

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Plugs, socket-outlets and ship couplers for high-voltage shore connection systems (HVSC-SYSTEMS) –
Part 2: Dimensional compatibility and interchangeability requirements for accessories to be used by various types of ships**

**Prises de courant et connecteurs de navires pour les systèmes haute tension de raccordement des navires à quai –
Partie 2: Règles dimensionnelles de compatibilité et d'interchangeabilité pour les appareils destinés à être utilisés par divers types de navires**



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2011 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.

If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland
Email: inmail@iec.ch
Web: www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

- Catalogue of IEC publications: www.iec.ch/searchpub

The IEC on-line Catalogue enables you to search by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, withdrawn and replaced publications.

- IEC Just Published: www.iec.ch/online_news/justpub

Stay up to date on all new IEC publications. Just Published details twice a month all new publications released. Available on-line and also by email.

- Electropedia: www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 20 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary online.

- Customer Service Centre: www.iec.ch/webstore/custserv

If you wish to give us your feedback on this publication or need further assistance, please visit the Customer Service Centre FAQ or contact us:

Email: csc@iec.ch
Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00

A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

- Catalogue des publications de la CEI: www.iec.ch/searchpub/cur_fut-f.htm

Le Catalogue en-ligne de la CEI vous permet d'effectuer des recherches en utilisant différents critères (numéro de référence, texte, comité d'études,...). Il donne aussi des informations sur les projets et les publications retirées ou remplacées.

- Just Published CEI: www.iec.ch/online_news/justpub

Restez informé sur les nouvelles publications de la CEI. Just Published détaille deux fois par mois les nouvelles publications parues. Disponible en-ligne et aussi par email.

- Electropedia: www.electropedia.org

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International en ligne.

- Service Clients: www.iec.ch/webstore/custserv/custserv_entry-f.htm

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions, visitez le FAQ du Service clients ou contactez-nous:

Email: csc@iec.ch
Tél.: +41 22 919 02 11
Fax: +41 22 919 03 00

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Plugs, socket-outlets and ship couplers for high-voltage shore connection systems (HVSC-SYSTEMS) –
Part 2: Dimensional compatibility and interchangeability requirements for accessories to be used by various types of ships**

**Prises de courant et connecteurs de navires pour les systèmes haute tension de raccordement des navires à quai –
Partie 2: Règles dimensionnelles de compatibilité et d'interchangeabilité pour les appareils destinés à être utilisés par divers types de navires**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX



CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references.....	7
3 Terms and definitions.....	7
4 General.....	7
5 Standard ratings.....	7
6 Classification.....	7
7 Marking.....	7
8 Dimensions.....	7
9 Protection against electric shock.....	8
10 Provision for earthing.....	8
11 Terminals and terminations.....	8
12 Locking devices and interlocks.....	8
13 Resistance to ageing of rubber and thermoplastic material.....	8
14 General construction.....	8
15 Construction of socket-outlets and ship inlets.....	8
16 Construction of ship connectors.....	8
17 Construction of plugs.....	8
18 Degrees of protection.....	8
19 Insulation resistance, dielectric withstand and partial discharge tests.....	8
20 Normal operation.....	9
21 Temperature rise.....	9
22 Flexible cables and their connection.....	9
23 Mechanical strength.....	9
24 Screws, current-carrying parts and connections.....	9
25 Resistance to heat, to fire and to tracking.....	9
26 Corrosion and resistance to rusting.....	9
27 Conditional short-circuit current withstand test.....	9
28 Electromagnetic compatibility.....	9
Annex AA (normative) Standard sheets 7,2 kV 350 A three-phase accessory with two IP0 pilot contacts.....	10
Annex BB (normative) Standard sheets 7,2 kV 350 A three-phase accessory with two IP2X pilot contacts.....	14
Annex CC (normative) Standard sheets 7,2 kV 350 A three-phase accessory with three IP2X pilot contacts.....	18
Annex DD (normative) Standard sheets 12 kV 500 A three-phase accessory with two IP0 pilot contacts.....	22
Annex EE (normative) Standard sheets 12 kV 500 A three-phase accessory with two IP2X pilot contacts.....	26
Annex FF (normative) Standard sheets 12 kV 500 A three-phase accessory with three IP2X pilot contacts.....	30

