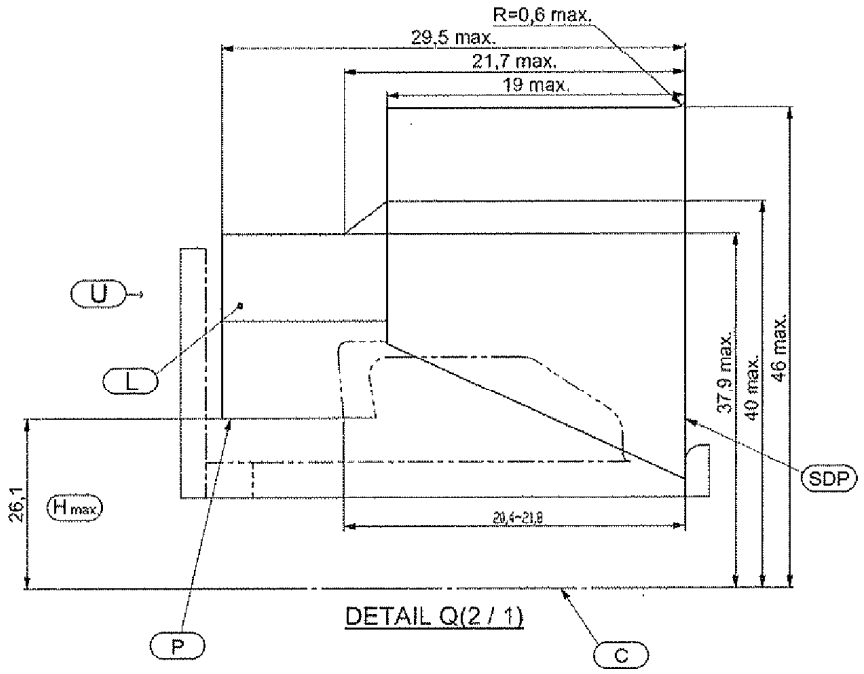
The sketches are not intended to govern the design of the vehicle connector body and latch shape except for the dimensions shown.

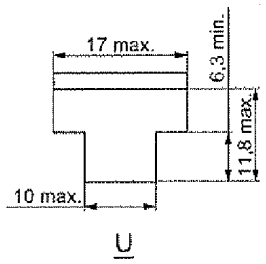
## STANDARD SHEET 2-I

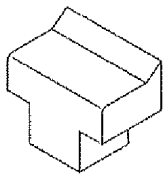
### Sheet 4 *(continuation of Sheet 3)*

### MAXIMUM OUTLINE OF LATCH

Latch shown touching surface P




IEC

The sketches are not intended to govern the design of the latch shape except for the dimensions shown.

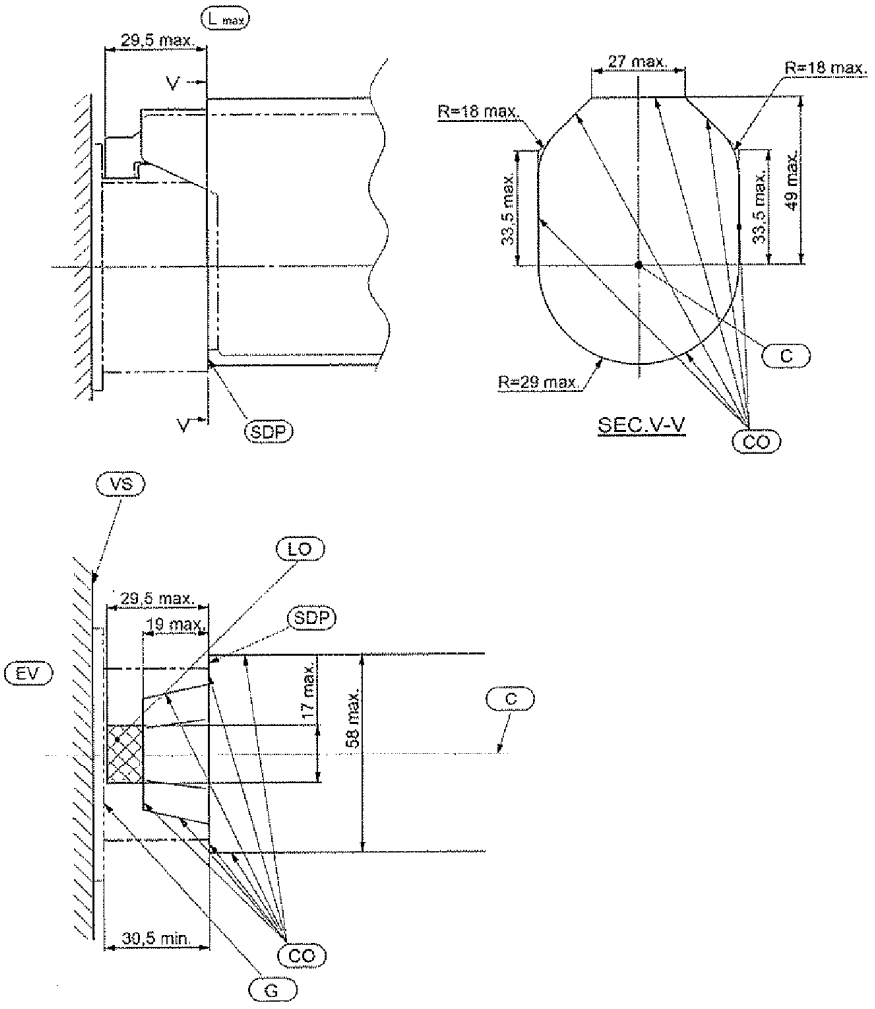
*Dimensions in millimetres*

| Key | Description |
|---|---|
| C | Centre line of vehicle inlet |
| $H_{max.}$ | Maximum height of surface P (see section A-A) |
| L | Latch |
| P | Surface P |
| SDP | Standard datum plane of vehicle inlet |
| U | Maximum outline of latch |

## STANDARD SHEET 2-I

### Sheet 5 *(continuation of Sheet 4)*

### VEHICLE CONNECTOR
### MAXIMUM DIMENSIONS OF BODY AND LATCH OUTLINE




IEC

The sketches are not intended to govern the design of the vehicle connector body and latch shape except for the dimensions shown.

| Key | Description |
|---|---|
| G | Surface G (if any) |
| SDP | Standard datum plane of vehicle inlet |
| C | Center point of vehicle inlet |
| $L_{max}$ | Restriction of latch length |
| CO | Vehicle connector body shape shall be within these solid lines |
| EV | Electric vehicle |
| LO | The latch shall be within this shaded zone |
| VS | Vehicle surface |

## STANDARD SHEET 2-Ia

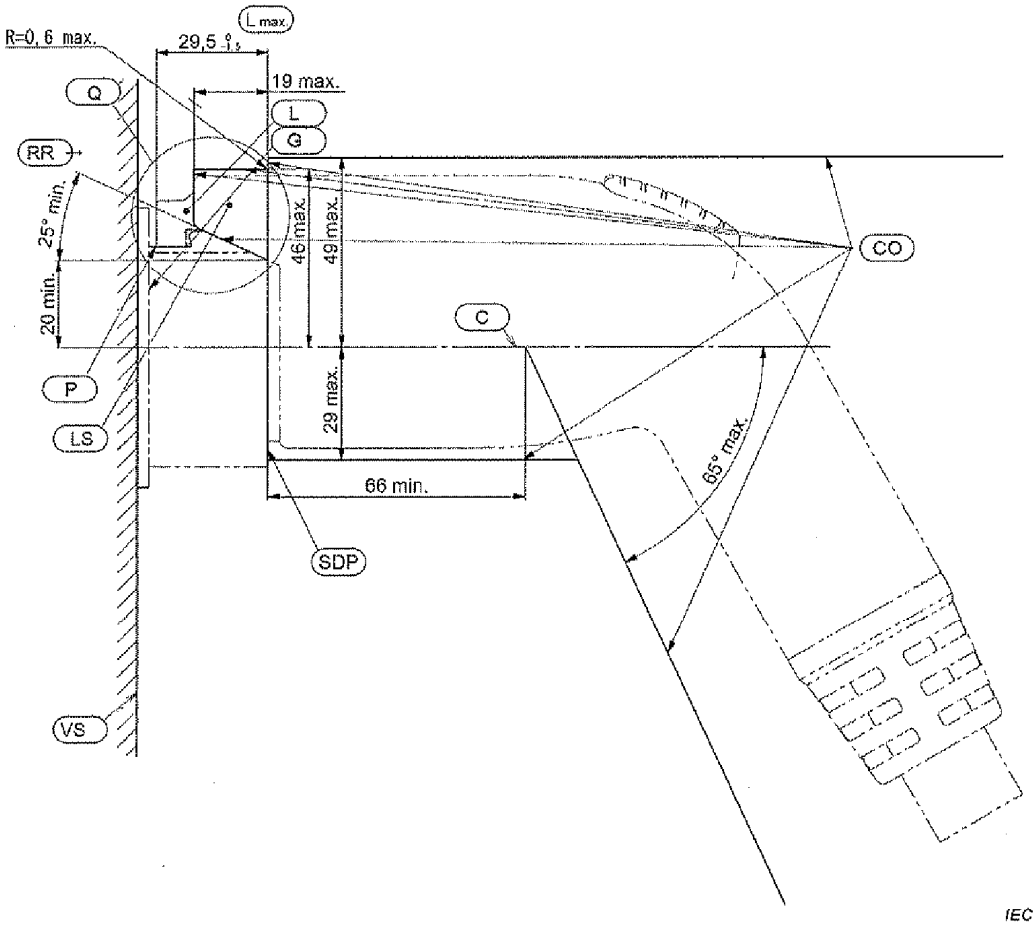
### Sheet 1

### VEHICLE CONNECTOR
### OPTIONAL LOCKING SYSTEM

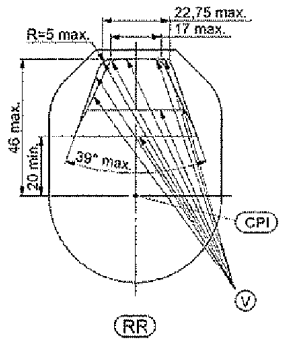
### RETAINING MEANS FOR IP44 VEHICLE COUPLER
### MAXIMUM DIMENSIONS OF BODY OUTLINE

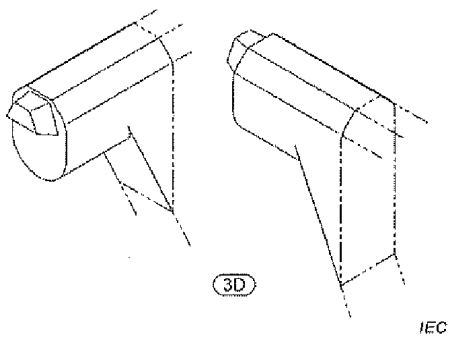
Latch shown in latched position

*Dimensions in millimetres*




Side view of vehicle coupler



| Key | Description |
|---|---|
| CO | Vehicle connector body shape shall be within these solid lines |
| $L_{max.}$ | Restriction of latch length |
| C | Centre line of vehicle inlet |
| CPI | Centre point of vehicle inlet |
| SDP | Standard datum plane of vehicle inlet |
| LS | Shroud of latch (if any) |
| VS | Vehicle surface |
| L | Latch |
| Q | See continuation |
| RR | View RR indicates shroud shape, if any |
| G | Surface G |
| P | Surface P |
| V | Shroud of latch shape (if any) shall be within these solid lines. Latch shall not extend beyond this profile when it is in fully "open" position. |
| 3D | 3D view |
| NOTE Shroud is not mandatory. | |

The sketches are not intended to govern the design of the vehicle connector body and latch shape except for the dimensions shown.

## STANDARD SHEET 2-Ia

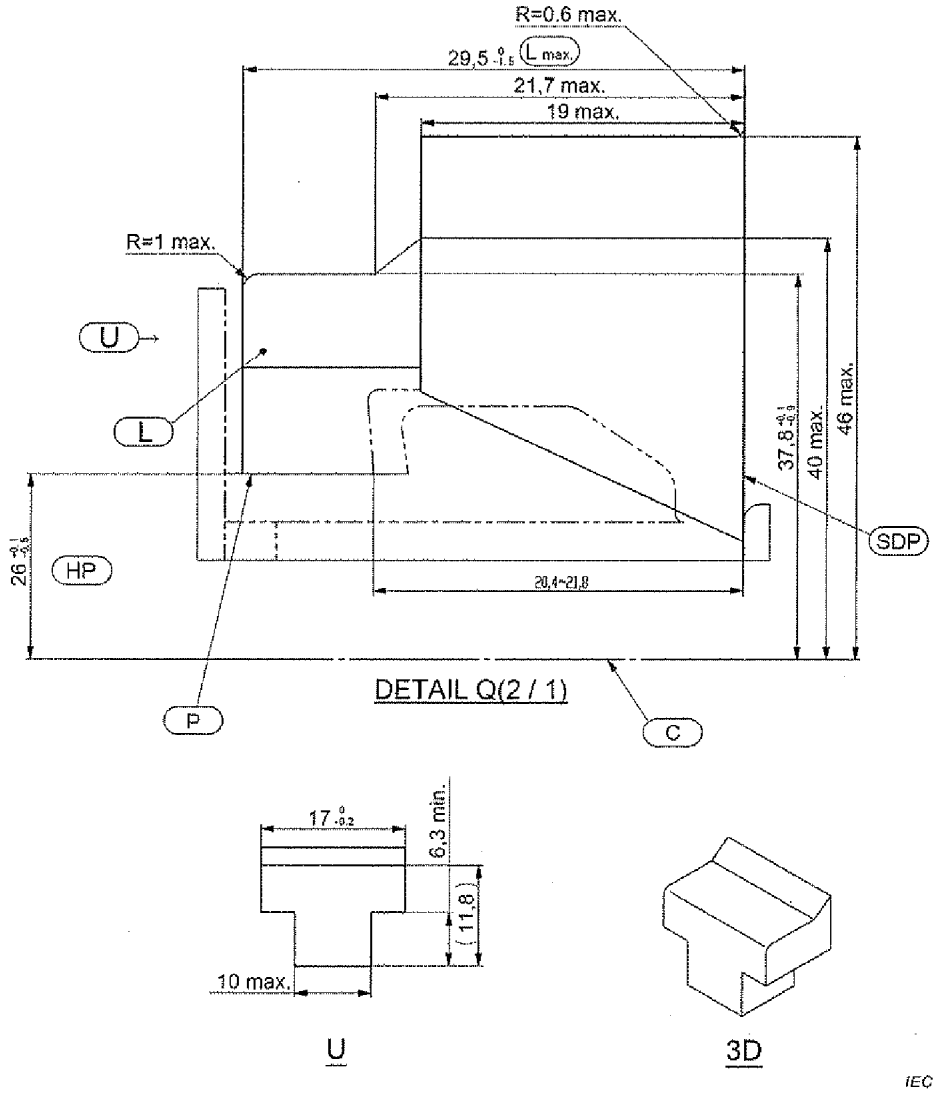
### Sheet 2 *(continuation of Sheet 1)*

### MAXIMUM OUTLINE OF LATCH

*Dimensions in millimetres*

Latch shown in touching surface P

The sketches are not intended to govern the design of the latch shape except for the dimensions shown.



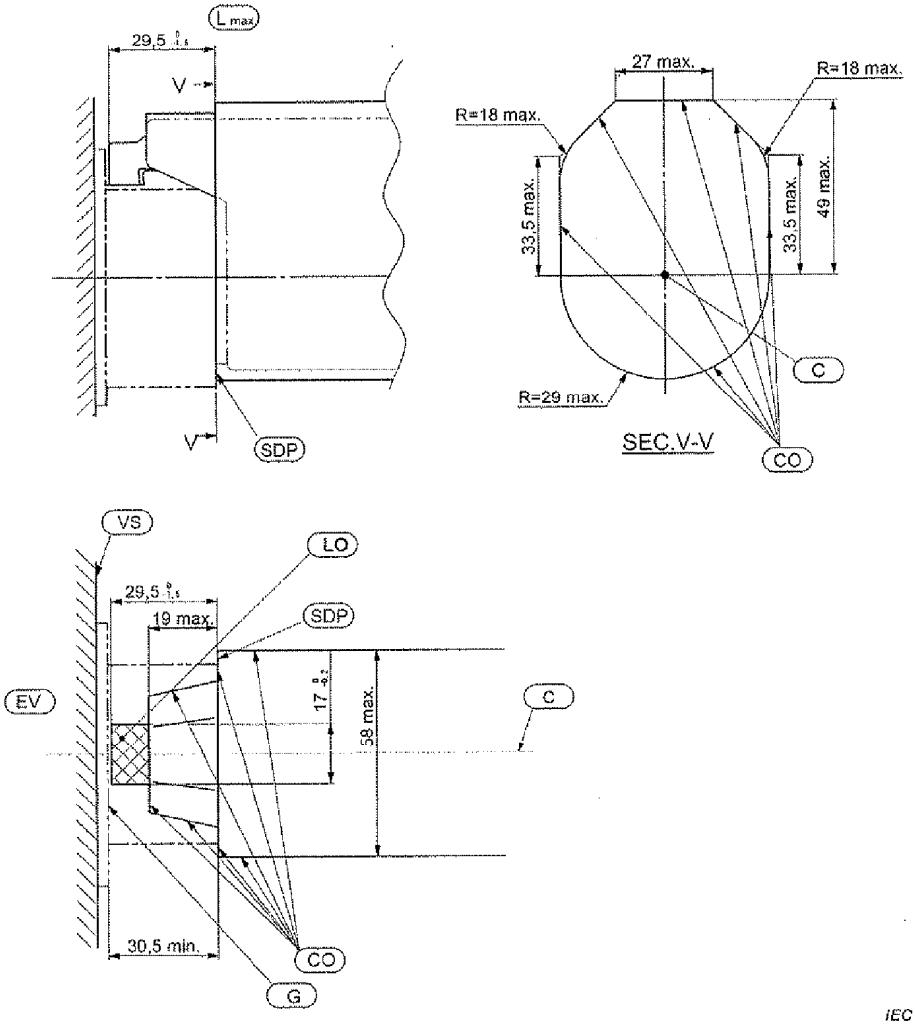

| Key | Description |
|---|---|
| C | Centre line of vehicle inlet |
| HP | Height of surface P (see section A-A of standard sheet 2-I) |
| L | Latch |
| P | Surface P |
| SDP | Standard datum plane of vehicle inlet |
| U | Maximum outline of latch |
| $L_{max.}$ | Restriction of latch length |

**STANDARD SHEET 2-Ia**

**Sheet 3 *(continuation of Sheet 2)***

VEHICLE CONNECTOR
MAXIMUM DIMENSIONS OF BODY AND LATCH OUTLINE

*Dimensions in millimetres*




The sketches are not intended to govern the design of the vehicle connector body and latch shape except for the dimensions shown.

| Key | Description |
|---|---|
| G | Surface G (if any) |
| SDP | Standard datum plane of vehicle inlet |
| C | Center point of vehicle inlet |
| $L_{max}$ | Restriction of latch length |
| CO | Vehicle connector body shape shall be within these solid lines |
| EV | Electric vehicle |
| LO | The latch shall be within this shaded zone |
| VS | Vehicle surface |

## CONFIGURATION TYPE 2

## STANDARD SHEETS 2-II

## 63 A, 480 V THREE-PHASE OR 70 A, 250 V SINGLE PHASE ACCESSORIES

### Overview

The standard sheets 2-II apply to configuration type 2: 63 A, 480 V a.c. three-phase and 70 A, 250 V a. c. single-phase accessories.

