

AS ISO 11862:2021  
ISO 11862:1993



STANDARDS  
Australia



# Earth-moving machinery — Auxiliary starting aid electrical connector



AS ISO 11862:2021

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- Australian Industry Group
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- Construction and Mining Equipment Industry Group
- Department of Regional NSW
- Department of Resources, Qld
- Engineers Australia
- Institute of Instrumentation, Control & Automation Australia
- Minerals Council of Australia
- Mining Electrical and Mining Mechanical Engineering Society
- University of Queensland

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# Earth-moving machinery — Auxiliary starting aid electrical connector

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## Preface

This Standard was prepared by the Standards Australia Committee ME-063, Earthmoving Equipment.

The objective of this document is to specify the details, dimensions and design of both plug (male) and receptacle (female) which must mate properly to permit interchangeable use of different makes of electrical connectors providing an auxiliary starting circuit for earth-moving machinery as defined in ISO 6165.

This document also lays down a universal connecting device, with correct polarity, standard circuit coding and protection from electrical shorts, which may be used with any other machinery, vehicle or automotive equipment with the same electrical system voltage range.

This document is identical with, and has been reproduced from, ISO 11862:1993, *Earth-moving machinery — Auxiliary starting aid electrical connector*.

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 11862 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Sub-Committee SC 3, *Operation and maintenance*.

# Australian Standard<sup>®</sup>

## Earth-moving machinery — Auxiliary starting aid electrical connector

### 1 Scope

This International Standard specifies the details, dimensions and design of both plug (male) and receptacle (female) which must mate properly to permit interchangeable use of different makes of electrical connectors providing an auxiliary starting circuit for earth-moving machinery as defined in ISO 6165. It lays down a universal connecting device, with correct polarity, standard circuit coding and protection from electrical shorts, which may also be used with any other machinery, vehicle or automotive equipment with the same electrical system voltage range.

### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 6165:1987, *Earth-moving machinery — Basic types — Vocabulary*.

ISO 9247:1990, *Earth-moving machinery — Electrical wires and cables — Principles of identification and marking*.

IEC 228:1978, *Conductors of insulated cables*.

IEC 245-4:1980, *Rubber insulated cables of rated voltages up to and including 450/750 V — Part 4: Cords and flexible cables*.

IEC 269-1:1986, *Low-voltage fuses — Part 1: General requirements*.

### 3 General requirements

#### 3.1 Receptacle

The receptacle assembly shall be as shown in [figure 1](#) and shall be permanently installed in a machine. The receptacle contains the male terminals [see [figure 3 b](#)]; the configuration shall provide positive means of ensuring correct polarity when coupled with the mating plug.

#### 3.2 Plug assembly

The plug assembly shall be as shown in [figure 2](#); it provides auxiliary starting from one machine to another [see [figure 2 a](#)], or from an external power source, such as a battery cart, to the machine [see [figure 2 b](#)]. The plug contains the female terminals [see [figure 3 a](#)] and mates with the receptacle assembly in [3.1](#).

### 4 Construction

#### 4.1 Materials

Connector bodies shall be made of glass-fibre-reinforced nylon or other mouldable insulating material of equal or superior properties. The contact parts shall be coated to ensure low deterioration and low electrical resistance.

## 4.2 Terminals

Terminals shall be in accordance with [figure 3](#) and permanently attached to the cable ends before moulding, by soldering, brazing, welding or by other suitable method to provide a connection which will be mechanically and electrically secure.

## 4.3 Cables

Current-carrying cables shall be 50 mm<sup>2</sup>, 70 mm<sup>2</sup> or 95 mm<sup>2</sup> wire size and shall conform with IEC 228 Class 5. Receptacle cables and plug cables shall be type 245 IEC 66 according to IEC 245-4. Particularly flexible stranding shall be used on the plug cables.

All cables shall be of sufficient length and have the appropriate terminals to connect with appropriate points within or between the machines or to any auxiliary power source.

All connecting cables shall be properly secured and protected within the machine.

## 4.4 Fuses

All fuses shall meet the requirements of IEC 269-1.

## 4.5 Identification of cables

Colour or number identification of cables shall conform with ISO 9247 and be arranged as shown in [figures 1](#) and [2](#) of this International Standard, to provide continuity of identification throughout the connected assemblies.