Annex GG (normative) Standard sheets 12 kV 500 A three-phase accessory with two pilot contacts	34
Annex HH (normative) Standard sheets 7,2 kV 250 A single-pole (neutral) accessory.....	38
Table AA.1.....	10
Table AA.2.....	11
Table AA.3.....	12
Table AA.4.....	13
Table BB.1.....	14
Table BB.2.....	15
Table BB.3.....	16
Table BB.4.....	17
Table CC.1.....	18
Table CC.2.....	19
Table CC.3.....	20
Table CC.4.....	21
Table DD.1.....	22
Table DD.2.....	23
Table DD.3.....	24
Table DD.4.....	25
Table EE.1.....	26
Table EE.2.....	27
Table EE.3.....	28
Table EE.4.....	29
Table FF.1.....	30
Table FF.2.....	31
Table FF.3.....	32
Table GG.1.....	34
Table GG.2.....	35
Table GG.3.....	36
Table GG.4.....	37
Table HH.1.....	38
Table HH.2.....	39
Table HH.3.....	40
Table HH.4.....	41

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PLUGS, SOCKET-OUTLETS AND SHIP COUPLERS FOR HIGH-VOLTAGE SHORE CONNECTION SYSTEMS (HVSC-SYSTEMS) –

Part 2: Dimensional compatibility and interchangeability requirements for accessories to be used by various types of ships

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62613-2 has been prepared by subcommittee 23H: Industrial plugs and socket-outlets, of IEC technical committee 23: Electrical accessories.

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

FDIS	Report on voting
23H/268/FDIS	23H/271/RVD

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.

The present Part 2 of IEC 62613 shall be read in conjunction with IEC 62613-1:—, hereafter referred to as “Part 1”.

The clauses of these particular requirements supplement or modify the corresponding clauses in Part 1. Where the text of subsequent parts indicates an "addition" to or a "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 the standard. Where no change is necessary, the words "This clause of Part 1 is applicable" are used. New annexes are numbered starting AA, BB, etc.

A list of all the parts in the IEC 62613 series, under the general title *Plugs, socket-outlets and ship couplers for high-voltage shore connection systems (HVSC-systems)*, can be found on the IEC website.

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 web site 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.

<http://standards.iteh.ai/catalog/standards/sist/31e9df5f-eab2-4438-ba0d-d5e720148ede/iec-62613-2-2011>

<https://standards.iteh.ai/catalog/standards/sist/31e9df5f-eab2-4438-ba0d-d5e720148ede/iec-62613-2-2011>

INTRODUCTION

International Standard series IEC 62613 has been primarily written to address the needs in terms of plugs, socket-outlets and ship couplers (ship connectors and ship inlets), herein referred to as “accessories”, of IEC/PAS 60092-510. The purpose of IEC/PAS 60092-510 is to define requirements that allow compliant ships to connect to compliant high-voltage shore power supplies through standardized shore-to-ship connection accessories.

Ships that do not require connecting with standardized high-voltage shore power supplies as above may use accessories that are not covered by the standard sheets of IEC 62613-2 but they may find it impossible to connect to these shore supplies.

Other low voltage plugs, socket-outlets, ship connectors and ship inlets used for the connection of certain ship types to low-voltage shore power supplies may be found in the IEC 60309 series.

The IEC 62613 series is divided into several parts:

- Part 1: *General requirements*, comprising clauses of a general character;
- Part 2: *Dimensional compatibility and interchangeability requirements for accessories to be used by various types of ships*.