For configuration type 2, the following specifications are applicable:

Interlocking and latching of the accessories is mandatory to prevent them from unintentional separation and breaking under load. The interlocking shall insure that the energy transmission is stopped before separation.

NOTE Interlocking can be performed by mechanical or electromechanical means.

The interlocking means shall offer a feedback to show that the mechanism is in correct engagement. At least one latching means shall be provided.

The feedback can be offered e.g. by a supplementary contact.

The pilot function shall be realized by implementation of IEC 61851-1:2010, Annex A "Pilot function through a control pilot circuit using PWM modulation and a control pilot wire."

Proximity detection and current coding shall be implemented according to IEC 61851-1:2010, Clause B.5 "System for simultaneous proximity detection and current coding for vehicle connectors and plugs".

Interoperability of configuration type 2 accessories is indicated in Table 204.

**Table 204 – Interoperation of configuration type 2 accessories**

| Accessory [a] | Plug (mode 3) Sheet 2-IIb | Vehicle inlet (all modes) Sheet 2-IId | Vehicle inlet (modes 2 and 3) Sheet 2-IIf |
|---|---|---|---|
| **Socket-outlet (mode 3) Sheet 2-IIa** | Yes | n. a. [d] | n. a. [d] |
| **Vehicle connector (mode 1) Sheet 2-IIc** | No[b] | Yes | No[b] |
| **Vehicle connector (modes 2 and 3) Sheet 2-IIe** | No[c] | Yes | Yes |

[a] Type 2 accessories shall only be used in the modes as listed in this tabulation.

[b] Interoperability excluded by mechanical coding.

[c] Interoperability excluded by gap in control pilot circuit.

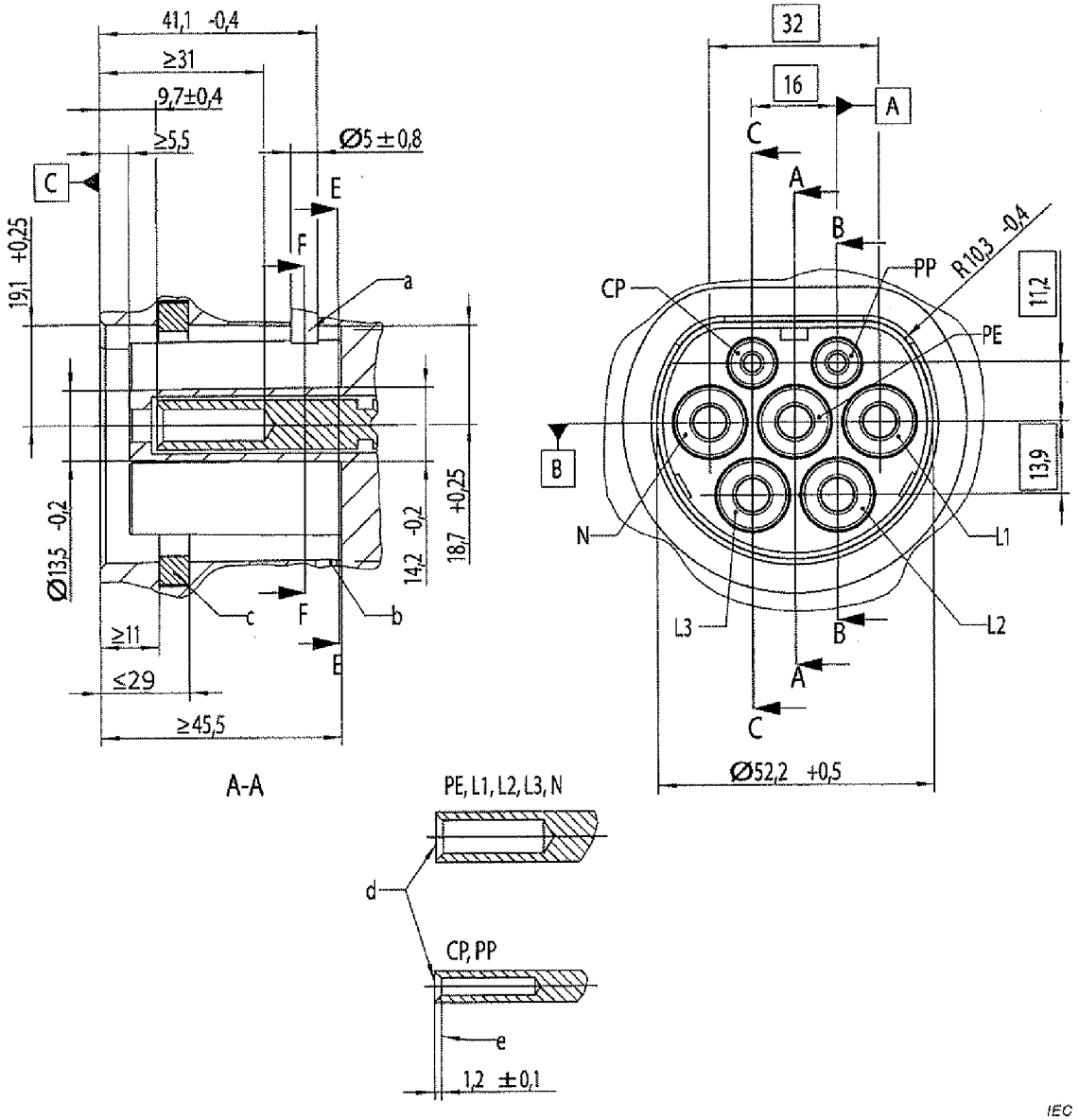
[d] Fixed accessories cannot be connected together.

Standard Sheets 2-IIg and 2-IIh define packaging rooms to ensure compatibility.

**STANDARD SHEET 2-IIa**

**Sheet 1**

**SOCKET-OUTLET**
**63 A, 480 V THREE-PHASE OR 70 A, 250 V SINGLE PHASE**




Undimensioned radii: R 0,5 mm to 0,7 mm

a Latching means construction to customer's decision

b Optional drain hole

c Sealing area (optional sealing). The plug area from 11 to 16,7 has to be kept free of shrinkage, tool cuts and ejector marks. See 2-IIb sheet 1.

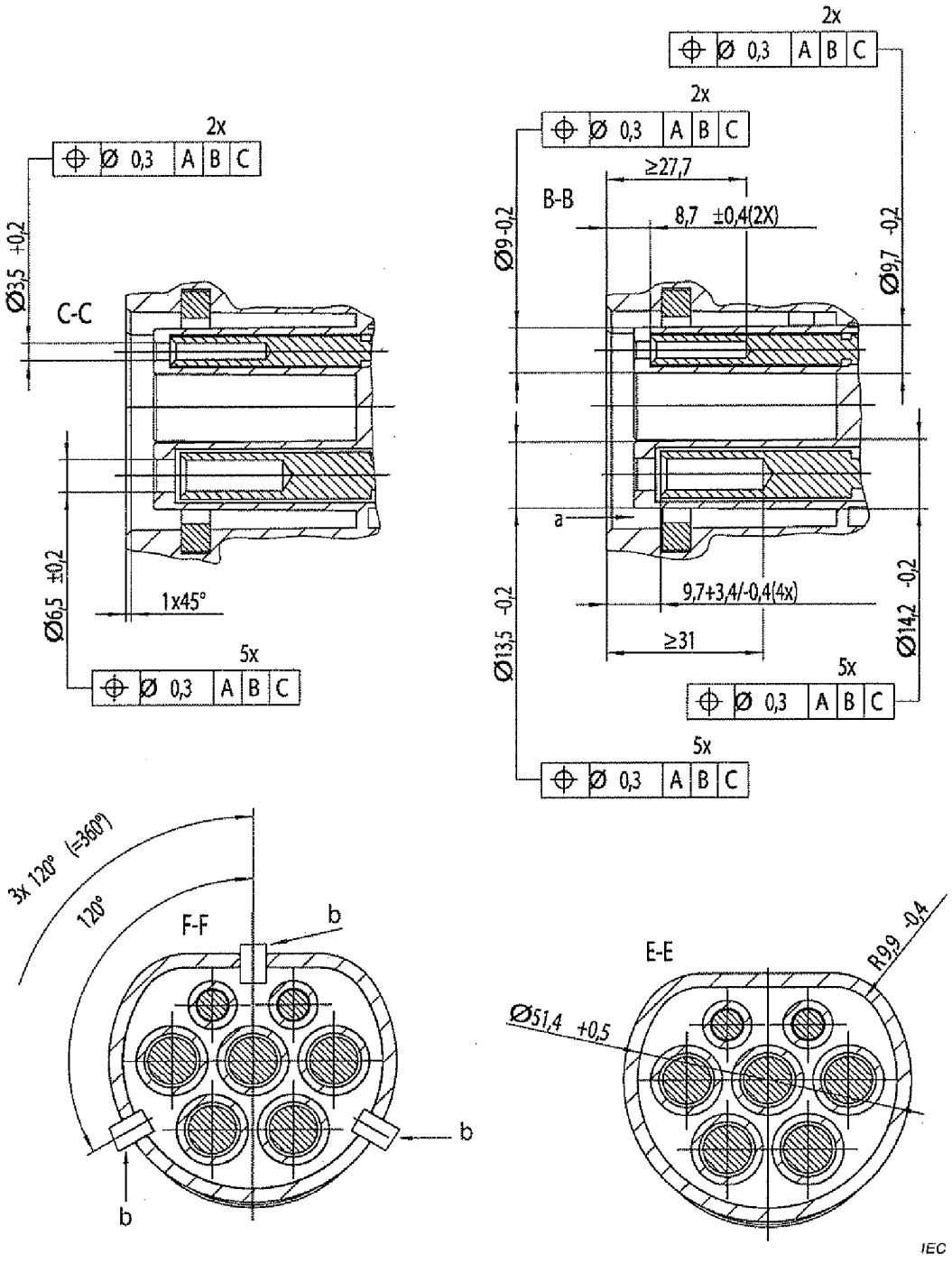
d Tip of sleeves chamfered for easy insertion

e Contact point

For single phase socket-outlets, contacts L2 and L3 including the surrounding insulation can be omitted.

**STANDARD SHEET 2-IIa**

**Sheet 2 *(continuation of Sheet 1)***




Undimensioned radii: R 0,5 mm to 0,7 mm

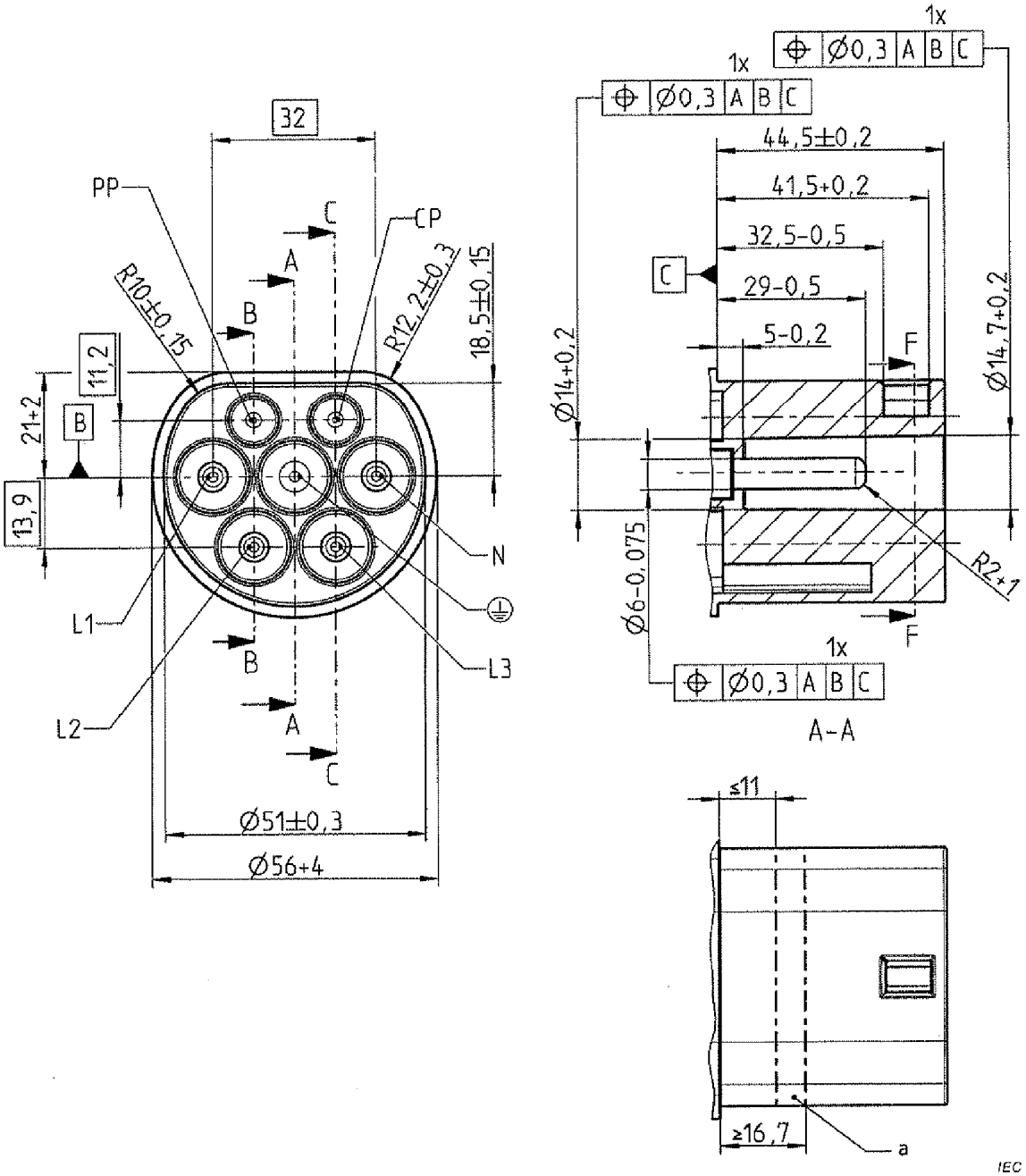
a Preferred area for optional shutter. Mechanism might exceed this area.

b Latching means positions. At least one Latching means provided.

**STANDARD SHEET 2-IIb**

**Sheet 1**

**PLUG**
**63 A, 480 V THREE-PHASE OR 70 A, 250 V SINGLE PHASE**



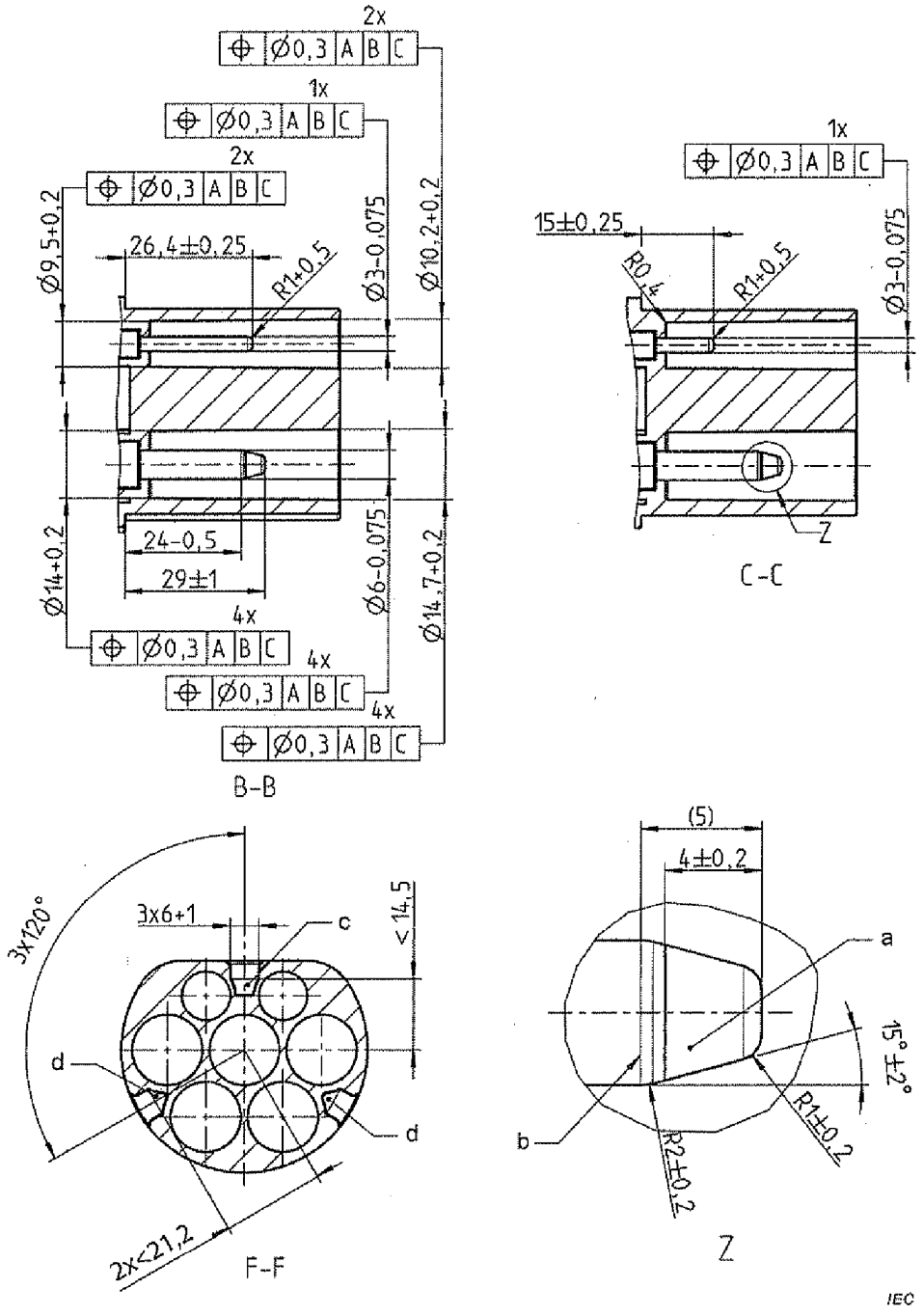

Undimensioned radii: R 0,5 mm to 0,7 mm

a Sealing area, free of sinkage, toolcuts and ejectors.
Surface roughness in sealing area: $R_a$=0,7 µm

For single phase plugs the contacts L2 and L3 can be omitted.