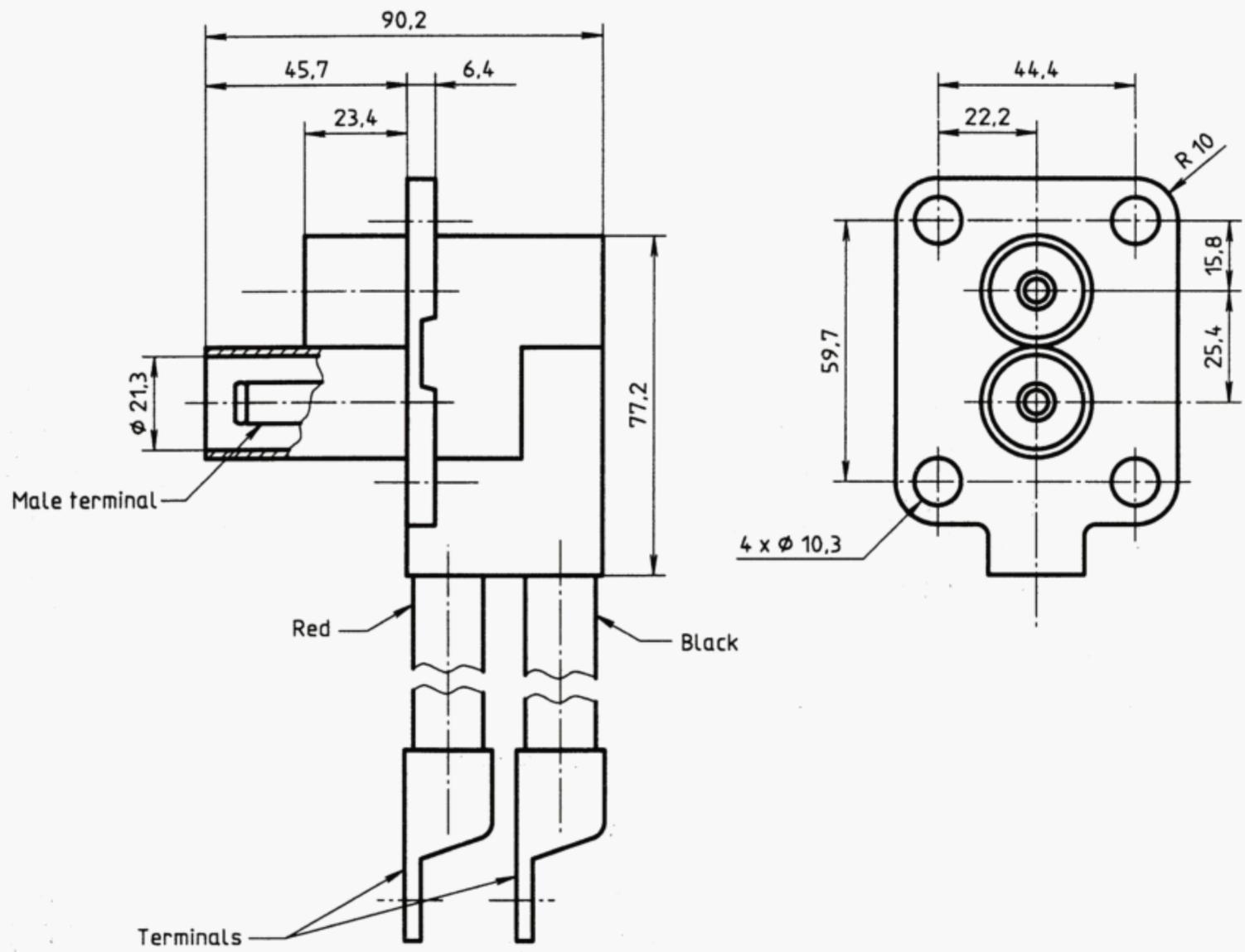
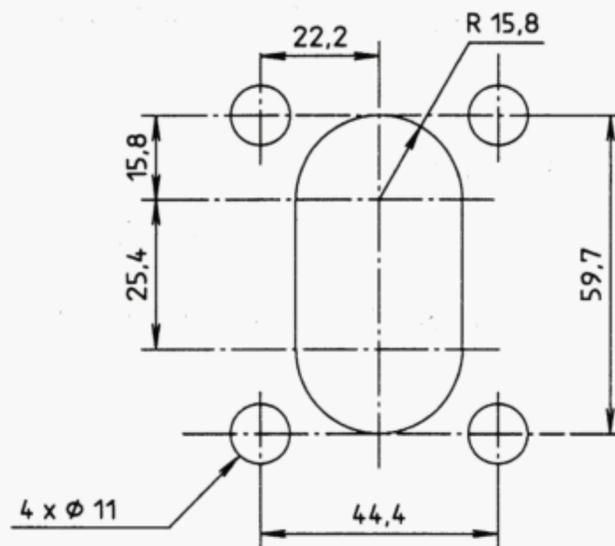
## 5 Location of receptacle on machine