These ships are described in IEC/PAS 60092-510.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[IEC 62613-2:2011](https://standards.iteh.ai/catalog/standards/sist/31e9df5f-eab2-4438-ba0d-d5e720148ede/iec-62613-2-2011)

<https://standards.iteh.ai/catalog/standards/sist/31e9df5f-eab2-4438-ba0d-d5e720148ede/iec-62613-2-2011>

Withstand

PLUGS, SOCKET-OUTLETS AND SHIP COUPLERS FOR HIGH-VOLTAGE SHORE CONNECTION SYSTEMS (HVSC-SYSTEMS) –

Part 2: Dimensional compatibility and interchangeability requirements for accessories to be used by various types of ships

1 Scope

This clause of Part 1 is applicable.

2 Normative references

This clause of Part 1 is applicable.

3 Terms and definitions

This clause of Part 1 is applicable.

4 General

This clause of Part 1 is applicable.

5 Standard ratings

This clause of Part 1 is applicable.

6 Classification

This clause of Part 1 is applicable.

7 Marking

This clause of Part 1 is applicable.

8 Dimensions

8.1 Replacement:

Accessories shall comply with the appropriate standard sheets in the annexes.

8.2 This subclause of Part 1 is applicable.

8.3 This subclause of Part 1 is applicable.

8.4 This subclause of Part 1 is applicable.

9 Protection against electric shock

This clause of Part 1 is applicable.

10 Provision for Earthing

This clause of Part 1 is applicable.

11 Terminals and terminations

This clause of Part 1 is applicable.

12 Locking devices and interlocks

This clause of Part 1 is applicable.

13 Resistance to ageing of rubber and thermoplastic material

This clause of Part 1 is applicable.

14 General construction

This clause of Part 1 is applicable.

15 Construction of socket-outlets and ship inlets

This clause of Part 1 is applicable.

16 Construction of ship connectors

This clause of Part 1 is applicable.

17 Construction of plugs

This clause of Part 1 is applicable.

18 Degrees of protection

This clause of Part 1 is applicable.

19 Insulation resistance, dielectric withstand and partial discharge tests

This clause of Part 1 is applicable.

20 Normal operation

This clause of Part 1 is applicable.

21 Temperature rise

This clause of Part 1 is applicable.

22 Flexible cables and their connection

This clause of Part 1 is applicable.

23 Mechanical strength

This clause of Part 1 is applicable.

24 Screws, current-carrying parts and connections

This clause of Part 1 is applicable.

25 Resistance to heat, to fire and to tracking

This clause of Part 1 is applicable.

26 Corrosion and resistance to rusting

This clause of Part 1 is applicable.

27 Conditional short-circuit current withstand test

This clause of Part 1 is applicable.

28 Electromagnetic compatibility

This clause of Part 1 is applicable.