**STANDARD SHEET 2-IIb**

**Sheet 2 *(continuation of Sheet 1)***




Undimensioned radii: R 0,5 mm to 0,7 mm

a Isolated cap

b No sharp edges acceptable at the transition region

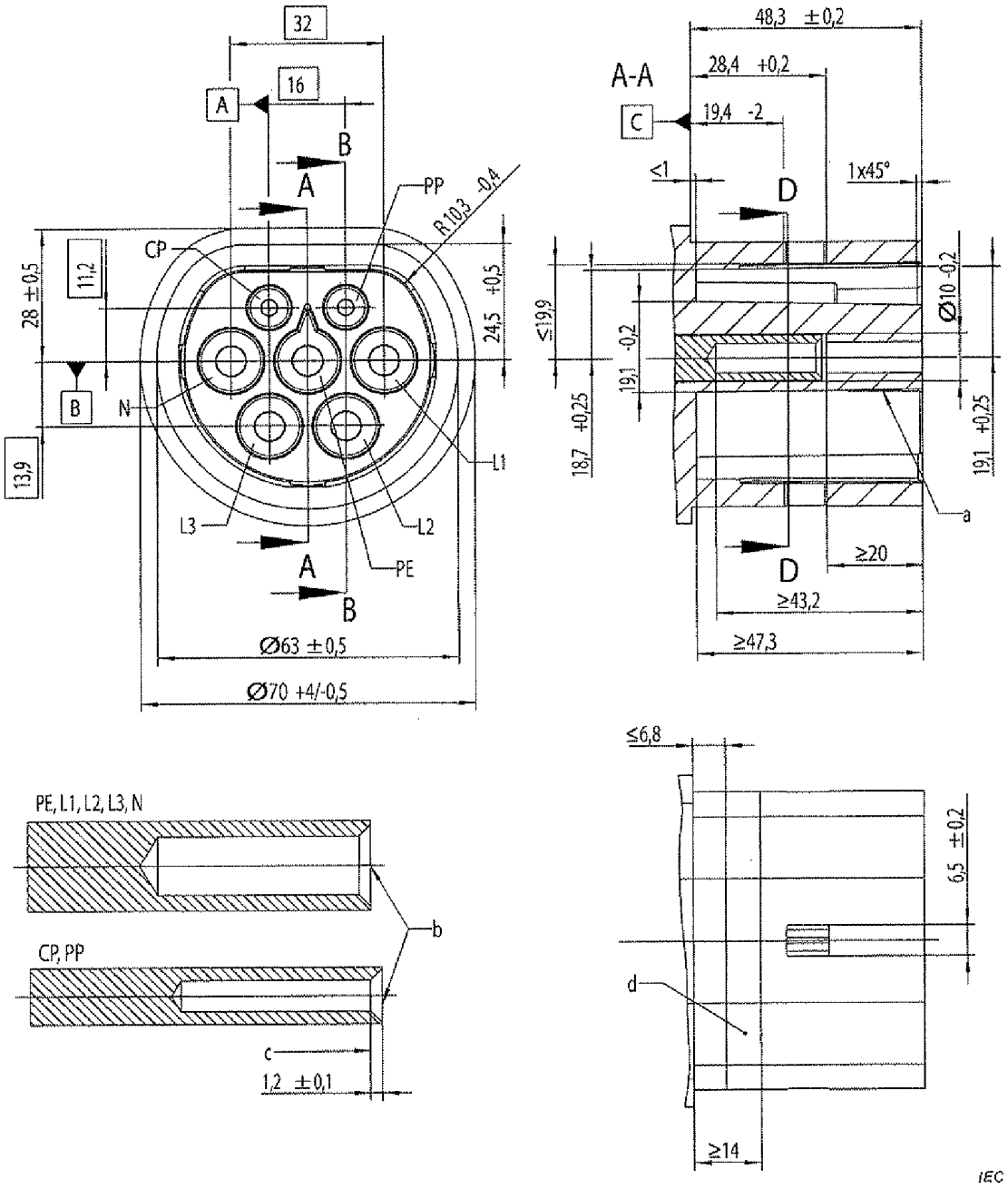
c The cavity shall have a rectangular shape with smooth edges with the dimensions indicated and shall be within the prescribed limits over the distance <14,5 mm. Beyond this, limits of the cavity may have a different shape and different dimensions.

d The cavity shall have a rectangular shape with smooth edges with the dimensions indicated and shall be within the prescribed limits over the distance <21,2 mm. Beyond these limits the cavity may have a different shape and dimension.

## STANDARD SHEET 2-IIc

### Sheet 1

### VEHICLE CONNECTOR
### 63 A, 480 V THREE-PHASE OR 70 A, 250 V SINGLE PHASE




Undimensioned radii: R 0,5 mm to 0,7 mm

a All the domes may be shortened by 17,8 mm if a shutter is used

b Tip of sleeves chamfered for easy insertion

c Contact point

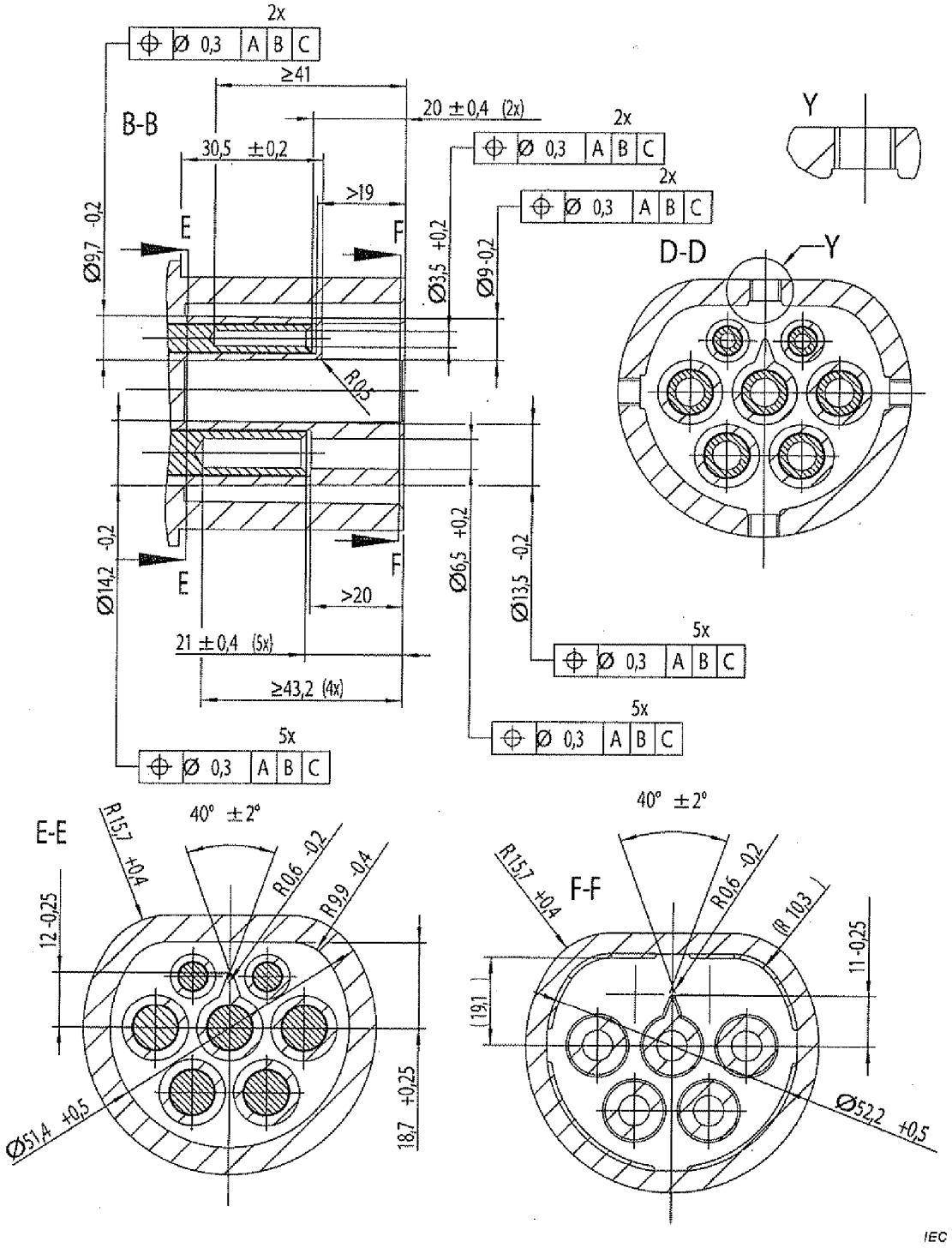
d Sealing area free of sinkage, toolcuts and ejectors

Surface roughness in sealing area: $R_a$ = 0,7 µm

For single phase connectors the contacts L2 and L3 including the surrounding insulation can be omitted

**STANDARD SHEET 2-IIc**

**Sheet 2 *(continuation of Sheet 1)***

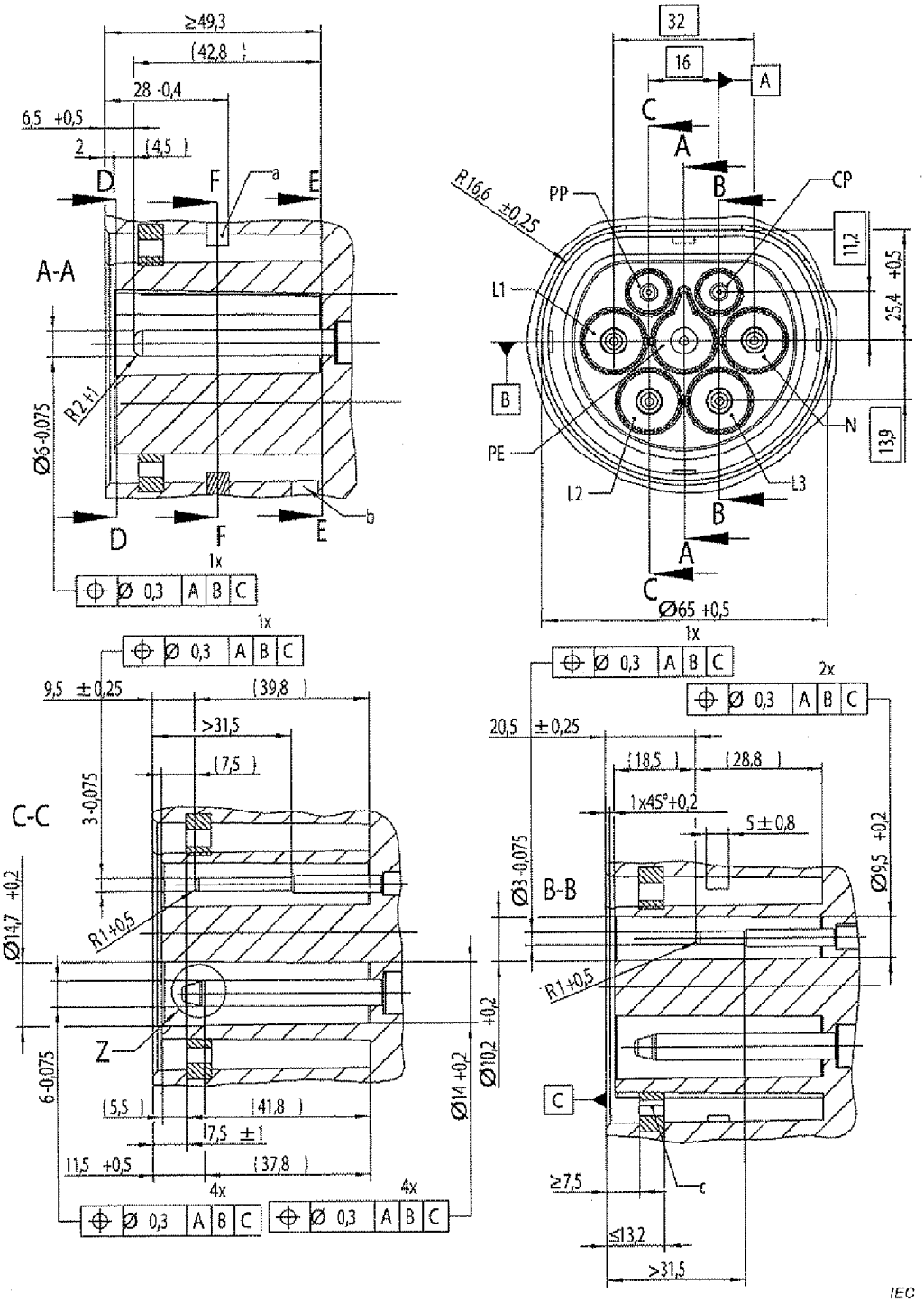



Undimensioned radii: R 0,5 mm to 0,7 mm

**STANDARD SHEET 2-IId**

**Sheet 1**

**VEHICLE INLET**
**63 A, 480 V THREE-PHASE OR 70 A, 250 V SINGLE PHASE**




a Latching means, construction to customers decision

b Optional drain hole

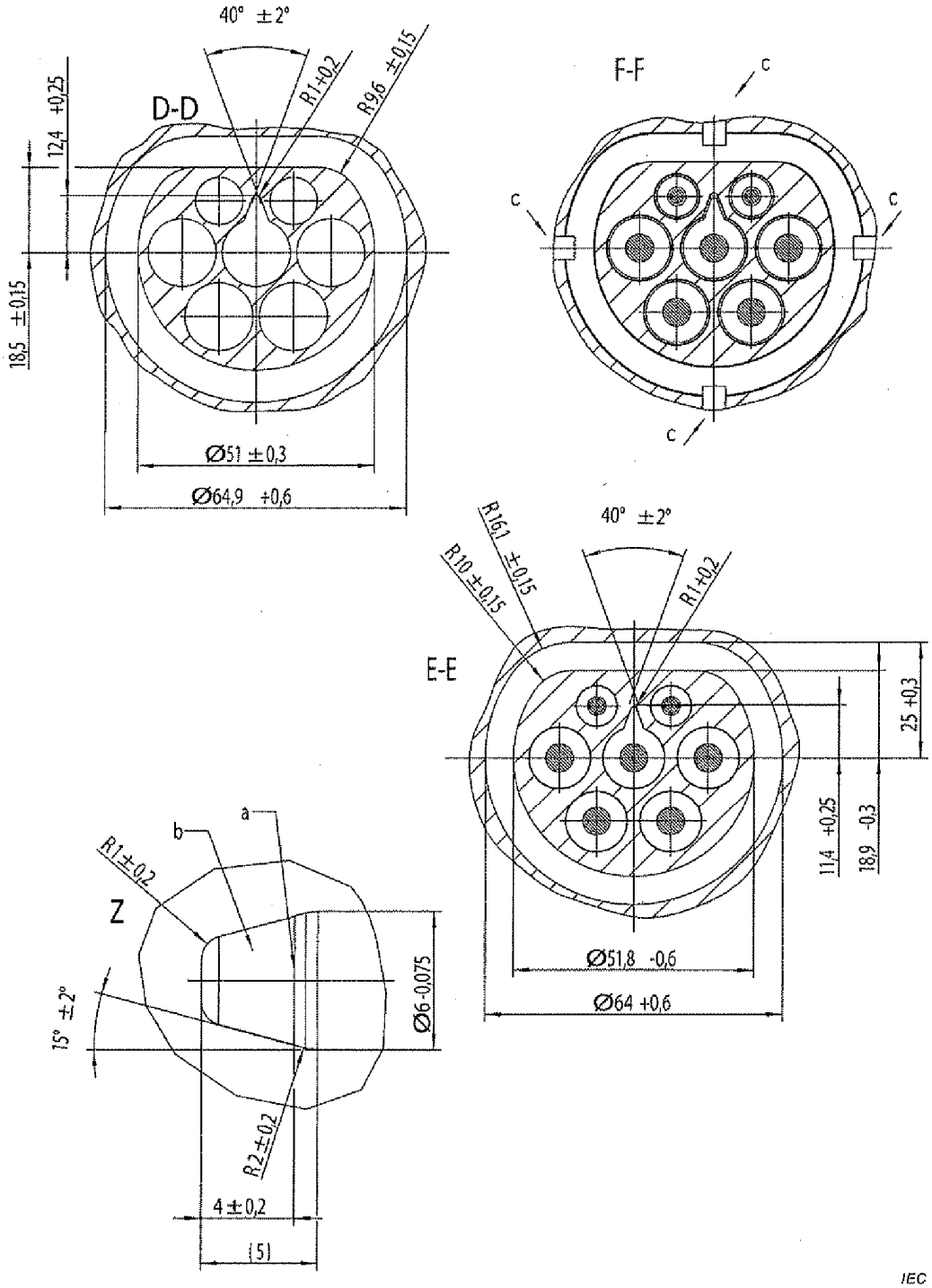
c Sealing area (optional sealing)

Undimensioned radii: R 0,5 mm to 0,7 mm

For single phase inlets the contacts L2 and L3 can be omitted.

**STANDARD SHEET 2-IId**

**Sheet 2 *(continuation of Sheet 1)***




Undimensioned radii: R 0,5 mm to 0,7 mm

a No sharp edges acceptable at the transition region

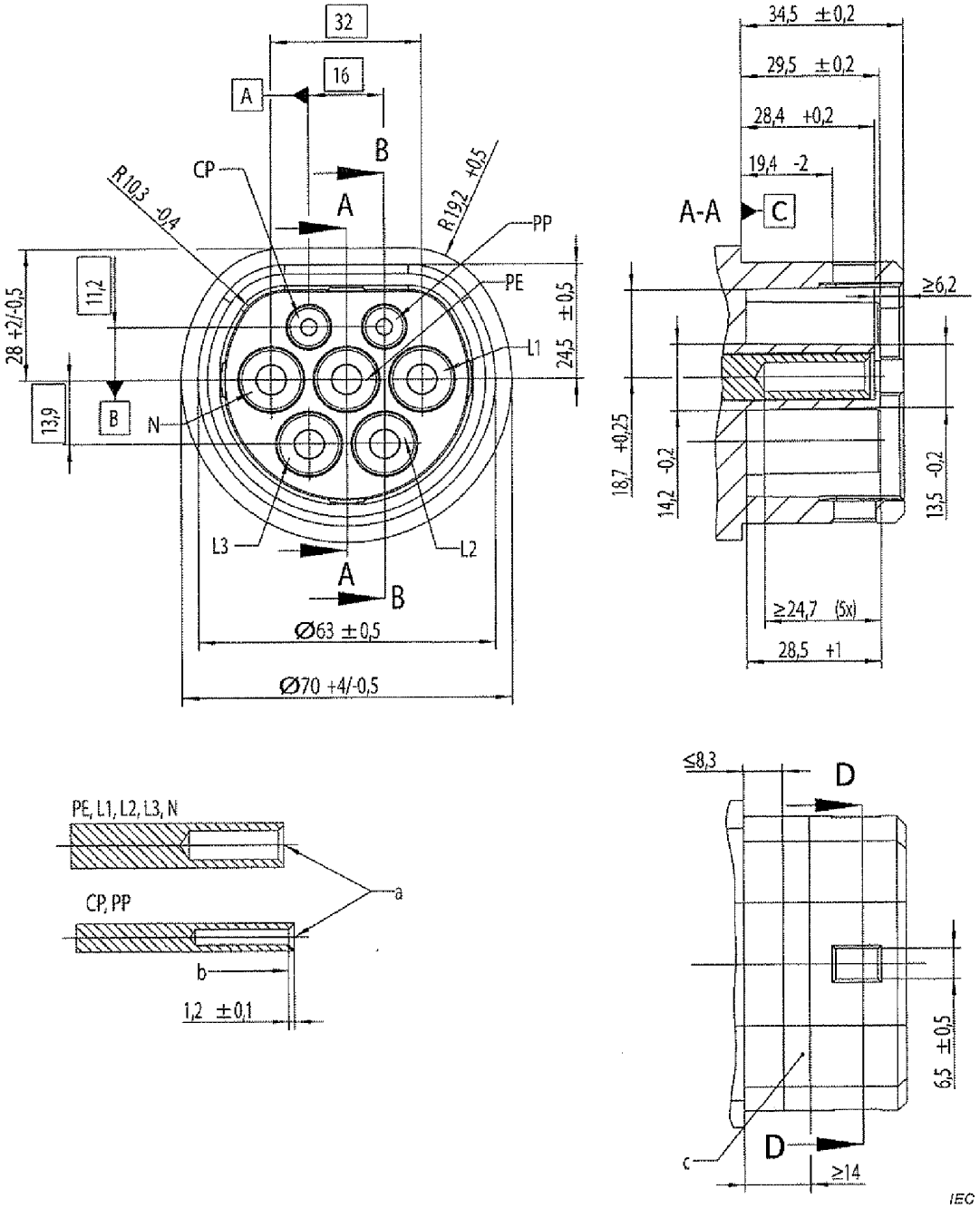
b Isolated cap

c Latching means positions. At least one latching means provided.