The receptacle shall be attached on the interior side of the machine with the terminal portion protruding outward through acceptance holes in the side of the machine (see [figure 1](#)) and located so that exposed portions of the receptacle will be protected from external damage by means of a lockable cover as shown in [figure 4](#).

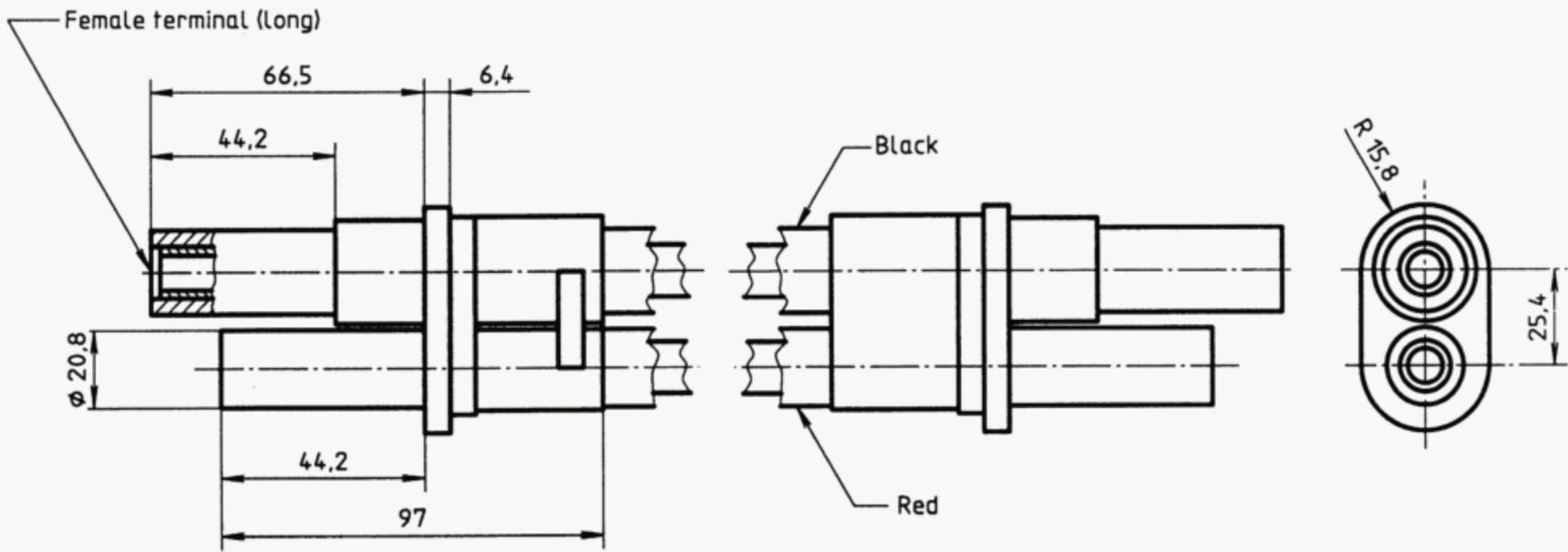
Where safeguarding is a concern, the location may be inside an enclosed compartment. The location should also provide easy access for attaching the auxiliary starting cables, and should be as close as practical to the starter motor in the machine so as to require a minimum length of connecting cables.

The machine manufacturer shall provide a label indicating the electrical system voltage at the receptacle.