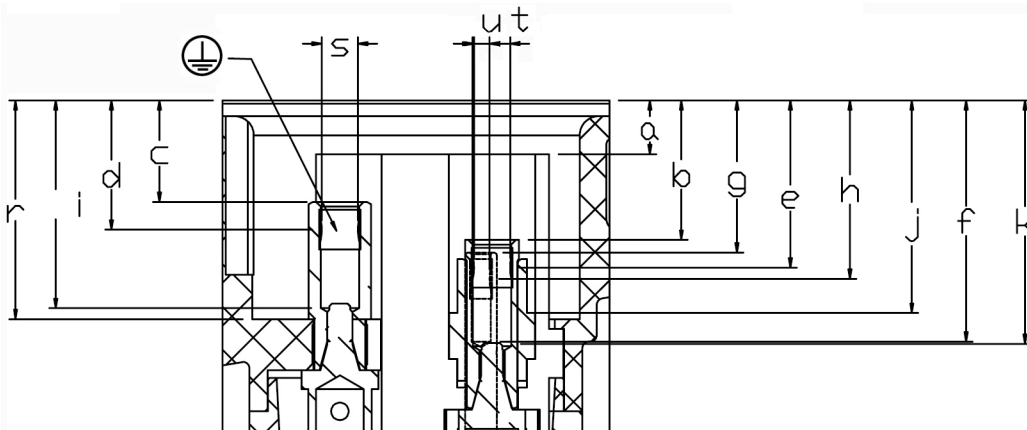
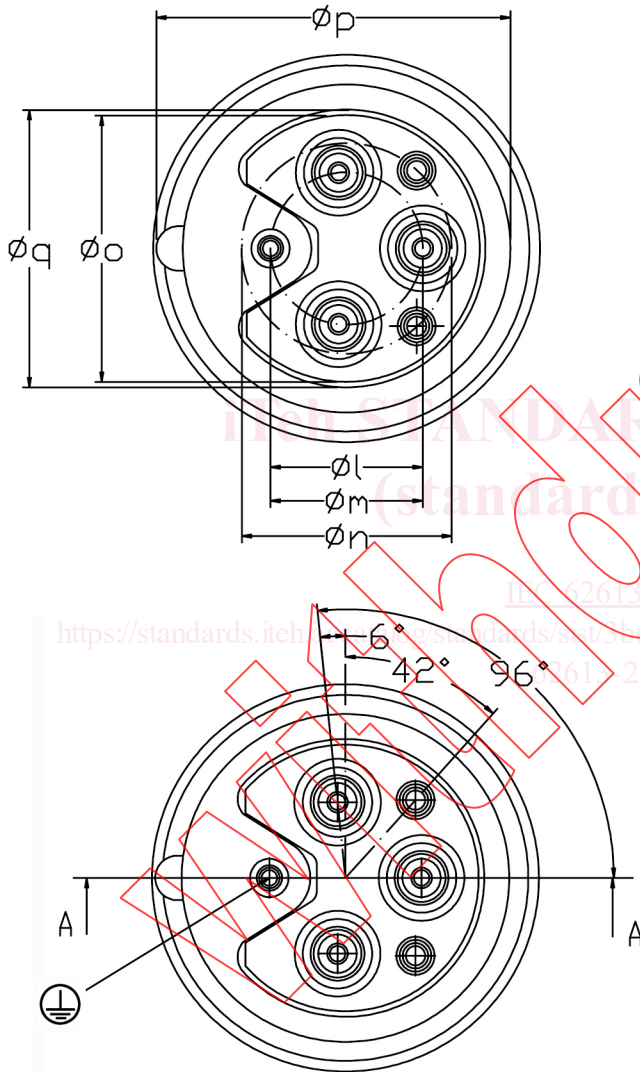
Annex AA
(normative)