**STANDARD SHEET 2-IIe**

**Sheet 1**

**VEHICLE CONNECTOR**
**63 A, 480 V THREE-PHASE OR 70 A, 250 V SINGLE PHASE**




Undimensioned radii: R 0,5 mm to 0,7 mm

a Tip of sleeves chamfered for easy insertion

b Contact point

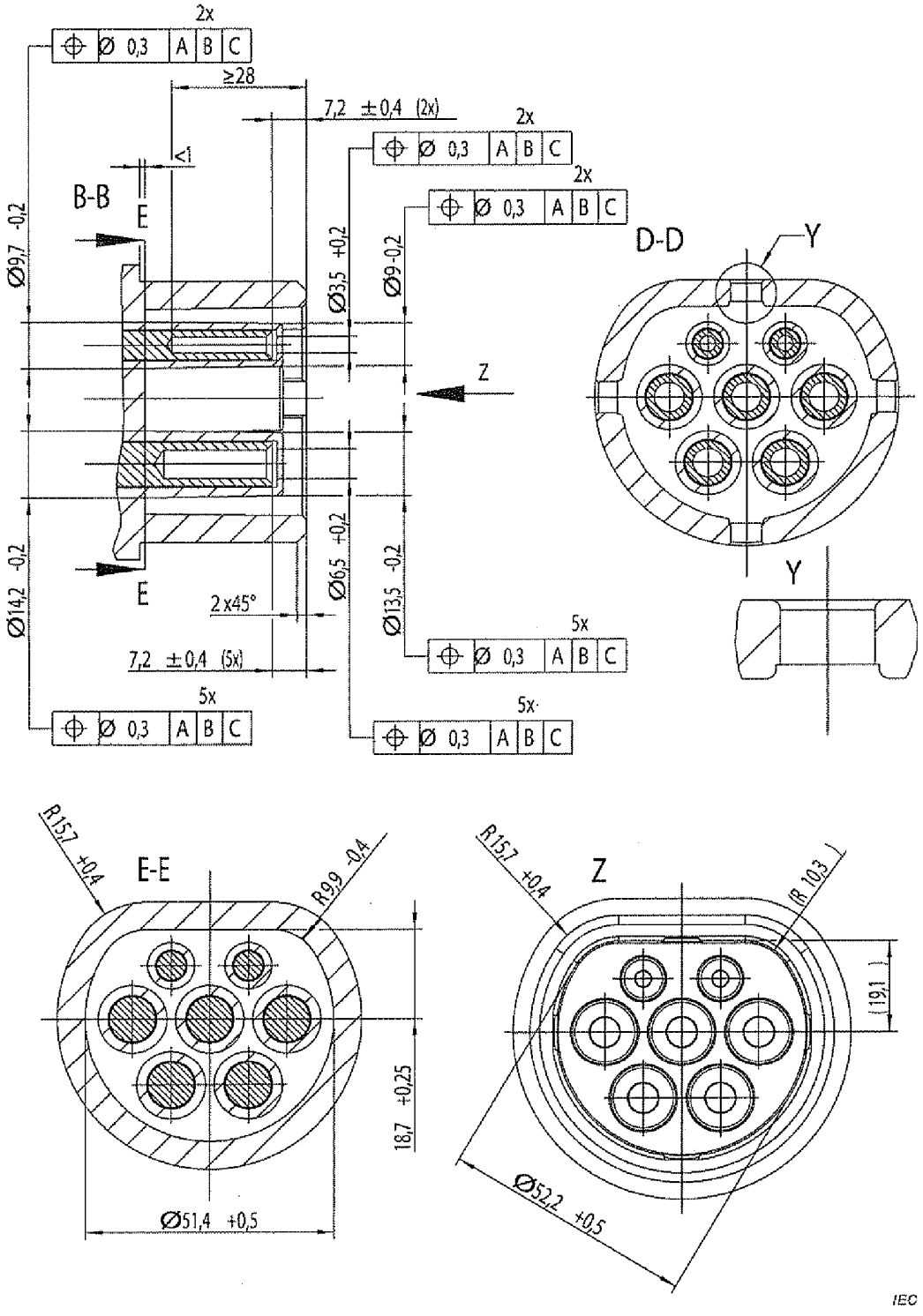
c Sealing area free of sinkage, toolcuts and ejectors

Surface roughness in sealing area: $R_a$=0,7 µm

For single phase connectors the contacts L2 and L3 including the surrounding insulation can be omitted.

**STANDARD SHEET 2-IIe**

**Sheet 2 *(continuation of Sheet 1)***

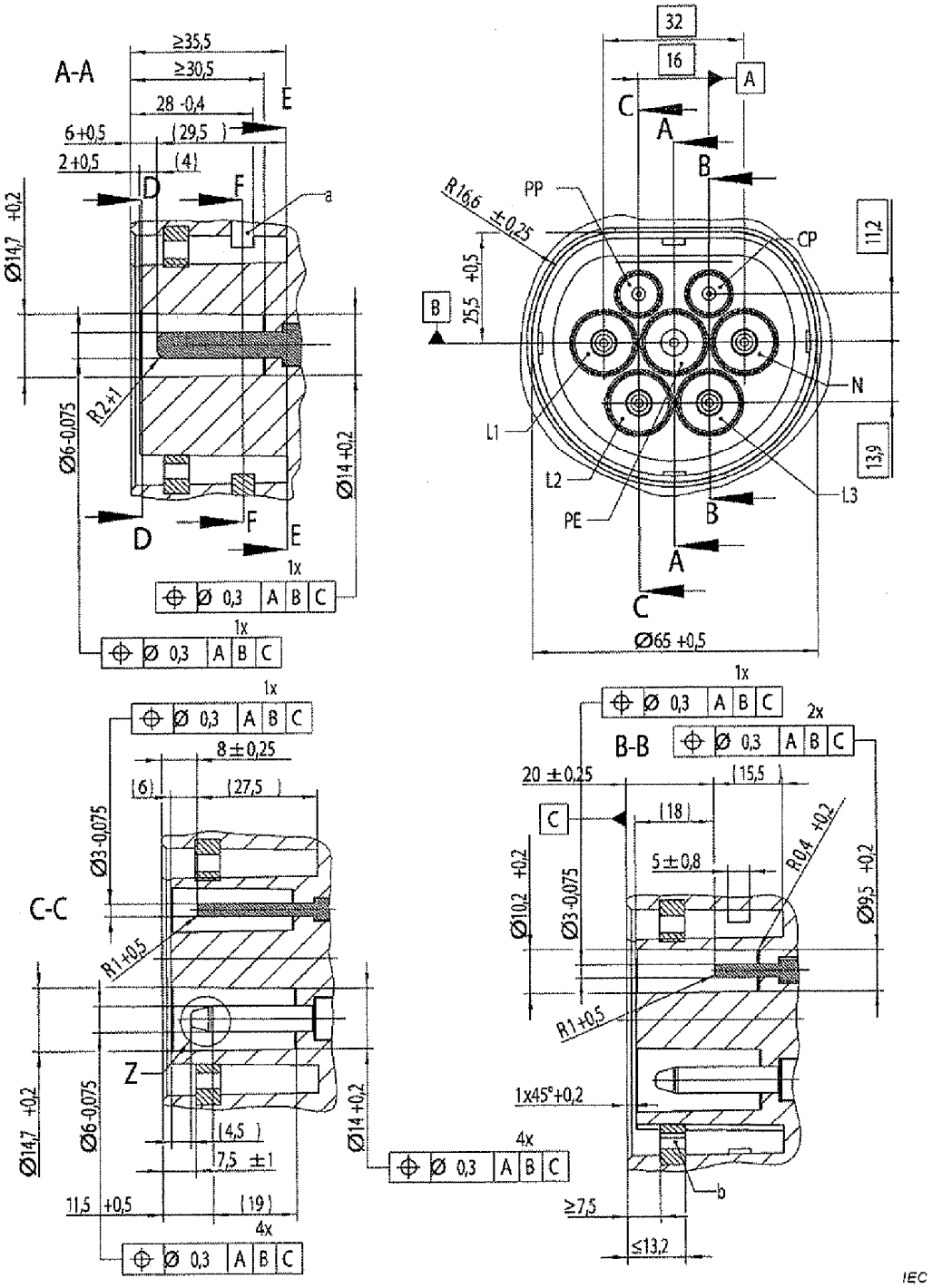



Undimensioned radii: R 0,5 mm to 0,7 mm

**STANDARD SHEET 2-IIf**

**Sheet 1**

**VEHICLE INLET**
**63 A, 480 V THREE-PHASE OR 70 A, 250 V SINGLE PHASE**




Undimensioned radii: R 0,5 mm to 0,7 mm

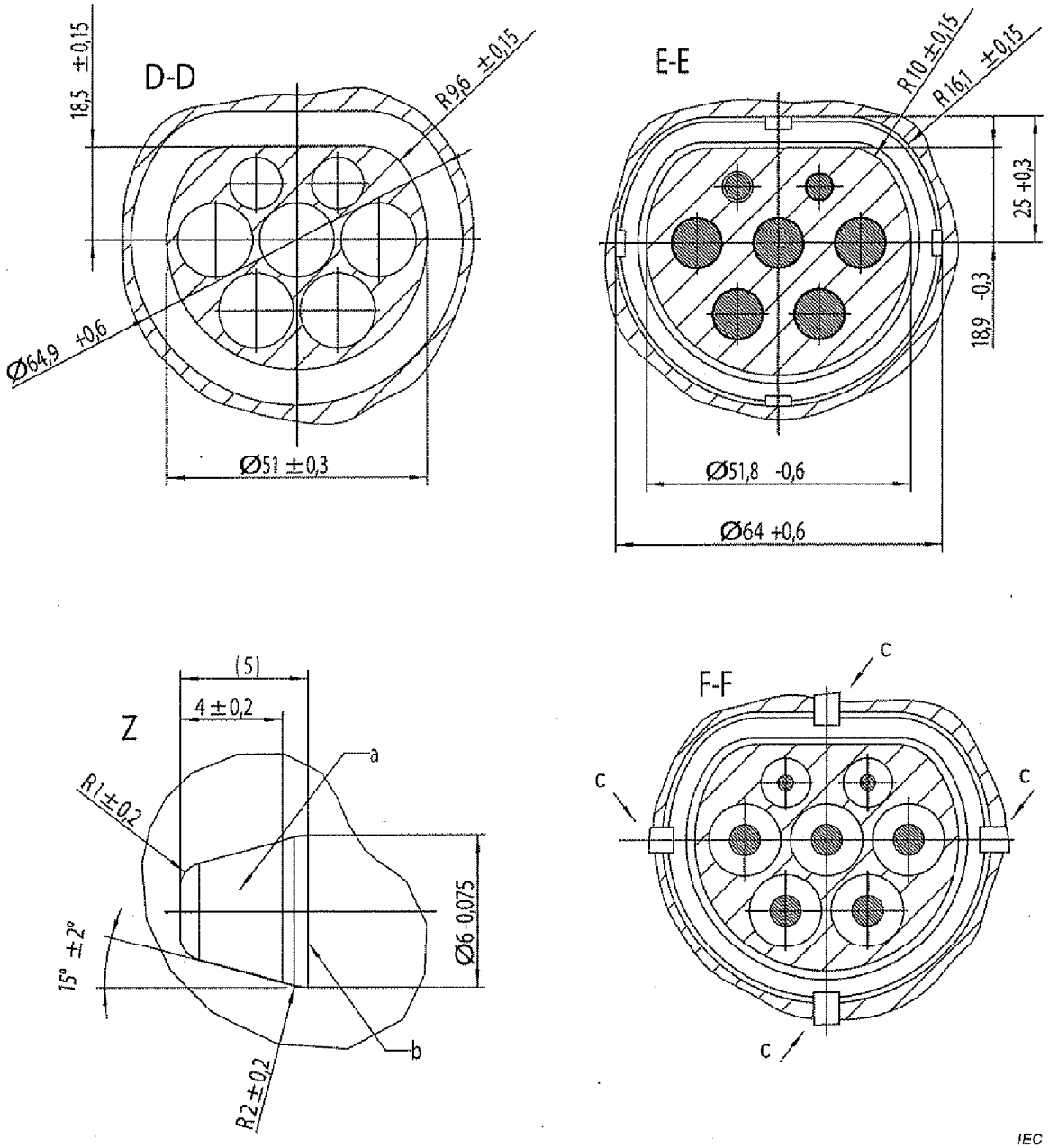
a Latching means construction to customer's decision

b Sealing area (optional sealing)

For single phase inlets the contacts L2 and L3 can be omitted.

**STANDARD SHEET 2-IIf**

**Sheet 2 *(continuation of Sheet 1)***




Undimensioned radii: R 0,5 mm to 0,7 mm

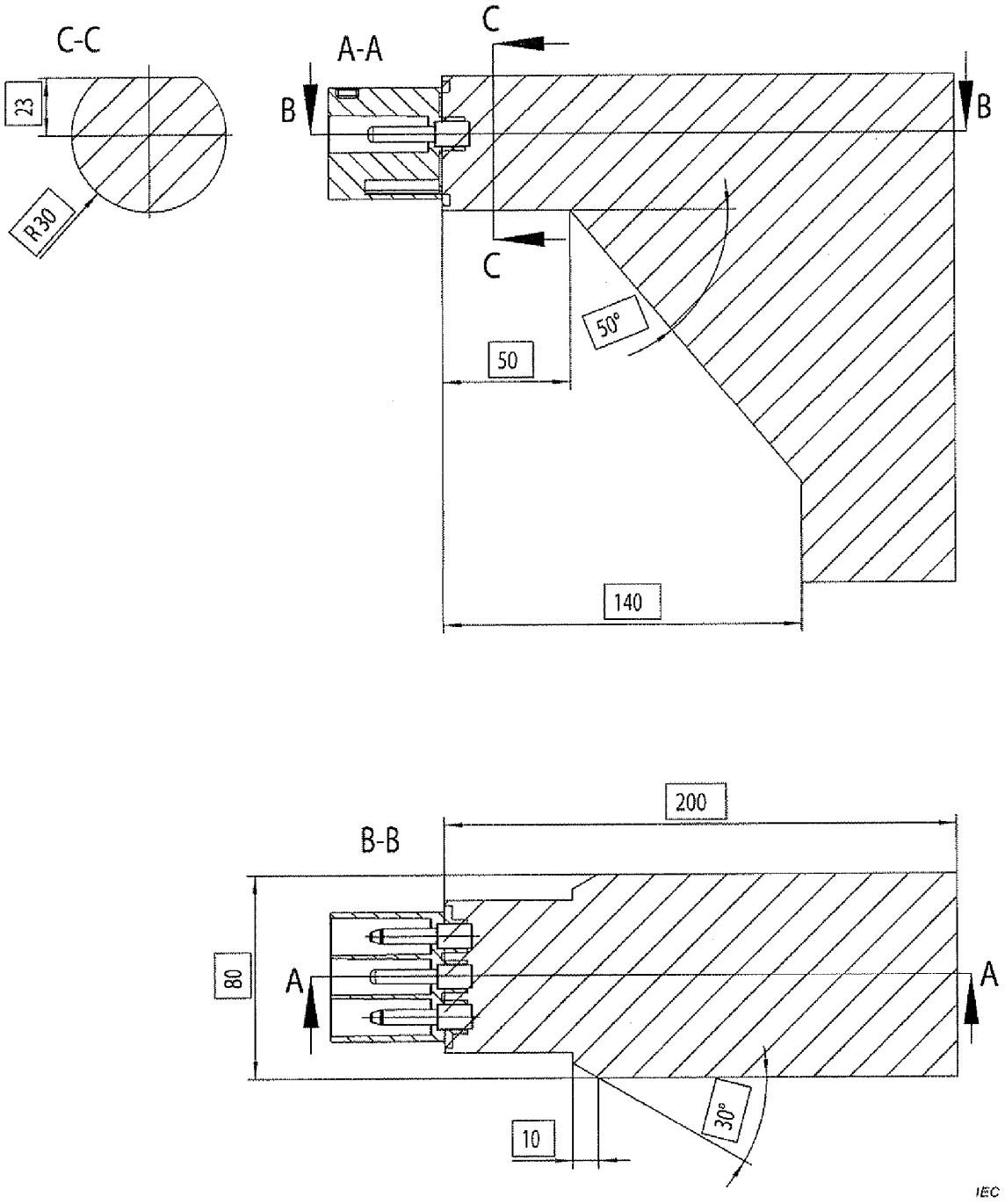
a Isolated cap

b No sharp edges acceptable at the transition region

c Latching means positions. At least one latching means provided.