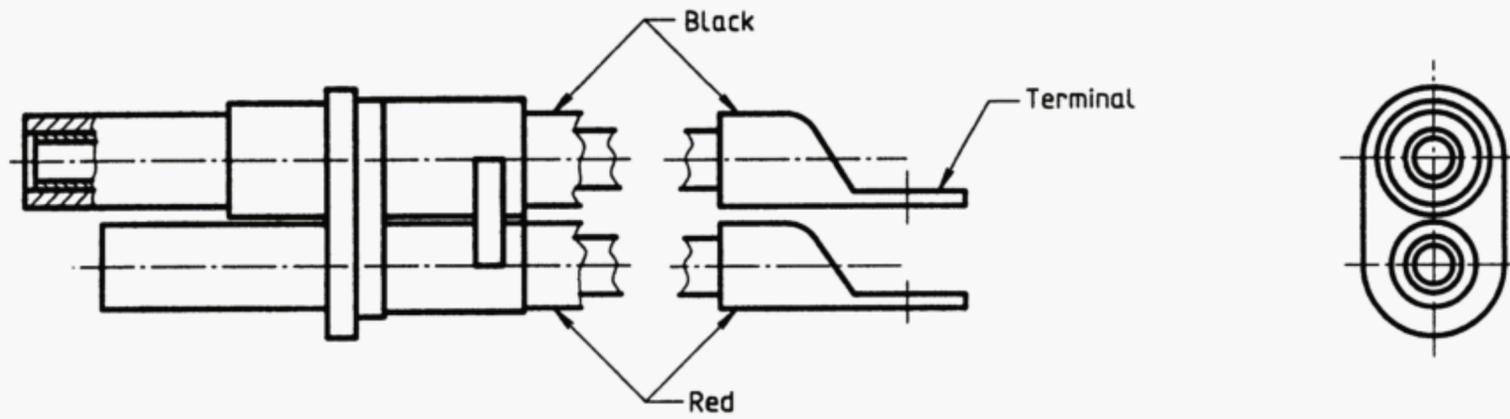
Dimensions in millimetres

**a) Receptacle assembly****b) Acceptance holes in machine****Figure 1 — Receptacle assembly and machine fitting**

Dimensions in millimetres



a) Machine to machine

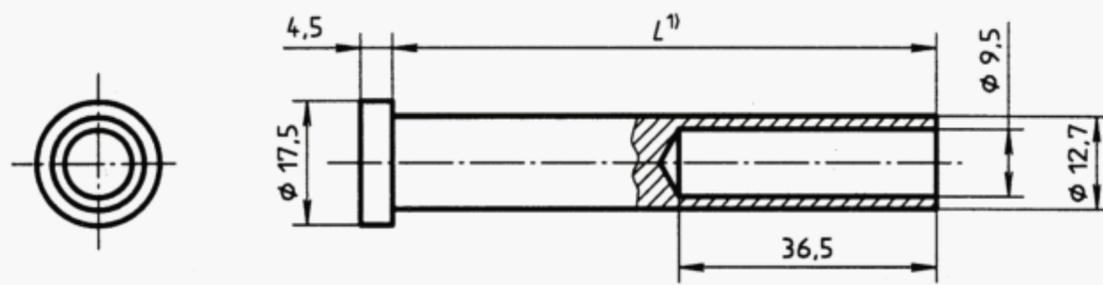


b) Machine to battery cart

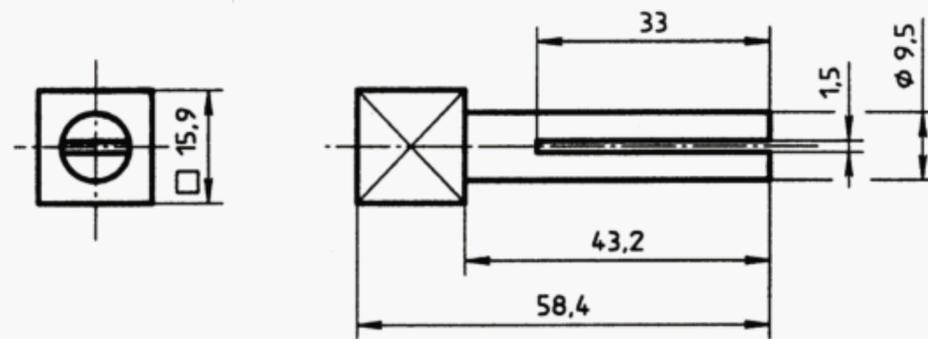
NOTE Dimensions are identical to those shown in a)