Standard sheets
7,2 kV 350 A three-phase accessory with two IP0 pilot contacts

AA.1 Socket-outlet

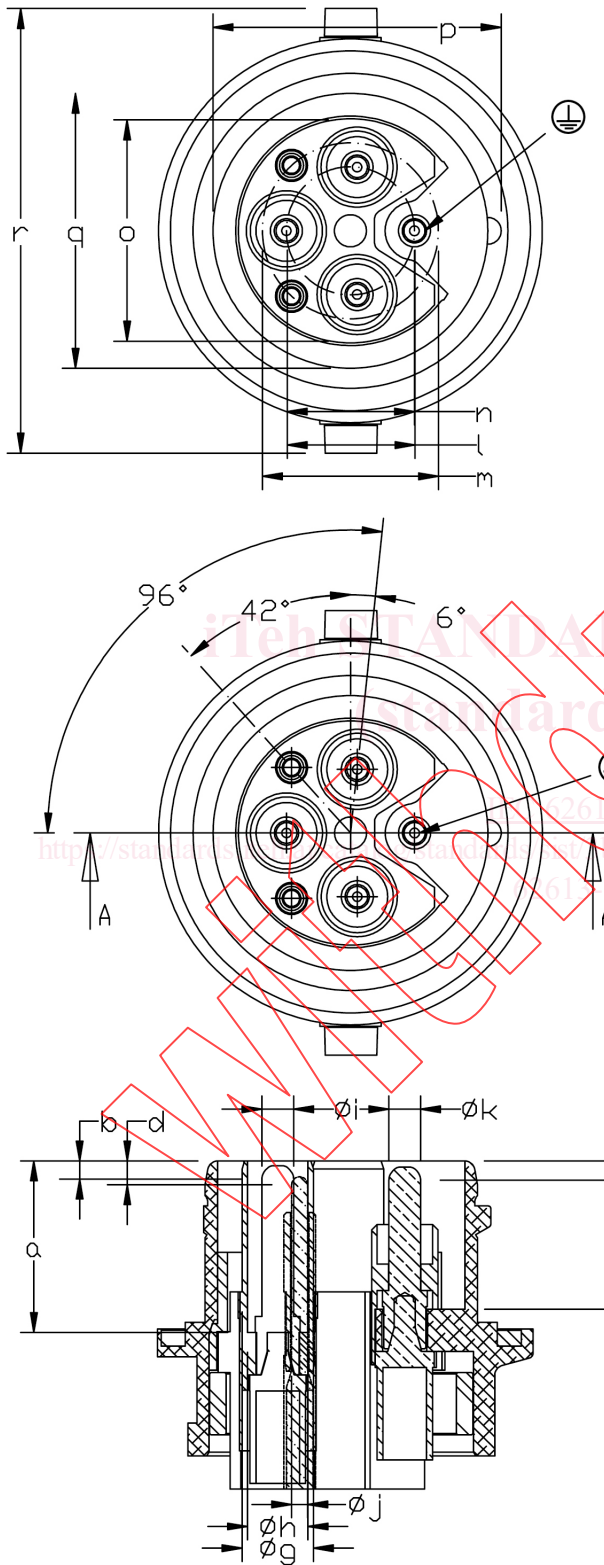
Table AA.1

Symbol	Description	Dimension mm
a	Top insulator	17,0 ± 0,25
b	Top phase	44,0 ± 0,25
c	Top earth	32,0 ± 0,25
d	Contact earth	37,6 ± 0,25
e	Contact phase	50,1 ± 0,25
f	Bottom pilot	76,0 ± 0,25
g	Top pilot	48,0 ± 0,25
h	Contact pilot	53,4 ± 0,25
i	Bottom earth	64,0 ± 0,25
j	Bottom insulator	66,0 ± 0,25
k	Bottom phase	76,5 ± 0,25
l	Pitch phases	48,0 ± 0,25
m	Pitch pilots	44,2 ± 0,25
n	Pitch earth	48,0 ± 0,25
o	Insulator width	84,0 ± 0,10
p	Socket + nose	111,6 ± 0,25
q	Socket width	87,5 ± 0,25
r	Tongue depth	69,0 ± 0,25
s	Earth diameter	12,0 ^{+0,10} ₀
t	Pilot diameter	6,0 ^{+0,10} ₀
u	Phase diameter	12,0 ^{+0,10} ₀