**STANDARD SHEET 2-IIg**

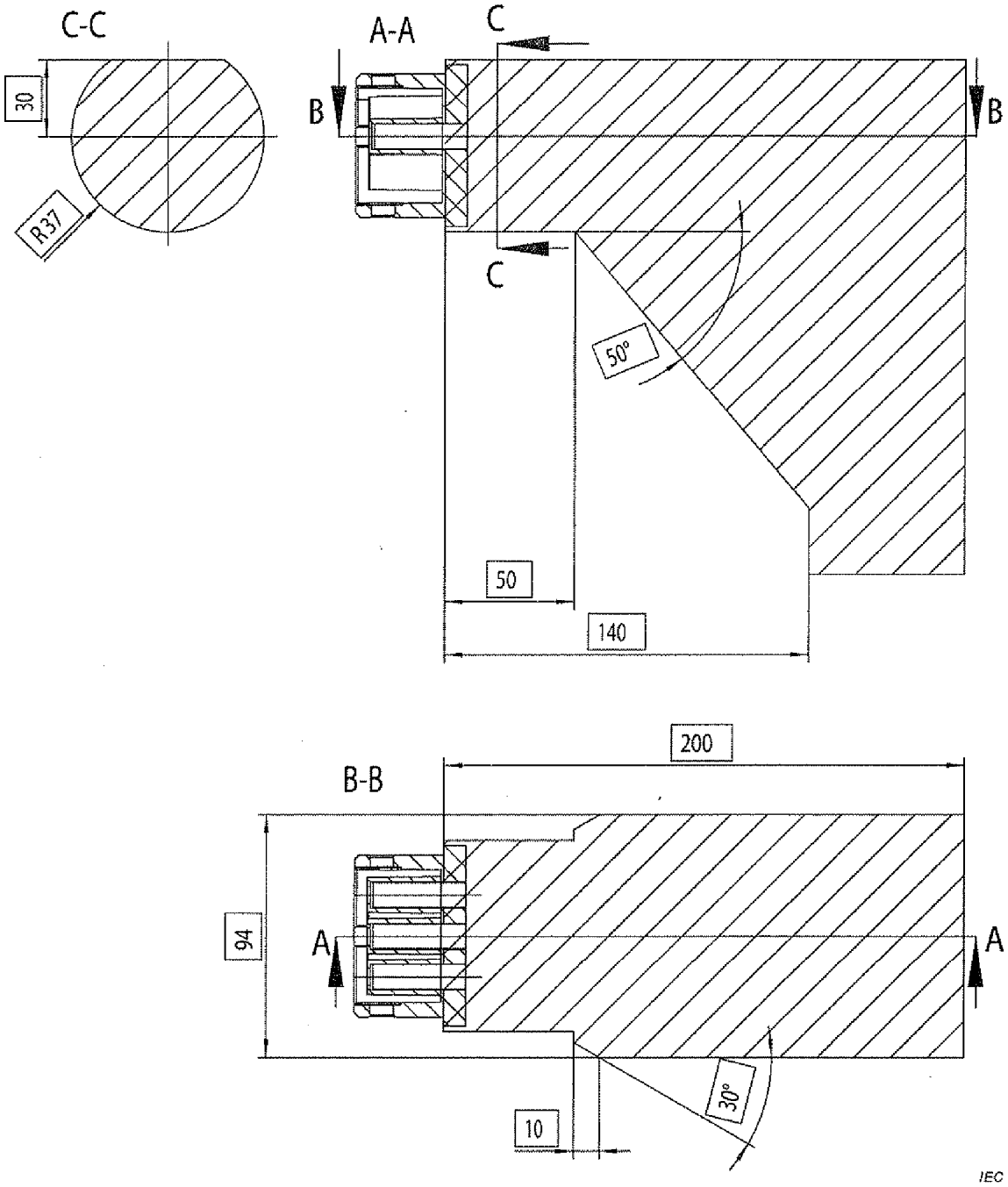
**PLUG**
**PACKAGING ROOM**




Plug body shape shall be within the shaded area.

**STANDARD SHEET 2-IIh**

**VEHICLE CONNECTOR PACKAGING ROOM**




Vehicle connector body shape shall be within the shaded area.

## CONFIGURATION TYPE 3

## STANDARD SHEETS 2-III

## 63 A, 480 V THREE-PHASE, 16 A AND 32 A, 250 V SINGLE PHASE ACCESSORIES

### Overview

The standard sheets 2-III apply to configuration type 3: 63 A, 480 V a.c. three-phase and 250 V a. c. single-phase accessories.

For configuration type 3, the following specifications are applicable:

Interlocking of the accessories is provided and it is intended to be used according to the requirements on IEC 61851-1:2010.

Interlocking and latching of accessories rated 63 A is mandatory.

NOTE 1 Interlocking can be performed by mechanical or electromechanical means.

The interlocking means shall offer a feedback to show that the mechanism is in correct engagement.

The pilot contact is intended to be used according to of IEC 61851-1:2010, Annex A.

When the PP contact is used for the simultaneous proximity detection and current capability coding of the cable assembly set the contact is intended to be used according to Clause B.5 of IEC 61851-1:2010, "System for simultaneous proximity detection and current coding for vehicle connectors and plugs."

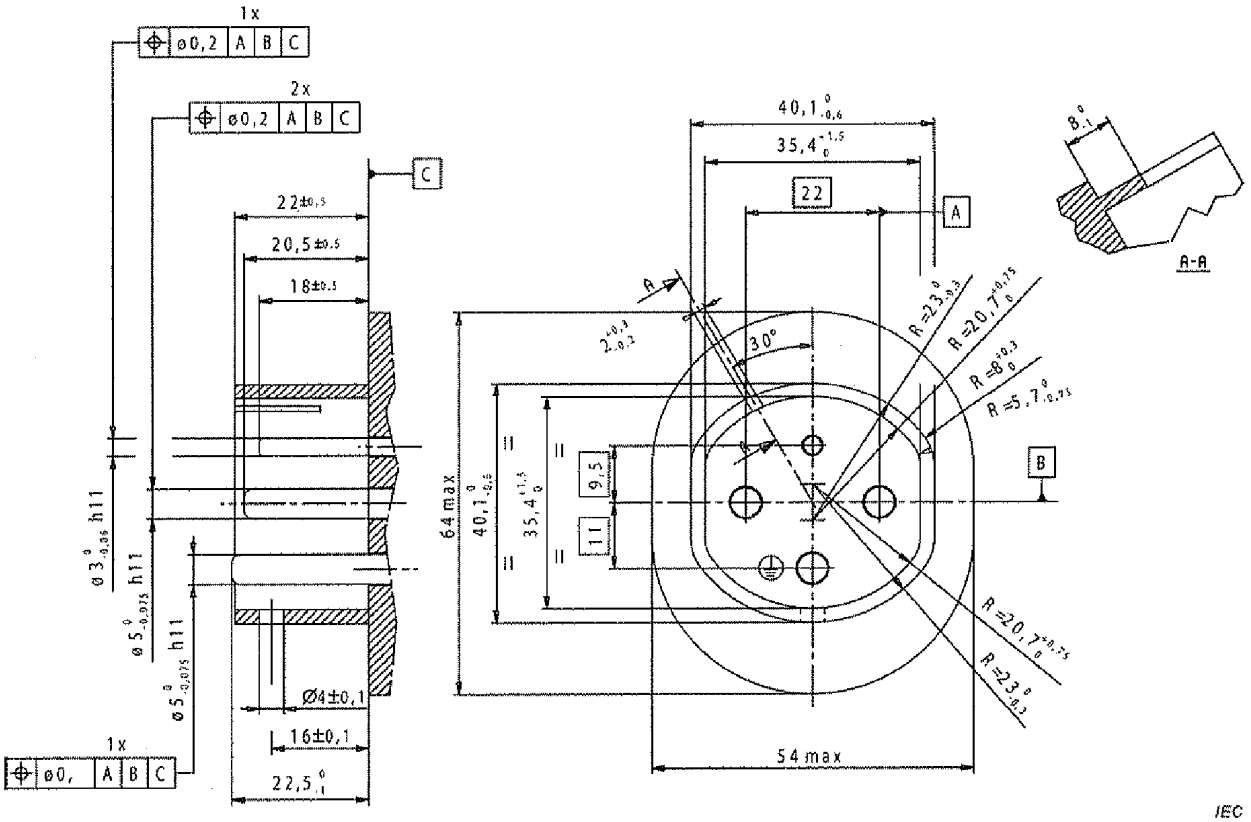
Standard Sheets 2–IIId are latching means and recommendations for packaging rooms.

NOTE 2 Keeping plugs and vehicle connectors in the shaded areas and keeping any part of socket-outlets/vehicle inlets outside the shaded areas will guarantee compatibility.

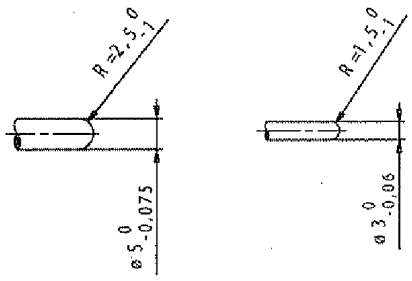
## STANDARD SHEETS 2-IIIa

### Sheet 1

### 16 A, 250 V SINGLE-PHASE PLUG WITH 1 PILOT CONTACT



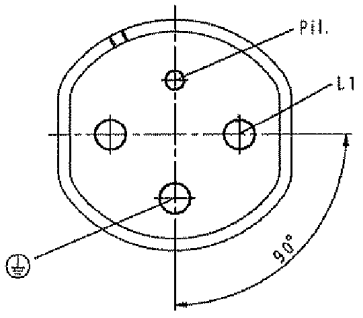

**End of pins**




Earth/Phase/Neutral contacts

Pilot

**Arrangement of pins**




Front view of pins of plug

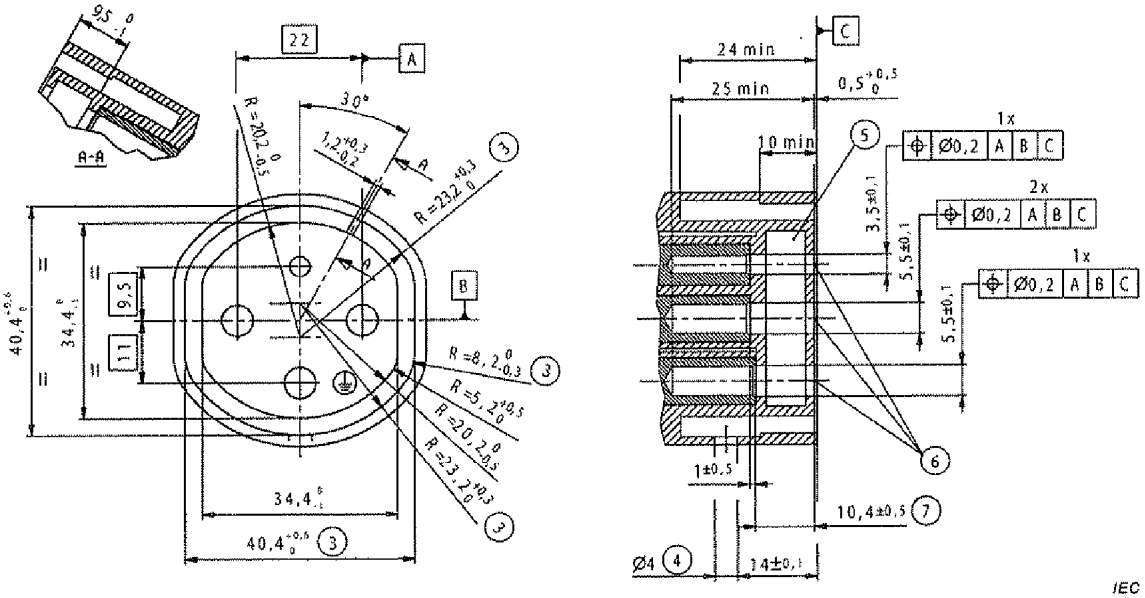
IEC

*Dimensions in millimetres*

## STANDARD SHEET 2-IIIa

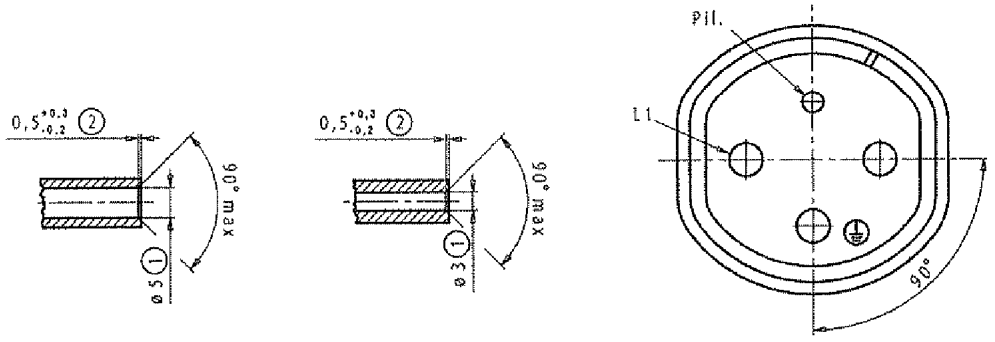
### Sheet 2 *(continuation of Sheet 1)*

### 16 A, 250 V SINGLE-PHASE SOCKET-OUTLET WITH 1 PILOT CONTACT




Holes or recesses in the front face, if any, other than those for contact tubes, shall not have a depth of more than 10 mm.

**End of contact tubes** **Arrangement of contact tubes**




Earth/Phase/Neutral contacts Pilot Front view of contact tubes of socket-outlet

IEC

*Dimensions in millimetres*

(1) The dimensions refer to the pins; the contact tubes need not be cylindrical.

(2) The beveling of the contact tubes may be well rounded off towards the internal cylindrical surface within a distance of 1,5 times the indicated values.

(3) The indicated dimension shall be within the prescribed limits of at least 10 mm. Beyond this, they may be larger but not smaller.

(4) This opening may be a hole with 4 mm diameter minimum or a slot 4 mm minimum width

(5) Space for shutters. If any, they are compulsory for phase and neutral contact tubes.

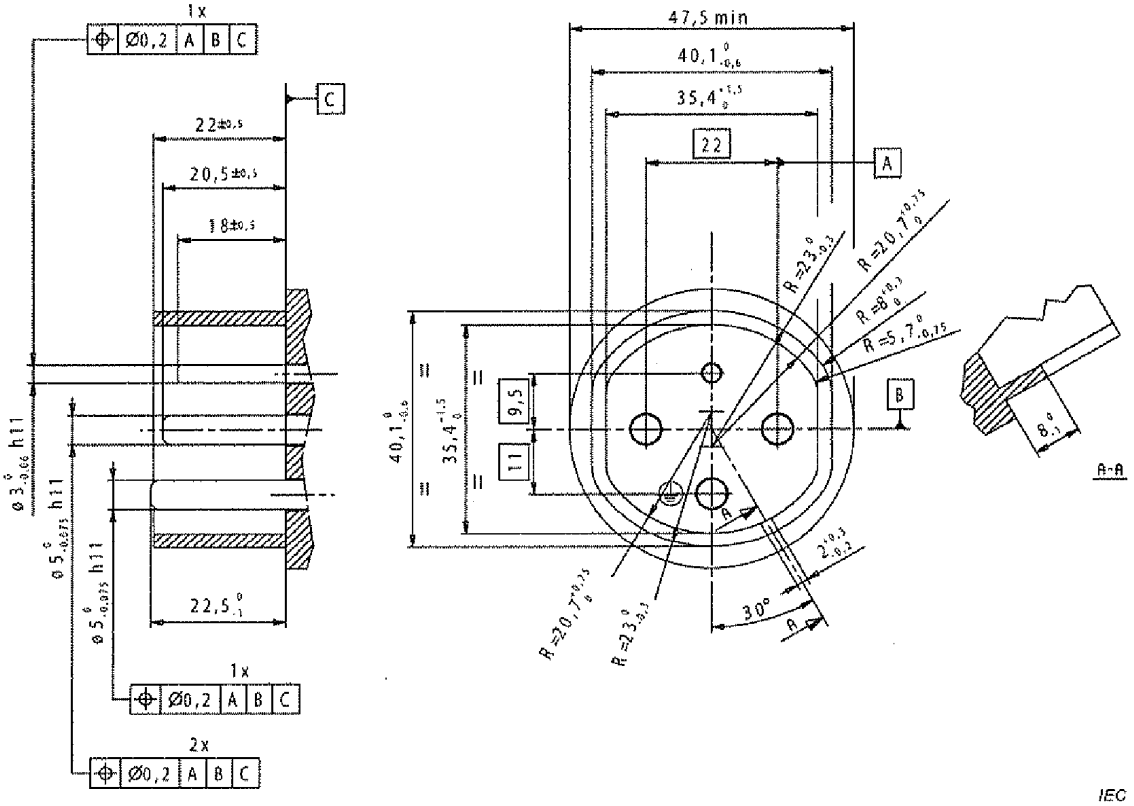
(6) Pin entry holes shall be rounded off or beveled.

(7) This dimension is measured from the extremity of the contact tube.

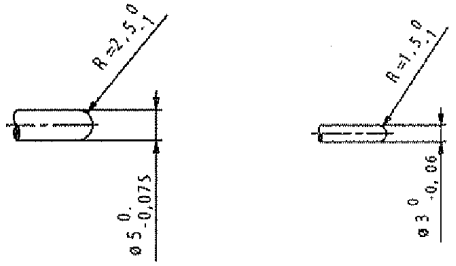
## STANDARD SHEET 2-IIIa

### Sheet 3 *(continuation of Sheet 2)*

### 16 A, 250 V SINGLE-PHASE VEHICLE INLET WITH 1 PILOT CONTACT

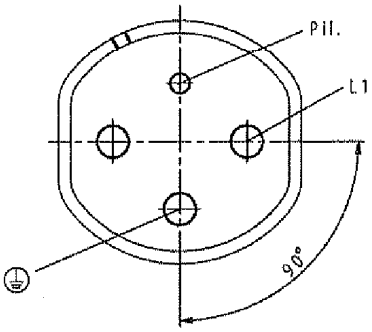



**End of pins**




Earth/Phase/Neutral contacts Auxiliary contacts

**Arrangement of pins**




Front view of pins of vehicle inlet

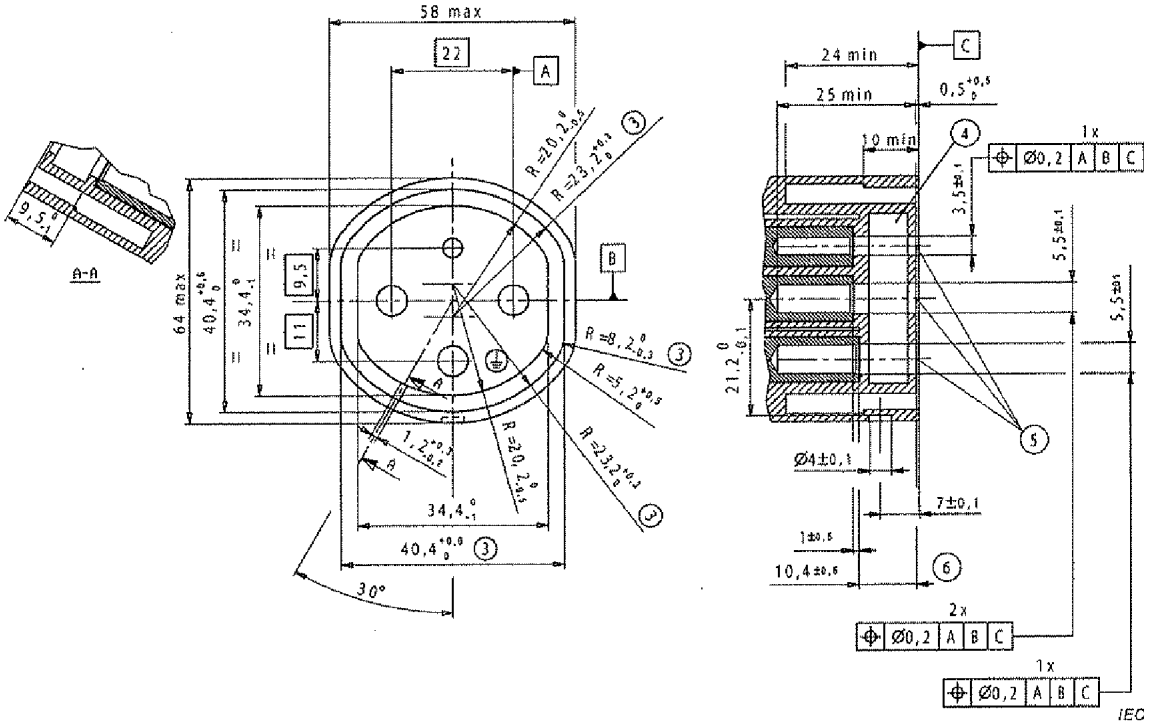
IEC

*Dimensions in millimetres*

## STANDARD SHEET 2-IIIa

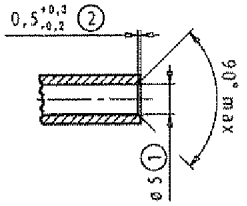
### Sheet 4 *(continuation of Sheet 3)*

### 16 A, 250 V SINGLE-PHASE VEHICLE CONNECTOR WITH 1 PILOT CONTACT

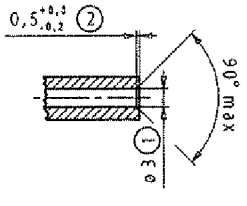



Holes or recesses in the front face, if any, other than those for contact tubes, shall not have a depth of more than 10 mm.

