

TECHNICAL  
REPORT

**ISO**  
**TR 12369**

First edition  
1994-10-01

---

---

**Agricultural tractors and machinery —  
Electrical power transmission connectors**

*Tracteurs et matériels agricoles — Connecteurs de transmission de  
puissance électrique*



Reference number  
ISO/TR 12369:1994(E)

## Foreword

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

The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/TR 12369, which is a Technical Report of type 2, was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 4, *Tractors*.

This document is being issued in the type 2 Technical Report series of publications (according to subclause G.4.2.2 of part 1 of the ISO/IEC Directives, 1992) as a "prospective standard for provisional application" in the field of electrical power transmission between agricultural tractors and implements, because there is an urgent need for guidance on how standards in this field should be used to meet an identified need.

© ISO 1994

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 the publisher.

International Organization for Standardization  
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

This document is not to be regarded as an "International Standard". It is proposed for provisional application so that information and experience of its use in practice may be gathered. Comments on the content of this document should be sent to the ISO Central Secretariat.

A review of this type 2 Technical Report will be carried out not later than two years after its publication with the options of: extension for another two years; conversion into an International Standard; or withdrawal.

STANDARDSISO.COM : Click to view the full PDF of ISO/TR 12369:1994

## Introduction

This Technical Report contains two proposals for electrical power transmission connectors from agricultural tractors to agricultural implements. Both variants are in practical use at the moment and it is intended to examine at a later date whether a preference for one of the types is possible.

Only the geometrical dimensions and electrical characteristics are covered. A test programme in which the mechanical and electrical requirements are specified in detail will be determined by a separate working group at a later date.

STANDARDSISO.COM : Click to view the full PDF of ISO/TR 12369:1994

# Agricultural tractors and machinery — Electrical power transmission connectors

## 1 Scope

This Technical Report specifies the essential interface dimensions of a socket and plug coupling to transmit 12 V electrical power from agricultural tractors to agricultural implements and machinery. It applies to sockets other than those used for trailer lighting as specified in ISO 1724.

This Technical Report does not apply to any other voltage system (6 V or 24 V).

NOTE 1 Figures are given solely for the purpose of illustration and for reference to terms and definitions. They do not purport to denote design requirements.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Technical Report. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Technical Report 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 1724:1980, *Road vehicles — Electrical connections between towing vehicles and towed vehicles with 6 or 12 V electrical equipment — Type 12 N (normal)*.

ISO 8935:1990, *Tractors for agriculture and forestry — Mountings and apertures for external equipment controls*.

## 3 Definitions

For the purposes of this Technical Report, the following definitions apply.

**3.1 contact:** Current-carrying elements of the connector, either male or female.

**3.2 pin:** Male contact.

**3.3 contact socket:** Female contact.

**3.4 socket:** Female half of the connector which is attached to the tractor.

**3.5 plug:** Male half of the connector which is attached to the implement.

**3.6 connector:** Complete mated assembly containing the socket, plug, pins and contact sockets.

**3.7 mating cycle:** One connection and one disconnection of the plug and socket.

## 4 Connector type 1

### 4.1 Dimensions

See figures 1 and 2.