AA.2 Plug top

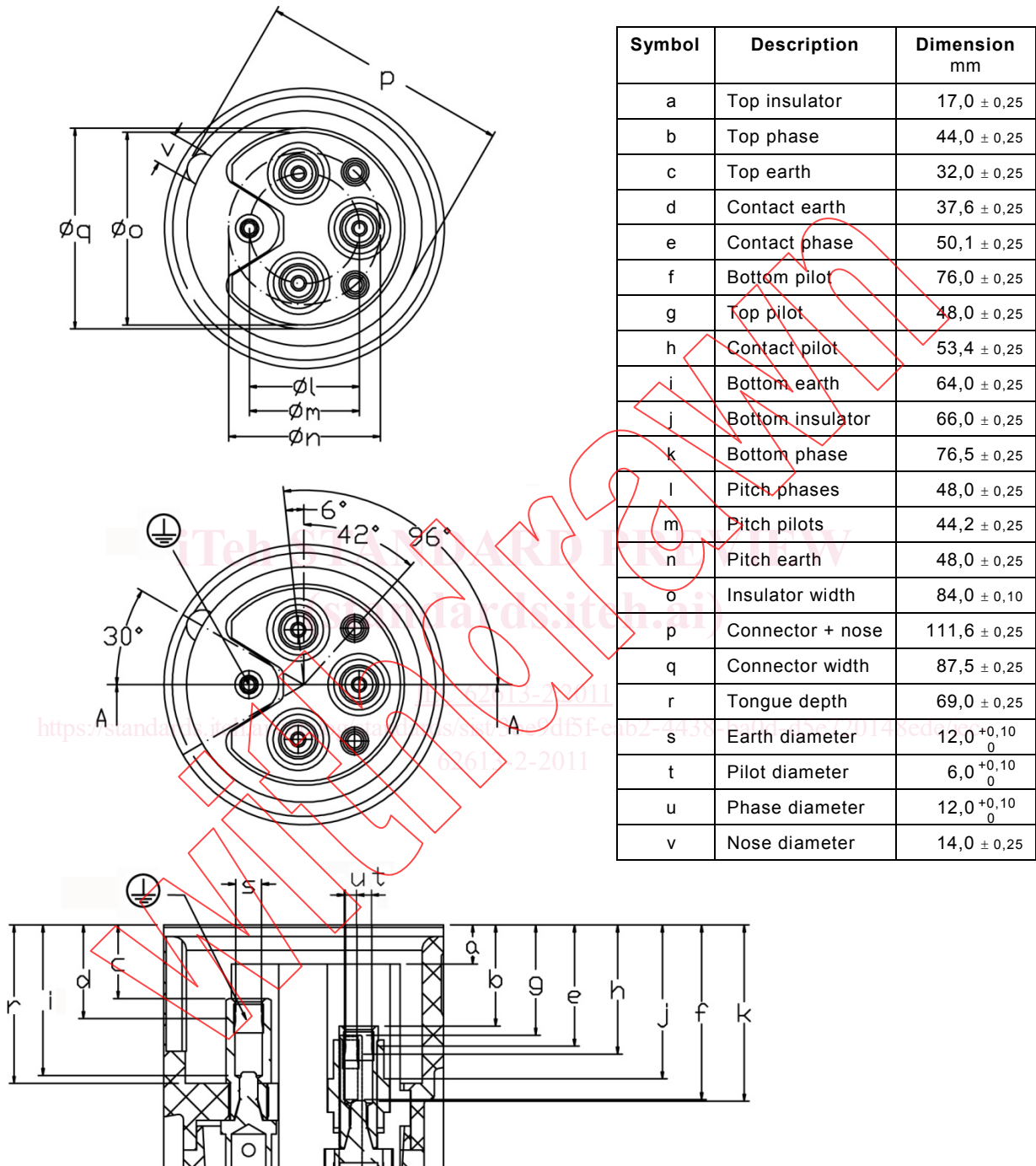
Table AA.2



Symbol	Description	Dimension mm
a	Insulator depth	$64,8 \pm 0,25$
b	Contact phase	$6,9 \pm 0,25$
c	Contact earth	$7,3 \pm 0,25$
d	Contact pilot	$9,0 \pm 0,25$
f	Tongue depth	$56,0 \pm 0,25$
g	Insulator outer diameter	$27,0 \pm 0,25$
h	Insulator inner diameter	$22,8 \pm 0,25$
i	Phase diameter	$12,0 \begin{smallmatrix} 0 \\ -0,05 \end{smallmatrix}$
j	Pilot diameter	$6,0 \begin{smallmatrix} 0 \\ -0,05 \end{smallmatrix}$
k	Earth diameter	$12,0 \begin{smallmatrix} 0 \\ -0,05 \end{smallmatrix}$
l	Pitch phases	$48,3 \pm 0,25$
m	Pitch pilots	$66,6 \pm 0,25$
n	Pitch earth	$48,0 \pm 0,25$
o	Insulator width	$84,0 \pm 0,10$
p	Plug + nose	$108,9 \pm 0,25$
q	Plug width	$103,0 \pm 0,25$
r	Width of rollers	$168,0 \pm 0,25$
s	Roller diameter	$20,0 \pm 0,10$
t	Roller height	$90,0 \pm 0,25$