**End of contact tubes**

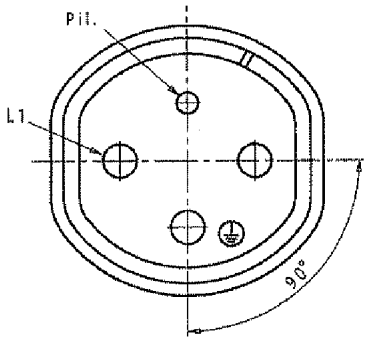



Earth/Phase/Neutral contacts




Pilot contact

**Arrangement of contact tubes**




Front view of contact tubes of vehicle connector

IEC

*Dimensions in millimetres*

(1) The dimensions refer to the pins; the contact tubes need not be cylindrical.

(2) The beveling of the contact tubes may be well rounded off towards the internal cylindrical surface within a distance of 1,5 times the indicated values.

(3) The indicated dimension shall be within the prescribed limits of at least 10 mm. Beyond this, they may be larger but not smaller.

(4) This opening may be a hole with 4 mm diameter minimum or a slot 4 mm minimum width.

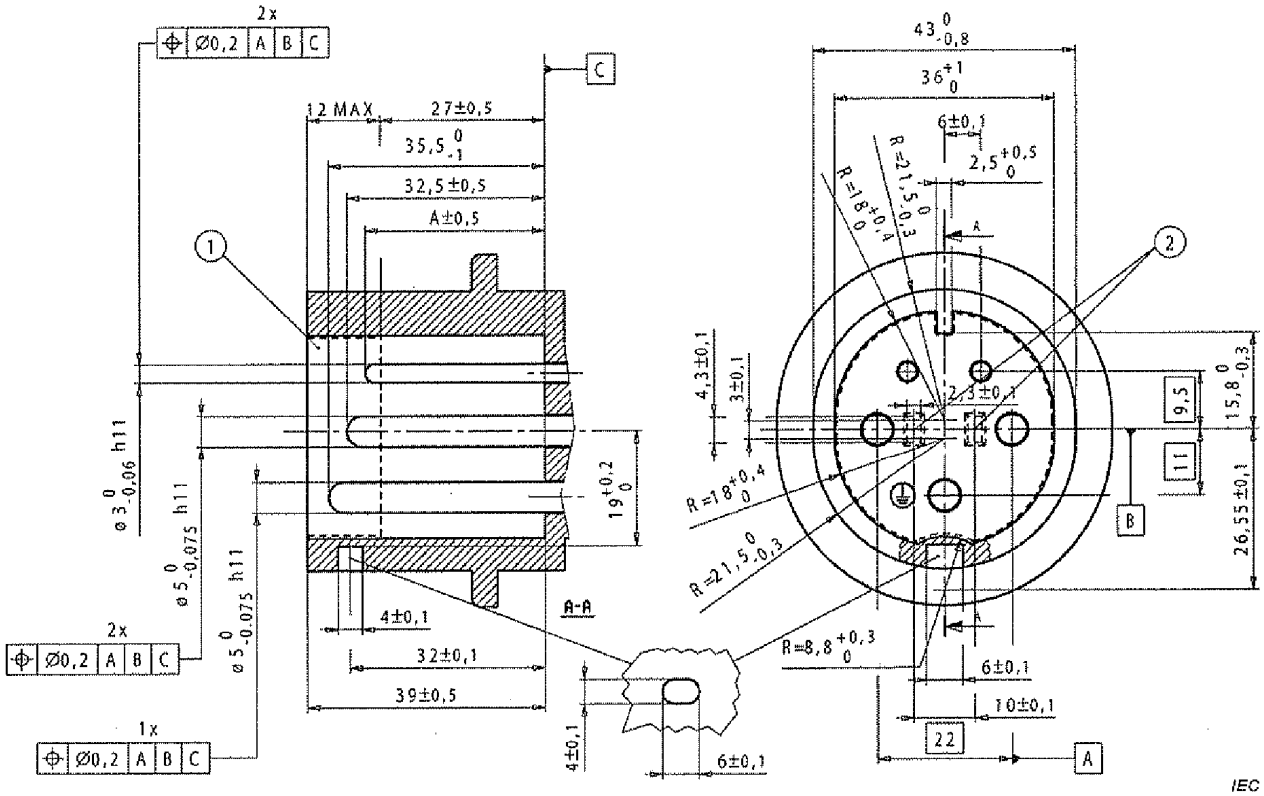
(5) Space for shutters. If any, they are compulsory for phase and neutral contact tubes.

(6) Pin entry holes shall be rounded off or beveled.

## STANDARD SHEET 2-IIIb

### Sheet 1

### 32 A, 250 V SINGLE-PHASE PLUG WITH 2 PILOT CONTACTS

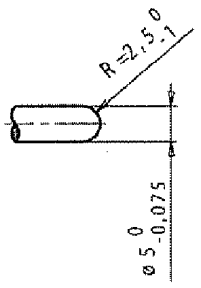



(1) Space for shutters. They are compulsory for phase and neutral contact pins.

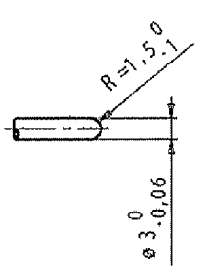
(2) Shutter pin entry holes shall be rounded off or beveled.

| Size of auxiliary contacts | |
|---|---|
| | A |
| CP | 29,5 |
| PP / CS | 34,0 |

**End of pins**

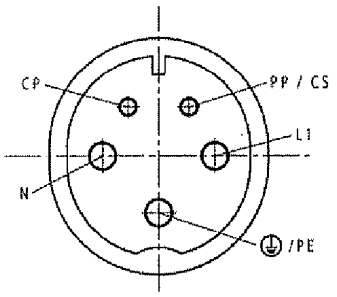



Earth/Phase/Neutral contacts




Auxiliary contacts

**Arrangement of pins**




Front view of pins of plug

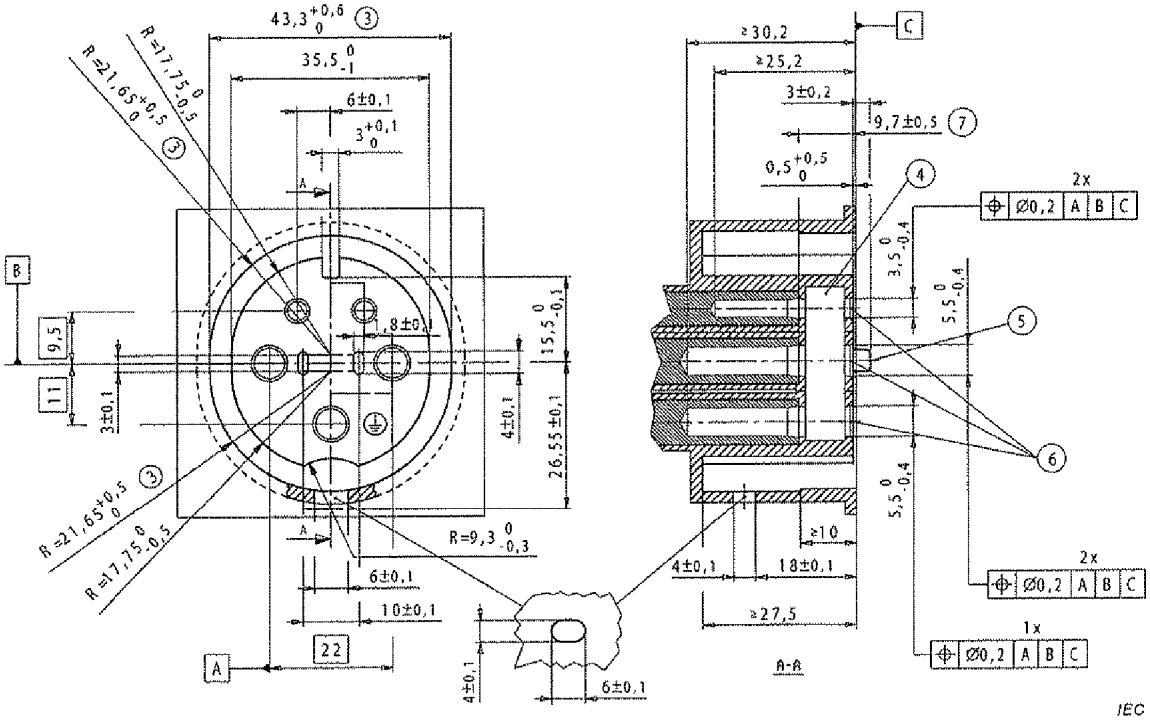
IEC

*Dimensions in millimetres*

## STANDARD SHEET 2-IIIb

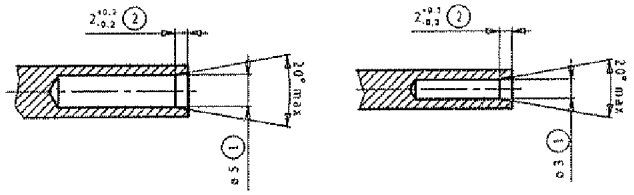
### Sheet 2 *(continuation of Sheet 1)*

### 32 A, 250 V SINGLE-PHASE SOCKET-OUTLET WITH 2 PILOT CONTACTS




Holes or recesses in the front face, if any, other than those for contact tubes, shall not have a depth of more than 10 mm.

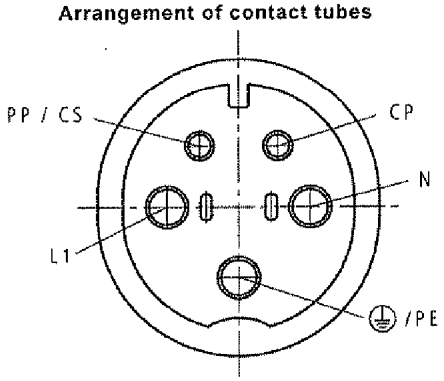
**End of contact tubes**




Earth/Phase/Neutral contacts

Auxiliary contacts

**Arrangement of contact tubes**




Front view of contact tubes of socket-outlet

IEC

*Dimensions in millimetres*

(1) The dimensions refer to the pins; the contact tubes need not be cylindrical.

(2) The beveling of the contact tubes may be well rounded off towards the internal cylindrical surface within a distance of 1,5 times the indicated values.

(3) The indicated dimension shall be within the prescribed limits of at least 10 mm. Beyond this, they may be larger but not smaller.

(4) This opening may be a hole with 4 mm diameter minimum or a slot 4 mm minimum width.

(5) Space for shutters. If any, they are compulsory for phase and neutral contact tubes.

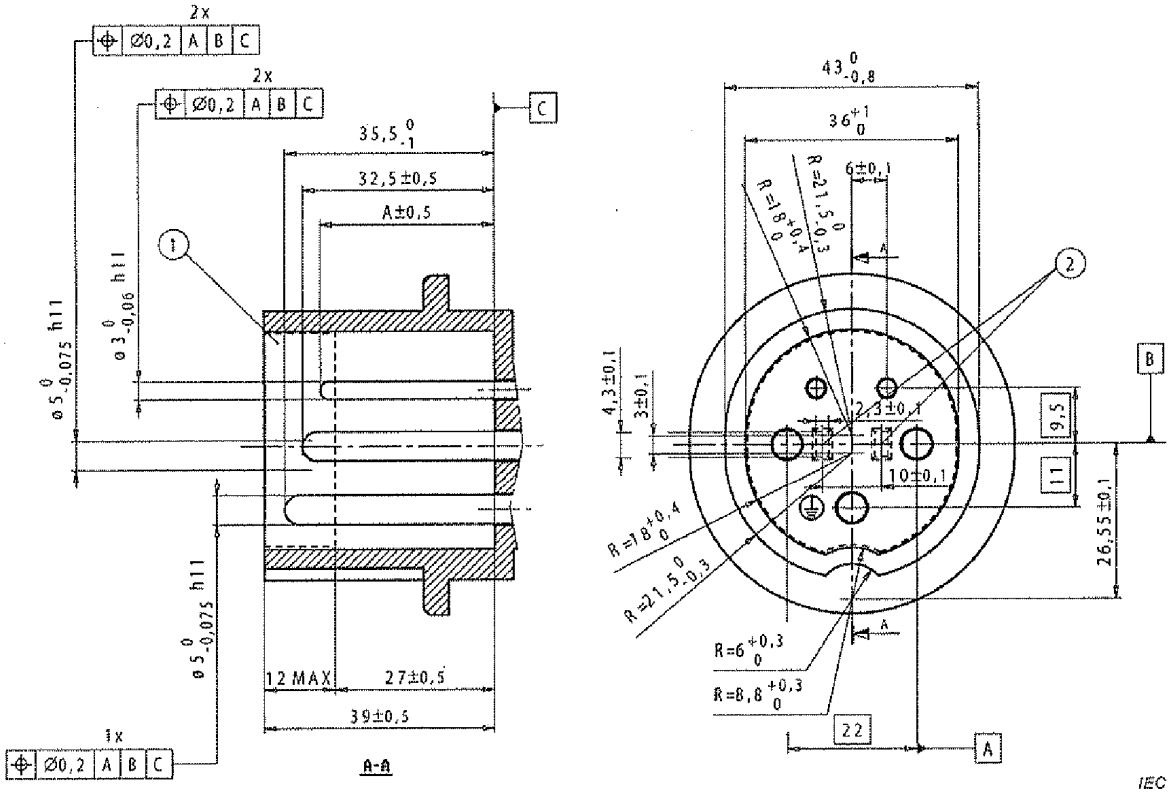
(6) Pin entry holes shall be rounded off or beveled.

(7) This dimension is measured from the extremity of the contact tube.

## STANDARD SHEET 2-IIIb

### Sheet 3 *(continuation of Sheet 2)*

### 32 A, 250 V SINGLE-PHASE VEHICLE INLET WITH 2 PILOT CONTACTS

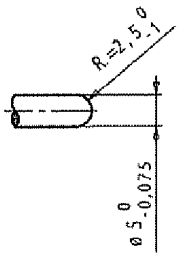



(1) Space for shutters. They are compulsory for phase and neutral contact pins

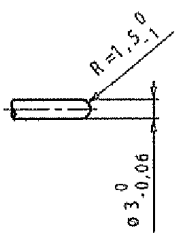
(2) Shutter pin entry holes shall be rounded off or beveled.

| Size of auxiliary contacts | A |
|---|---|
| CP | 29,5 |
| PP / CS | 34,0 |

**End of pins**

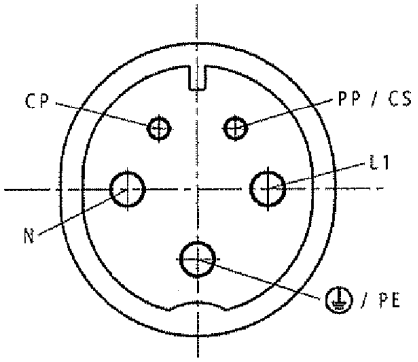



Earth/Phase/Neutral contacts




Auxiliary contacts

**Arrangement of pins**




Front view of pins of vehicle inlet

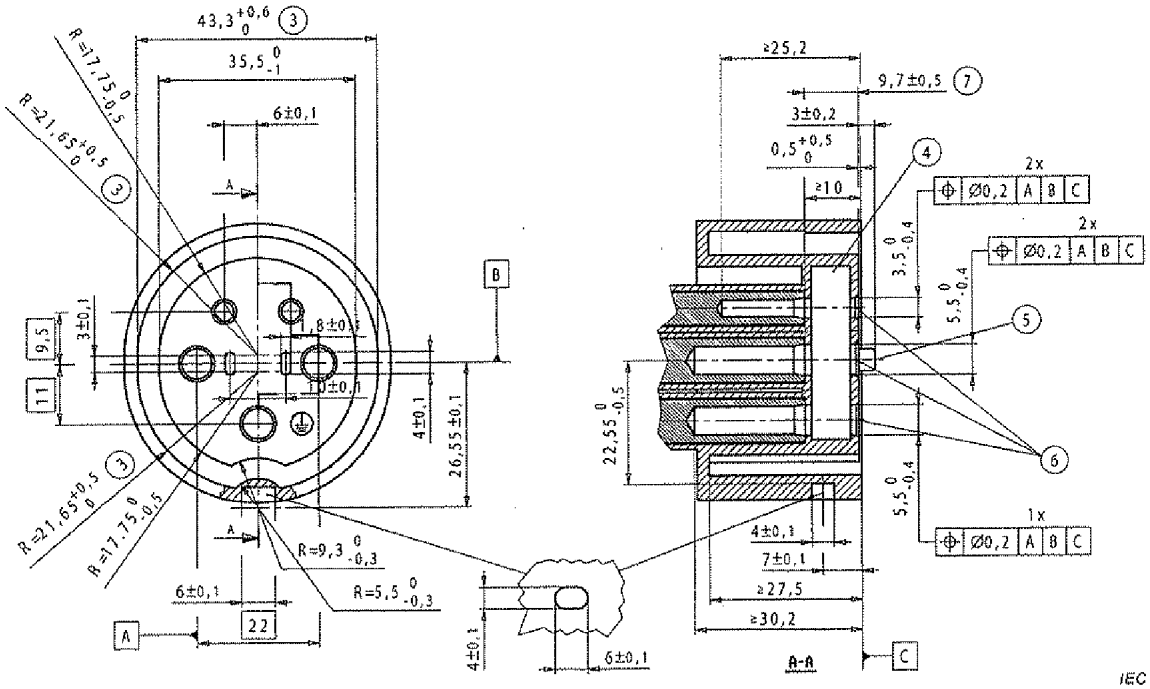
IEC

*Dimensions in millimetres*

**STANDARD SHEET 2-IIIb**

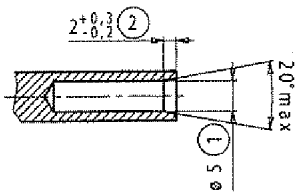
**Sheet 4 *(continuation of Sheet 3)***

**32 A, 250 V SINGLE-PHASE VEHICLE CONNECTOR WITH 2 PILOT CONTACTS**

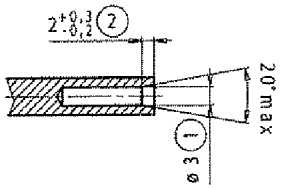



Holes or recesses in the front face, if any, other than those for contact tubes, shall not have a depth of more than 10 mm.