Figure 2 — Plug assembly

Dimensions in millimetre



a) Female terminal



b) Male terminal

1) L = Short terminal (red wire): 46,8 mm

$L$  = Long terminal (black wire): 66,3 mm

Figure 3 — Terminals

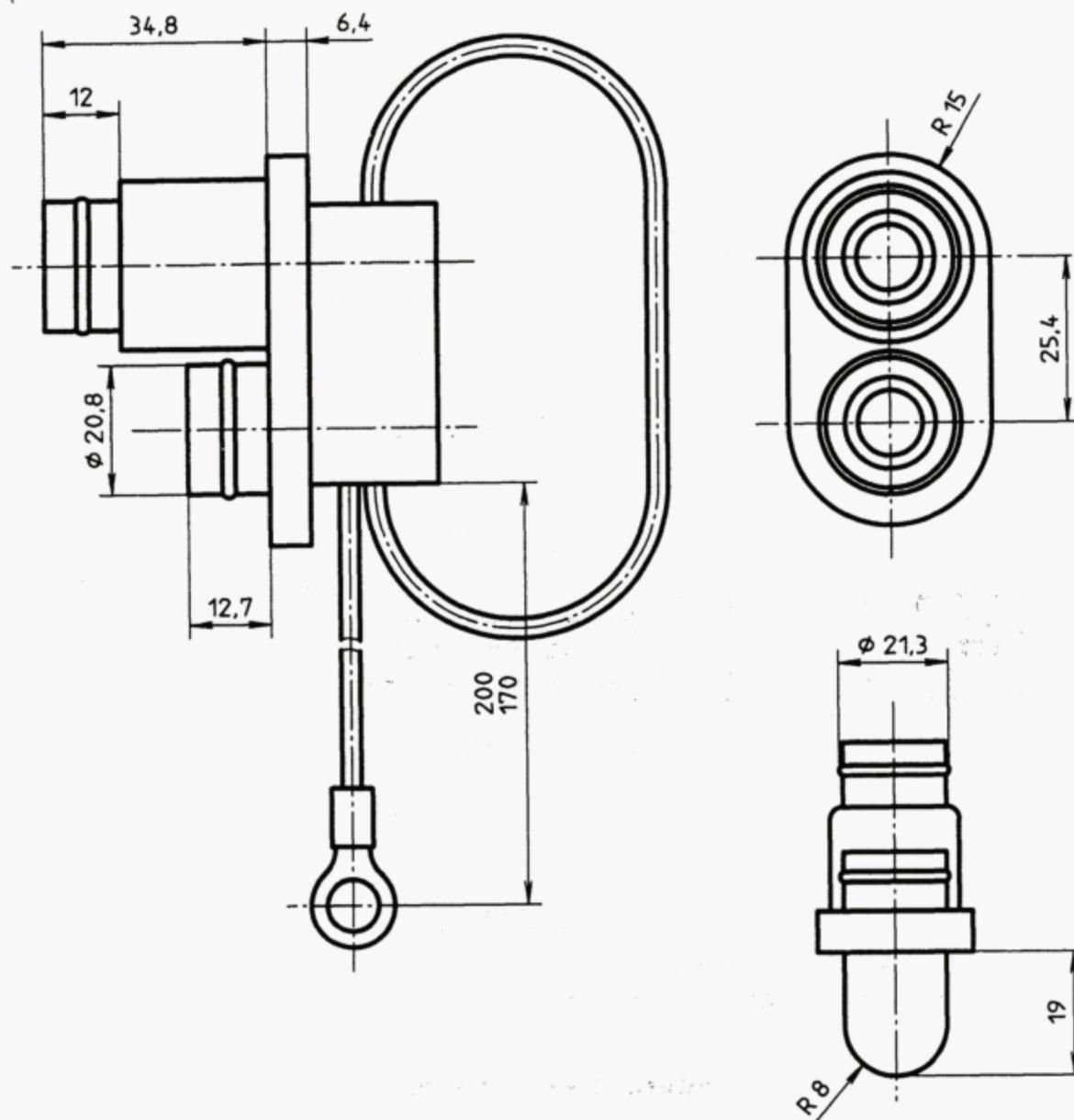


Figure 4 — Cover assembly

## NOTES

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Standards Australia is responsible for ensuring the Australian viewpoint is considered in the formulation of International Standards and that the latest international experience is incorporated in national Standards. This role is vital in assisting local industry to compete in international markets. Standards Australia represents Australia at both the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC).



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