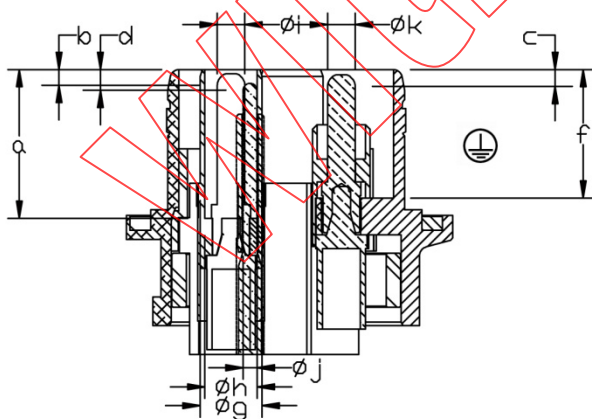
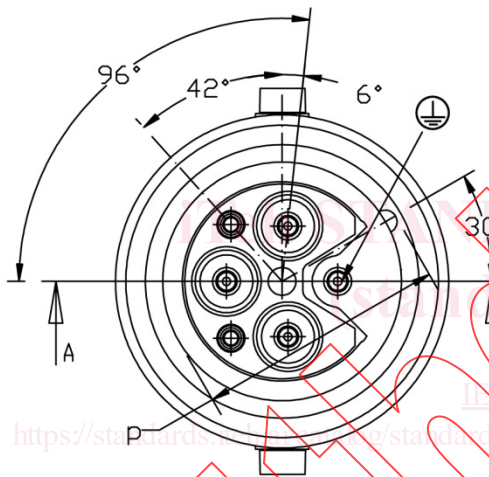
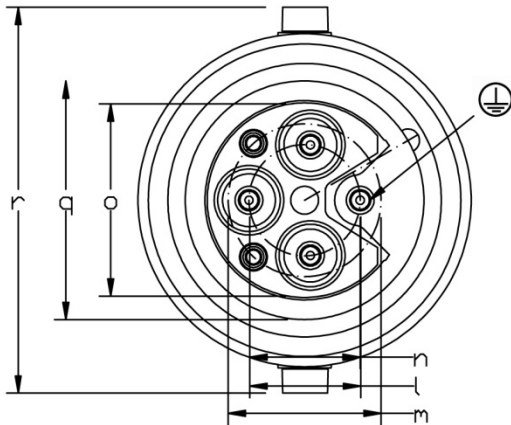
AA.3 Ship Connector top

Table AA.3



AA.4 Ship inlet

Table AA.4



Symbol	Description	Dimension mm
a	Insulator depth	64,8 ± 0,25
b	Contact phase	6,9 ± 0,25
c	Contact earth	7,3 ± 0,25
d	Contact pilot	9,0 ± 0,25
f	Tongue depth	56,0 ± 0,25
g	Insulator outer diameter	27,0 ± 0,25
h	Insulator inner diameter	22,8 ± 0,25
i	Phase diameter	12,0 ⁰ _{-0,05}
j	Pilot diameter	6,0 ⁰ _{-0,05}
k	Earth diameter	12,0 ⁰ _{-0,05}
l	Pitch phases	48,3 ± 0,25
m	Pitch pilots	66,6 ± 0,25
n	Pitch earth	48,0 ± 0,25
o	Insulator width	84,0 ± 0,10
p	Inlet + nose	108,9 ± 0,25
q	Inlet width	103,0 ± 0,25
r	Width of rollers	168,0 ± 0,25
s	Roller diameter	20,0 ± 0,10
t	Roller height	90,0 ± 0,25