**End of contact tubes**

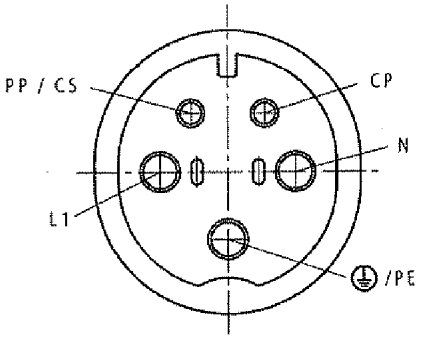



Earth/Phase/Neutral contacts




Auxiliary contacts

**Arrangement of contact tubes**




Front view of contact tubes of vehicle connector

IEC

*Dimensions in millimetres*

(1) The dimensions refer to the pins; the contact tubes need not be cylindrical.

(2) The beveling of the contact tubes may be well rounded off towards the internal cylindrical surface within a distance of 1,5 times the indicated values.

(3) The indicated dimension shall be within the prescribed limits of at least 10 mm. Beyond this, they may be larger but not smaller.

(4) This opening may be a hole with 4 mm diameter minimum or a slot 4 mm minimum width.

(5) Space for shutters. If any, they are compulsory for phase and neutral contact tubes.

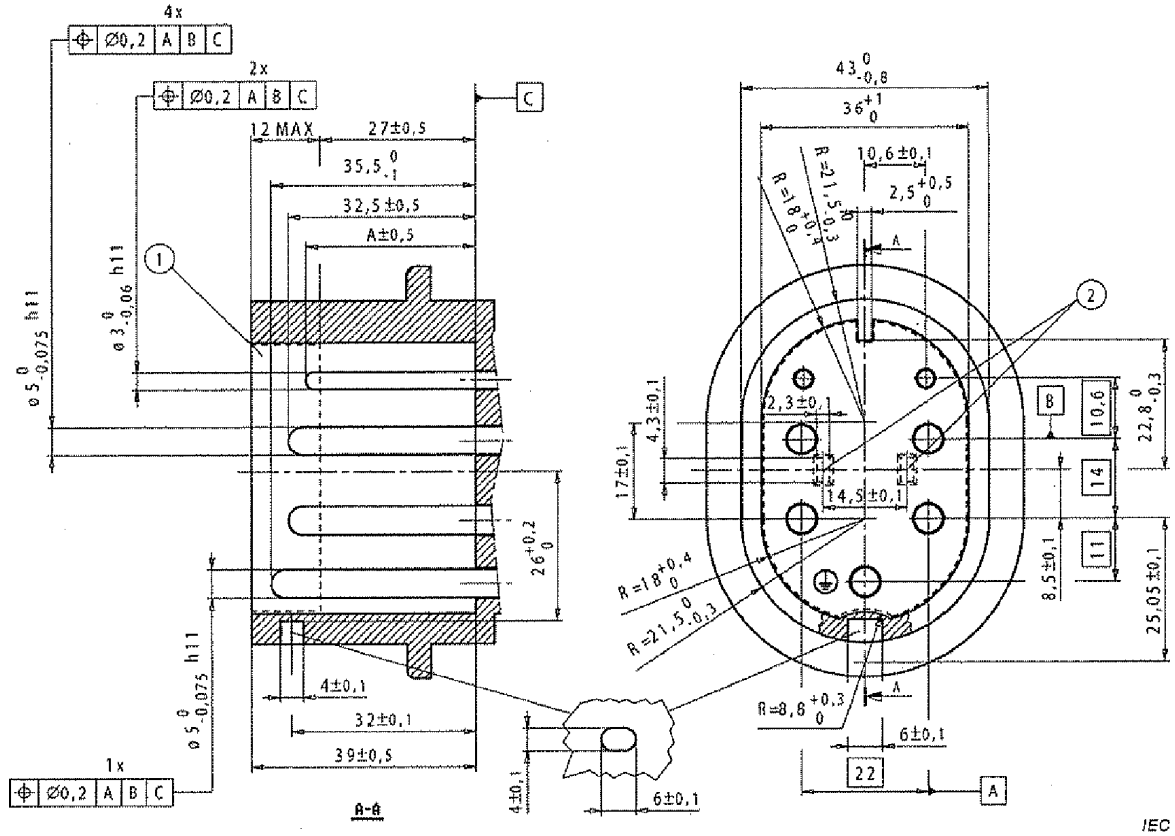
(6) Pin entry holes shall be rounded off or beveled.

(7) This dimension is measured from the extremity of the contact tube.

## STANDARD SHEET 2-IIIc

### Sheet 1

### 63 A, 480 V THREE-PHASE PLUG WITH 2 PILOT CONTACTS

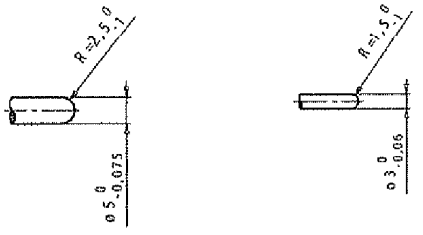



(1) Space for shutters. They are compulsory for phase and neutral contact pins.

(2) Shutter pin entry holes shall be rounded off or beveled.

| Size of auxiliary contacts | |
|---|---|
| | A |
| CP | 29,5 |
| PP / CS | 34,0 |

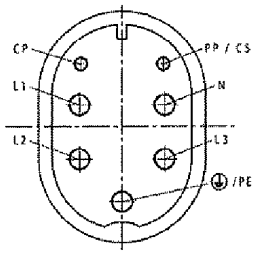
**End of pins**




Earth/Phase/Neutral contacts

Auxiliary contacts

**Arrangement of pins**




Front view of pins of plug

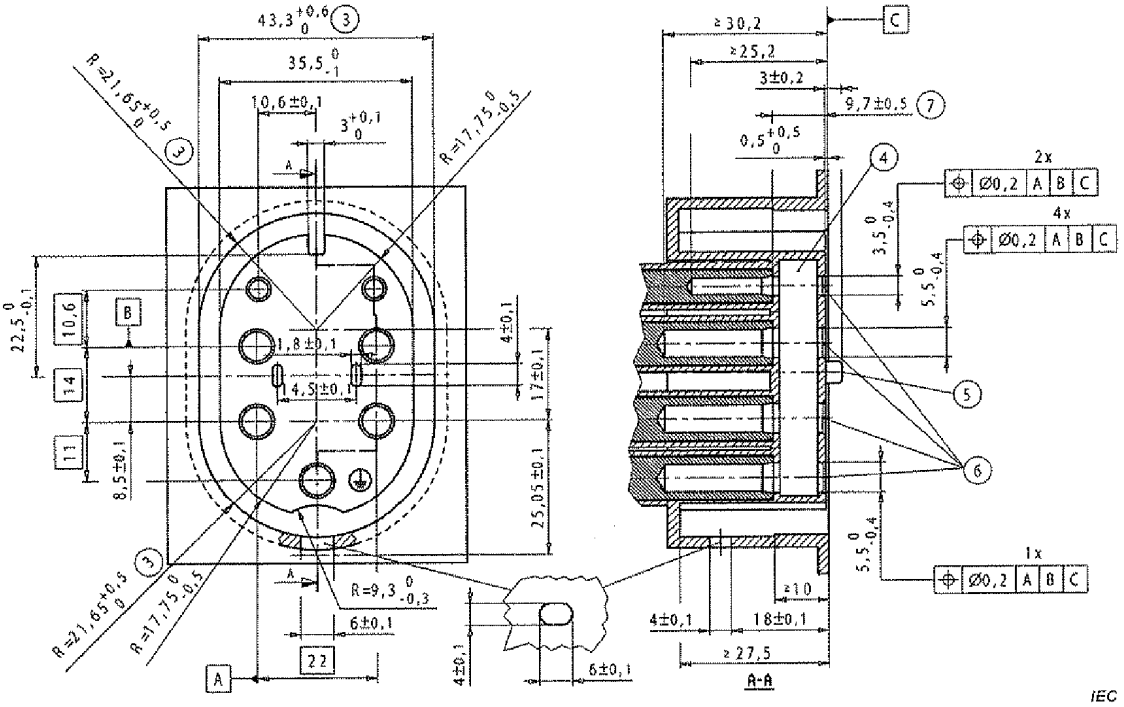
IEC

*Dimensions in millimetres*

## STANDARD SHEET 2-IIIc

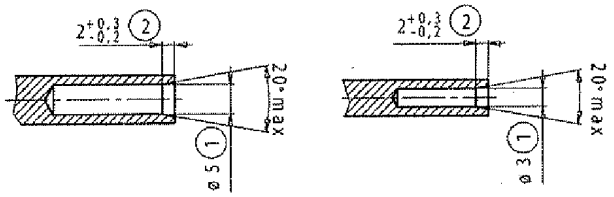
### Sheet 2 *(continuation of Sheet 1)*

### 63 A, 480 V THREE-PHASE SOCKET-OUTLET WITH 2 PILOT CONTACTS



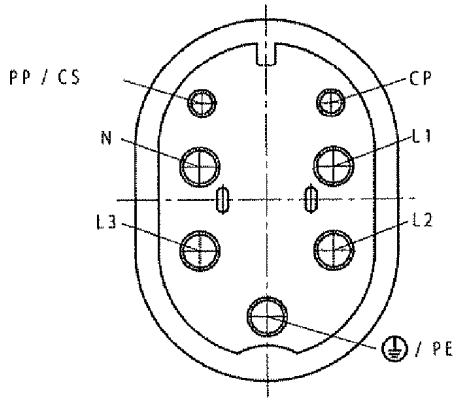

Holes or recesses in the front face, if any, other than those for contact tubes, shall not have a depth of more than 10 mm.

**End of contact tubes**




Earth/Phase/Neutral contacts Auxiliary contacts

**Arrangement of contact tubes**




Front view of contact tubes of socket-outlet

IEC

*Dimensions in millimetres*

(1) The dimensions refer to the pins; the contact tubes need not be cylindrical.

(2) The beveling of the contact tubes may be well rounded off towards the internal cylindrical surface within a distance of 1,5 times the indicated values.

(3) The indicated dimension shall be within the prescribed limits of at least 10 mm. Beyond this, they may be larger but not smaller.

(4) This opening may be a hole with 4 mm diameter minimum or a slot 4 mm minimum width.

(5) Space for shutters. If any, they are compulsory for phase and neutral contact tubes.

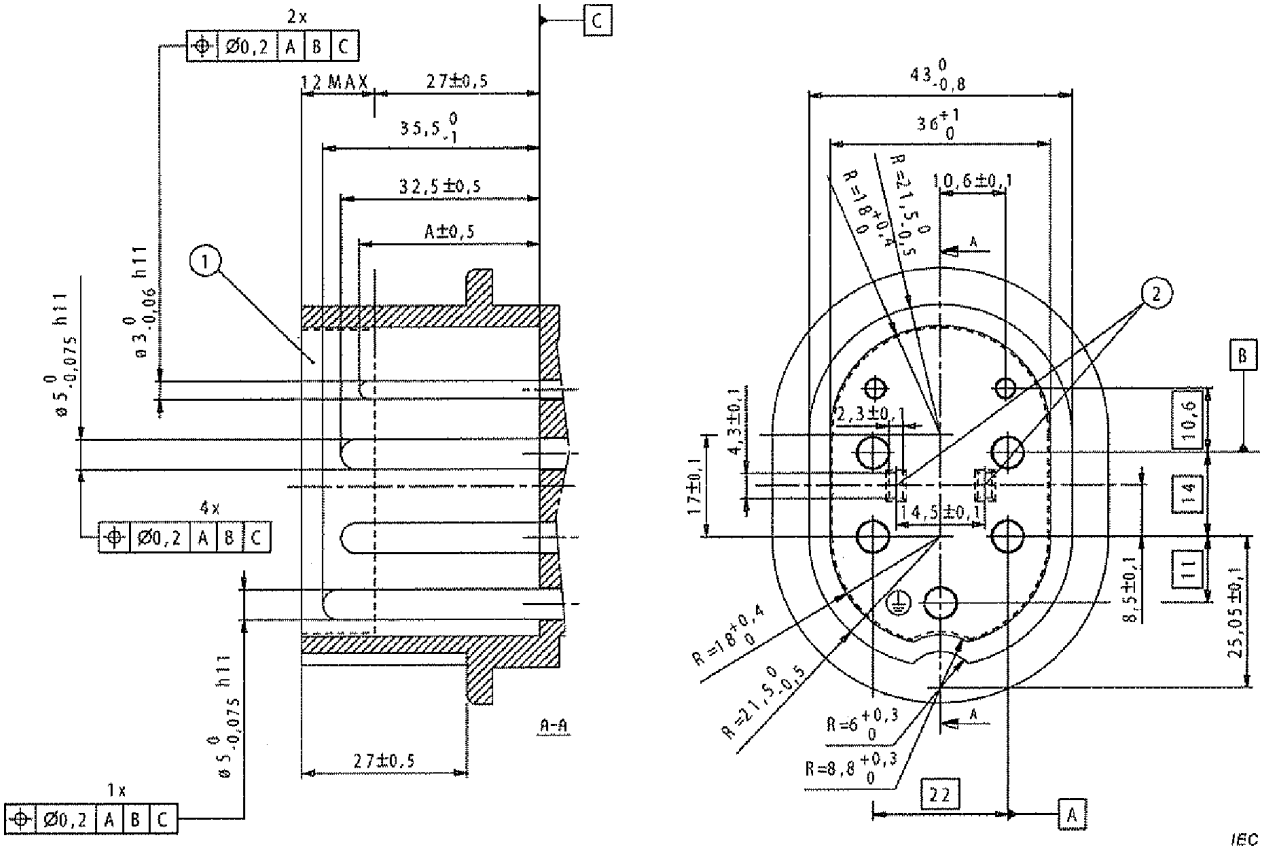
(6) Pin entry holes shall be rounded off or beveled.

(7) This dimension is measured from the extremity of the contact tube.

## STANDARD SHEET 2-IIIc

### Sheet 3 *(continuation of Sheet 2)*

### 63 A, 480 V THREE-PHASE VEHICLE INLET WITH 2 PILOT CONTACTS

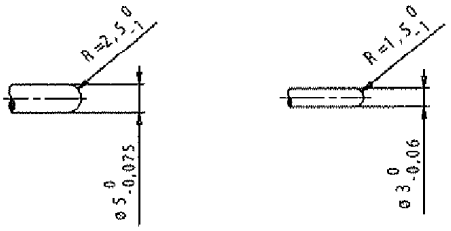



(1) Space for shutters. They are compulsory for phase and neutral contact pins.

(2) Shutter pin entry holes shall be rounded off or beveled.

| Size of auxiliary contacts | |
|---|---|
| | A |
| CP | 29,5 |
| PP / CS | 34,0 |

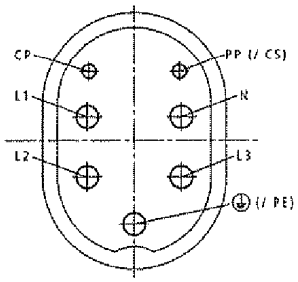
**End of pins**




Earth/Phase/Neutral contacts

Auxiliary contacts

**Arrangement of pins**




Front view of pins of vehicle inlet

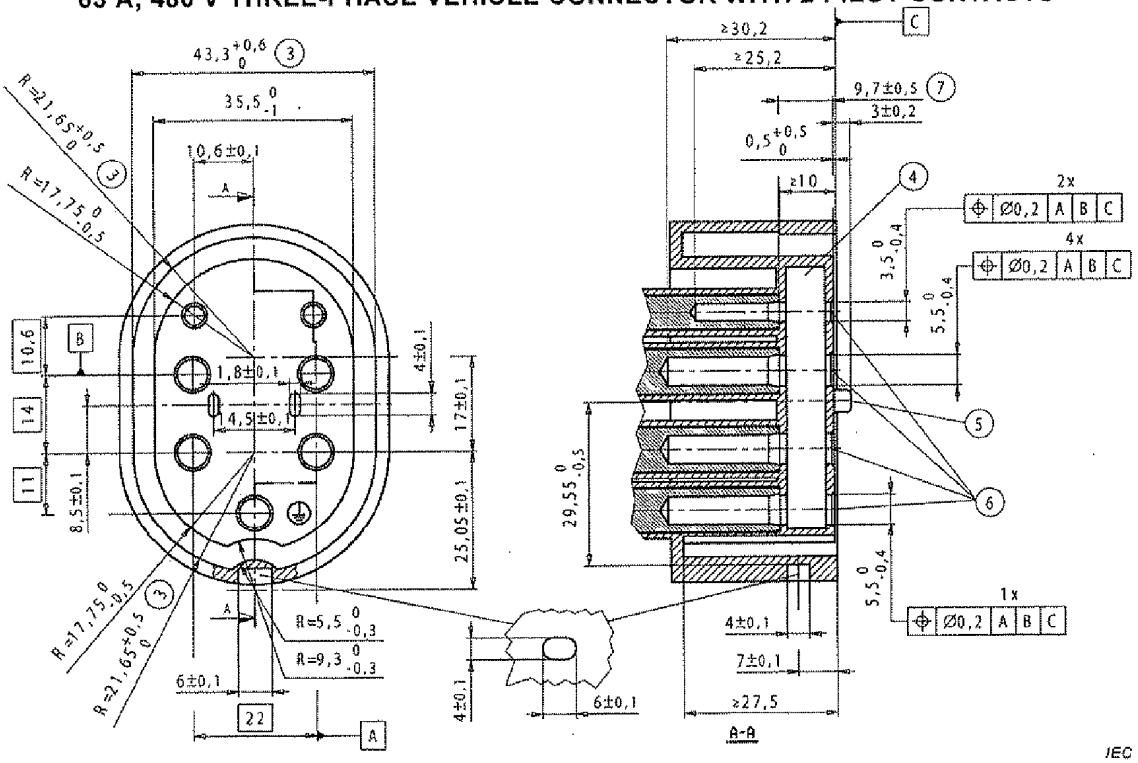
IEC

*Dimensions in millimetres*

## STANDARD SHEET 2-IIIc

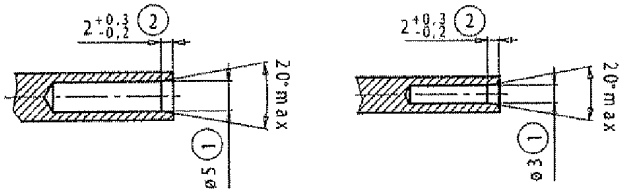
### Sheet 6 *(continuation of Sheet 5)*

### 63 A, 480 V THREE-PHASE VEHICLE CONNECTOR WITH 2 PILOT CONTACTS




Holes or recesses in the front face, if any, other than those for contact tubes, shall not have a depth of more than 10 mm.

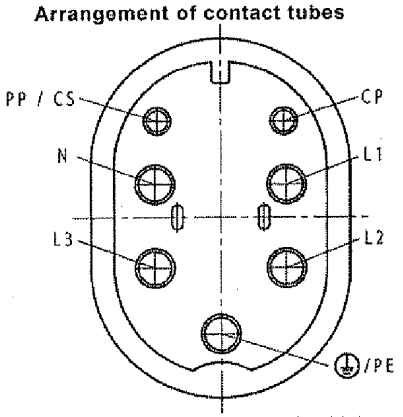
**End of contact tubes**



Earth/Phase/Neutral contacts

Auxiliary contacts

**Arrangement of contact tubes**




Front view of contact tubes of vehicle connector

IEC

*Dimensions in millimetres*

(1) The dimensions refer to the pins; the contact tubes need not be cylindrical.

(2) The beveling of the contact tubes may be well rounded off towards the internal cylindrical surface within a distance of 1,5 times the indicated values.

(3) The indicated dimension shall be within the prescribed limits of at least 10 mm. Beyond this, they may be larger but not smaller.

(4) This opening may be a hole with 4 mm diameter minimum or a slot 4 mm minimum width.

(5) Space for shutters. If any, they are compulsory for phase and neutral contact tubes.

(6) Pin entry holes shall be rounded off or beveled.

(7) This dimension is measured from the extremity of the contact tube.

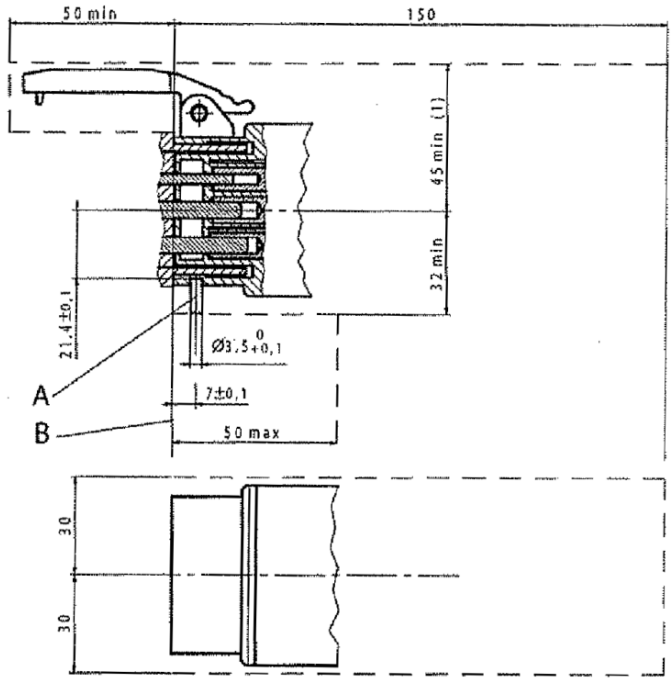
## STANDARD SHEET 2-IIId

### Sheet 1

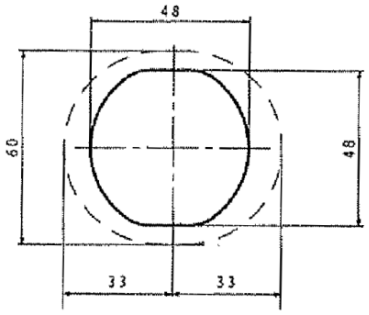
### 250 V, 16 A SINGLE-PHASE VEHICLE COUPLER (VEHICLE CONNECTOR + VEHICLE INLET)

### LATCHING MEANS AND PACKAGING ROOM (STANDARD SHEET 2-IIIa)

SIDE VIEW




TOP VIEW




FRONT VIEW

(1) Minimum space required for the movement of the hinge lid.

Vehicle connector body shape shall be within the dashed line.

IEC

*Dimensions in millimetres*

A: Latching means

B: Vehicle surface

## STANDARD SHEET 2-IIId

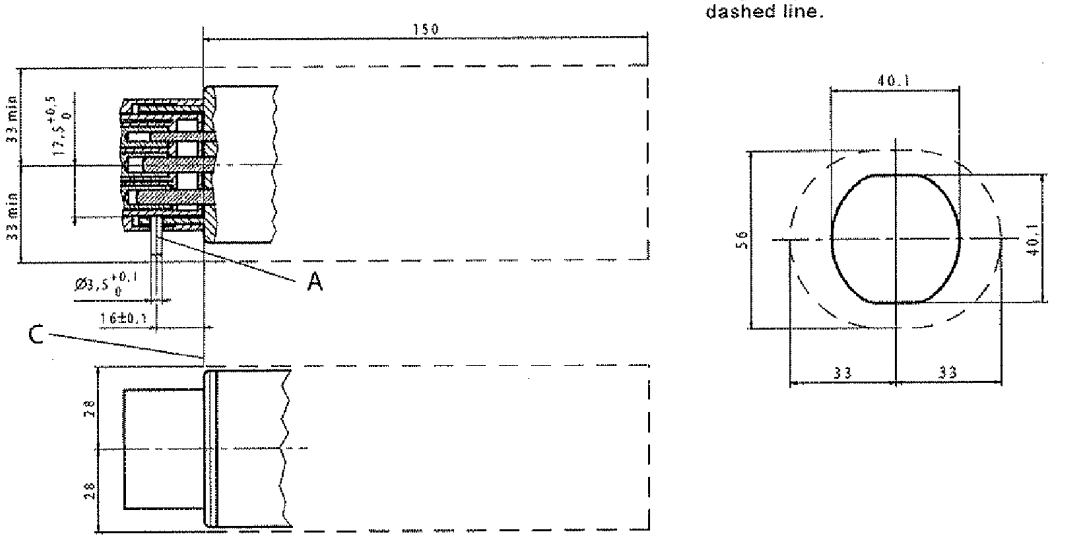
**Sheet 2 *(continuation of Sheet 1)***

## 16 A, 250 V SINGLE-PHASE PLUG AND SOCKET-OUTLET

## LATCHING MEANS AND PACKAGING ROOM (STANDARD SHEET 2-IIIa)

SIDE VIEW

Plug body shape shall be within the dashed line.




TOP VIEW

FRONT VIEW

IEC

*Dimensions in millimetres*

A: Latching means

C: Socket-outlet surface

## STANDARD SHEET 2-IIId

## 32 A, 250 V SINGLE-PHASE VEHICLE COUPLER (VEHICLE CONNECTOR + VEHICLE INLET)

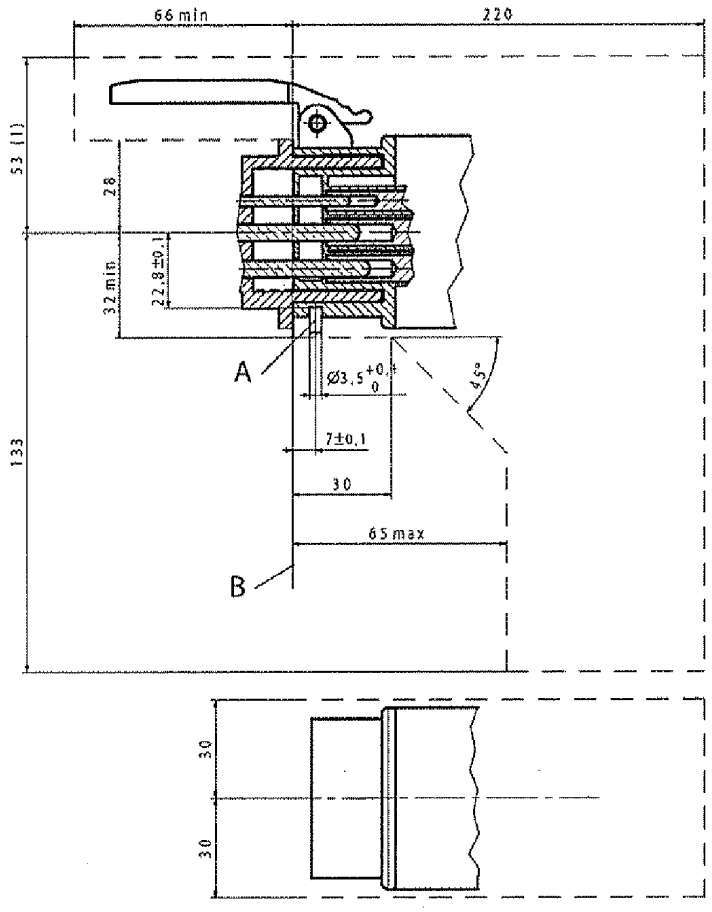
## LATCHING MEANS AND PACKAGING ROOM (STANDARD SHEET 2-IIIb)

### Sheet 3 *(continuation of Sheet 2)*

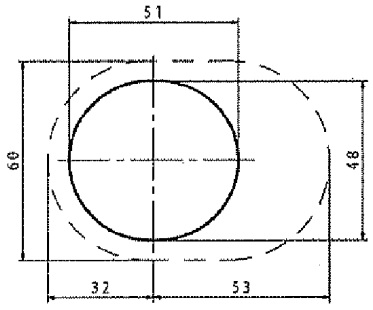
SIDE VIEW

(1) Minimum space required for the movement of the hinge lid

Vehicle connector body shape shall be within the dashed line.




TOP VIEW




FRONT VIEW

IEC

*Dimensions in millimetres*

A: Latching means

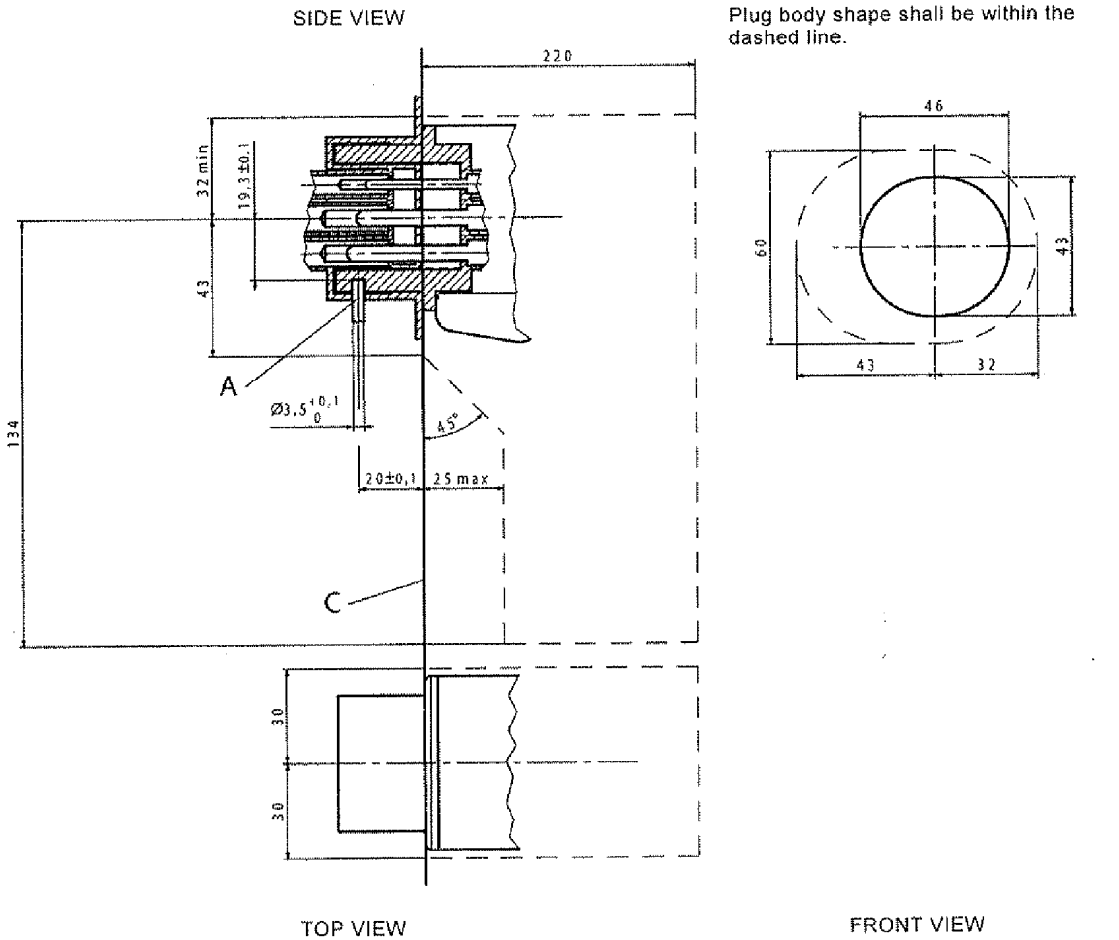
B: Vehicle surface

**STANDARD SHEET 2-IIId**

**32 A, 250 V SINGLE-PHASE PLUG AND SOCKET-OUTLET**

**LATCHING MEANS AND PACKAGING ROOM (STANDARD SHEET 2-IIIb)**

**Sheet 4 *(continuation of Sheet 3)***




*Dimensions in millimetres*

A: Latching means

C: Socket-outlet surface

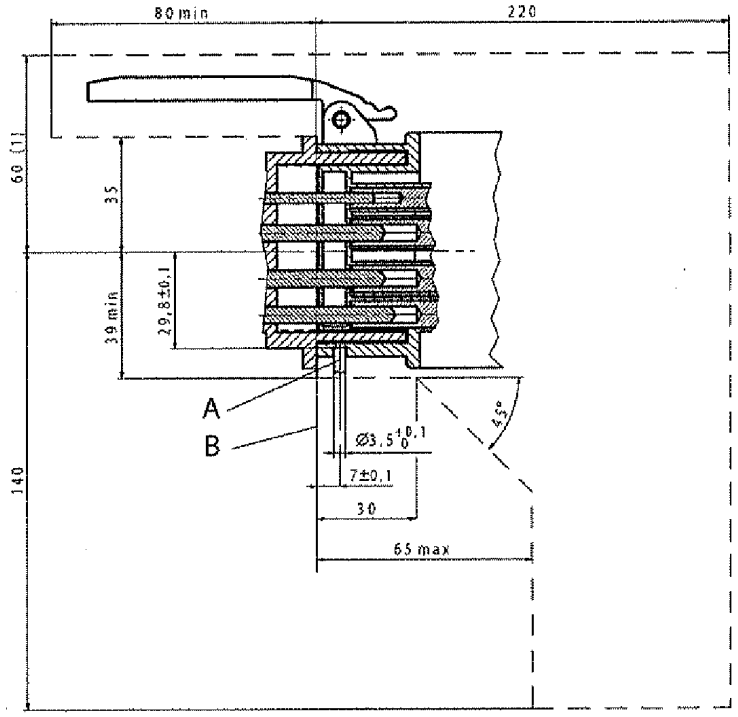
## STANDARD SHEET 2-IIId

## 63 A, 480 V THREE-PHASE VEHICLE COUPLER (VEHICLE CONNECTOR + VEHICLE INLET)

## LATCHING MEANS AND PACKAGING ROOM (STANDARD SHEET 2-IIIc)

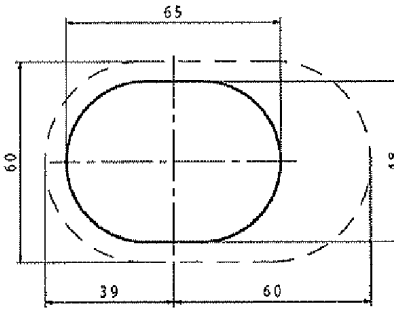
### Sheet 5 *(continuation of Sheet 4)*

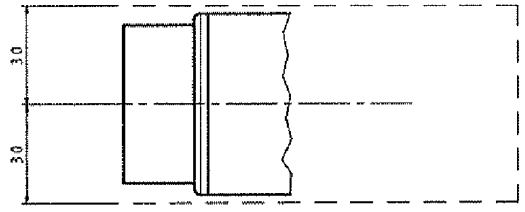
SIDE VIEW




(1) Minimum space required for the movement of the hinge lid

Vehicle connector body shape shall be within the dashed line.




TOP VIEW

FRONT VIEW

IEC

*Dimensions in millimetres*

A: Latching means

B: Vehicle surface

**STANDARD SHEET 2-IIId**

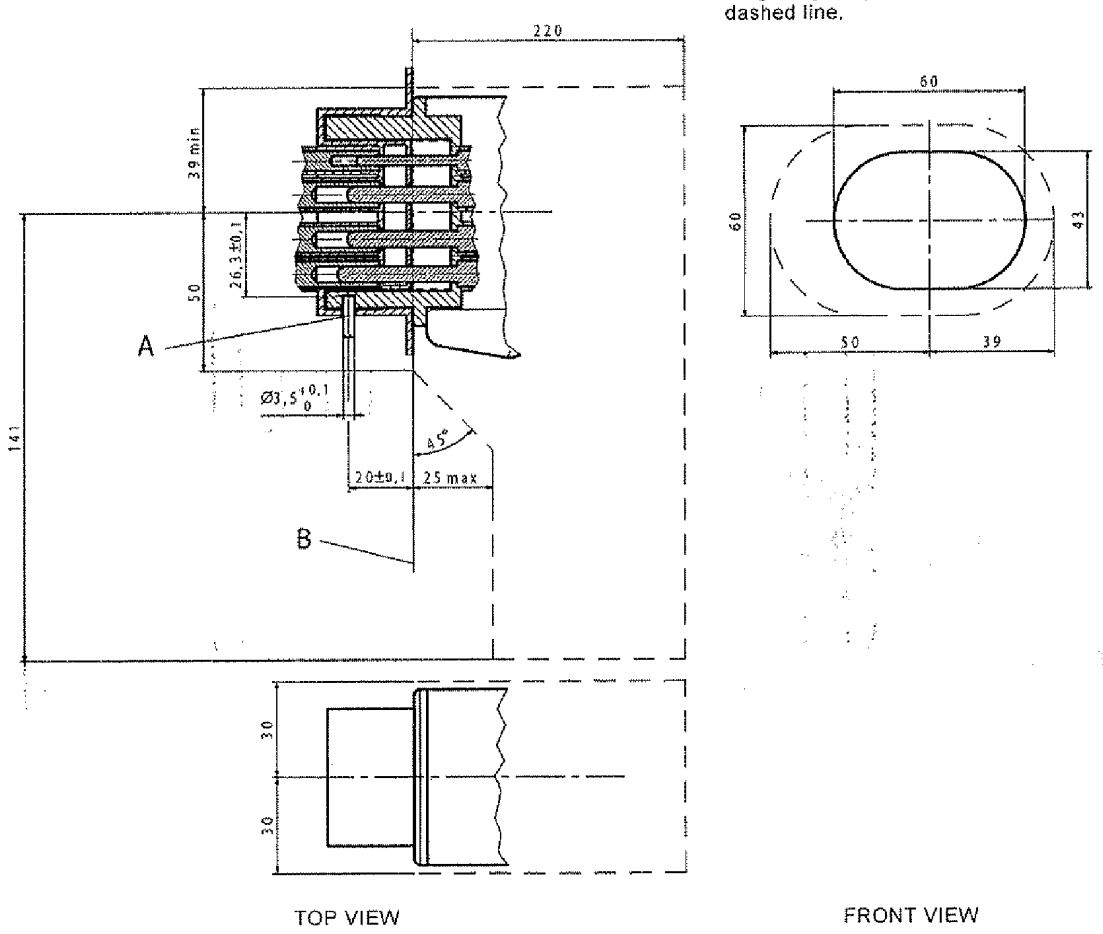
**63 A, 480 V THREE-PHASE PLUG AND SOCKET-OUTLET**

**LATCHING MEANS AND PACKAGING ROOM (STANDARD SHEET 2-IIIc)**

**Sheet 6 *(continuation of Sheet 5)***

SIDE VIEW

Plug body shape shall be within the dashed line.




TOP VIEW

FRONT VIEW

IEC

*Dimensions in millimetres*

A: Latching means

B: Socket-outlet surface