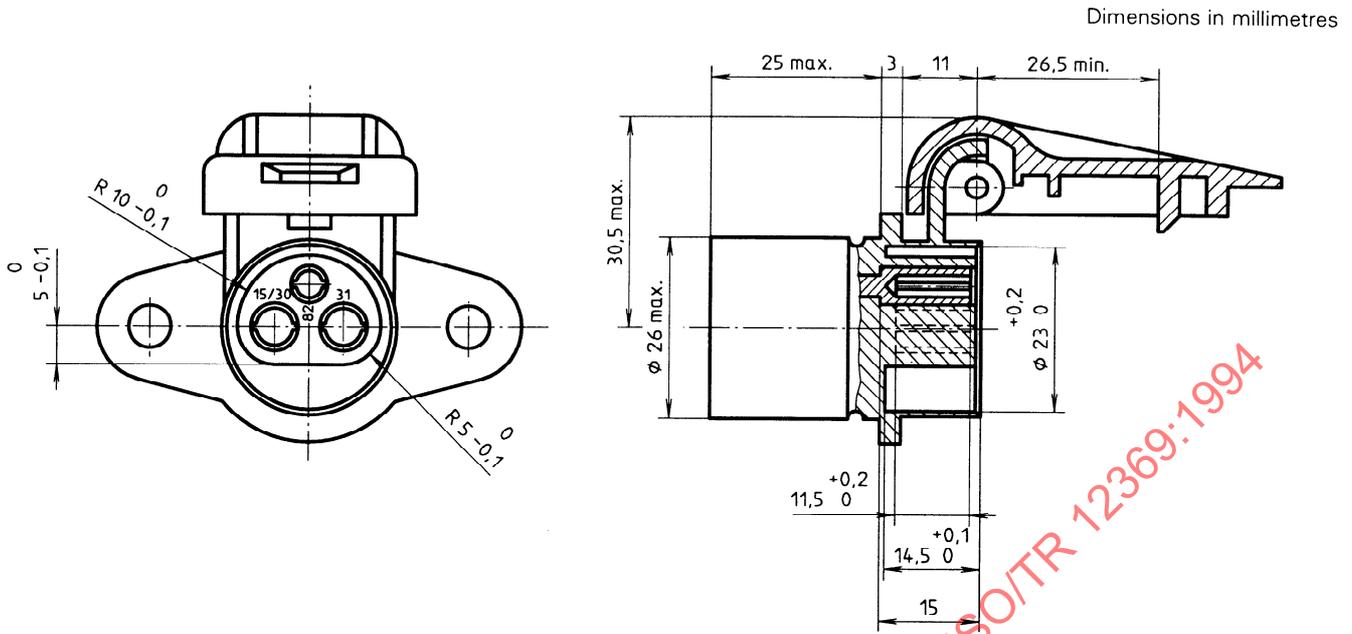


Figure 1 — Socket on tractor

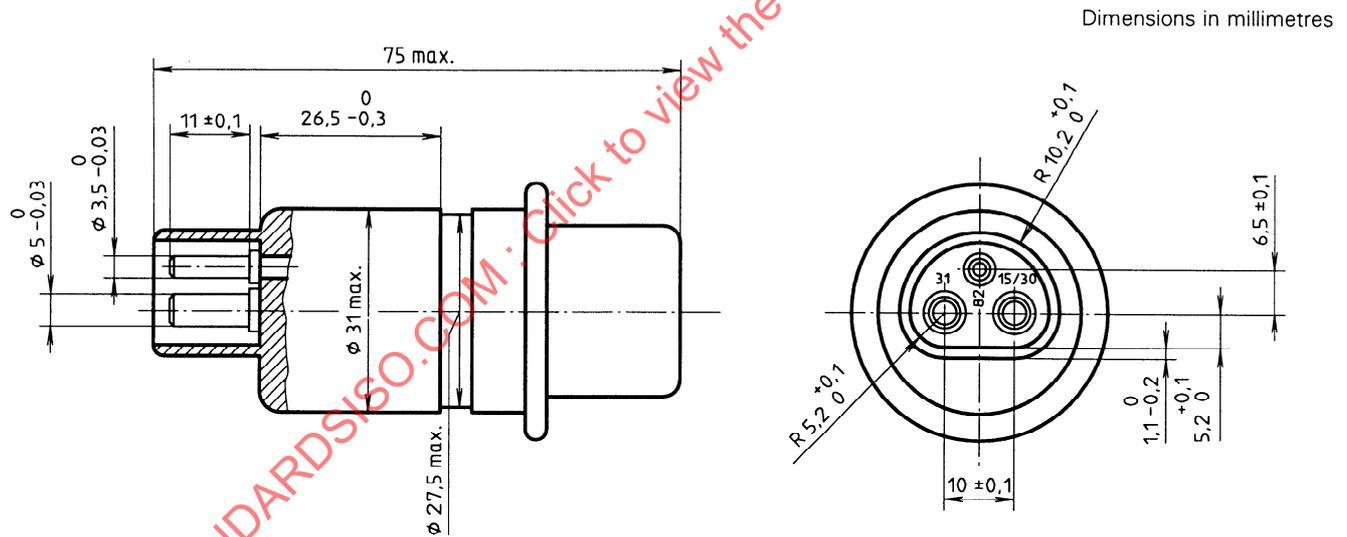


Figure 2 — Plug on implement

## 4.2 Requirements

There shall be a direct current of 25 A and a voltage of 12 V available at pins 15/30 and 31 when measured at the tractor nominal engine speed.

This requirement does not apply when lights (e.g. headlights, rear lights, working lights) are switched on.

The circuit shall be fused on the tractor. It is allowable to charge pin 82 (see figure 2) with a switched current of 5 A.

The socket cover (see figure 1) shall close automatically, when the plug is disconnected.

### 4.3 Pin layout and allocation

The layout of the pins shall be as shown in figure 2, to avoid misconnection.

Pins shall have the following allocation:

Pin 15/30	voltage
Pin 31	ground
Pin 82	switch

### 4.4 Location on tractor

One socket shall be placed on the right side in front of the driver's seat as close as possible to the mounting points for the external equipment controls as specified in ISO 8935:1990, subclause 3.2.

Further sockets outside the driving cabin, if any, shall be placed as close as possible to the trailer lighting socket. They shall be usable either at maximum current (25 A) alternatively or simultaneously at equivalent reduced current.

It shall be possible to connect these sockets with a plug as specified in figure 2.

## 5 Connector type 2

### 5.1 Dimensions

The socket on the tractor which contains the pins (three male spades 7,5 mm long × 5,8 mm wide × 2,5 mm thick) shall be as specified in figure 3.

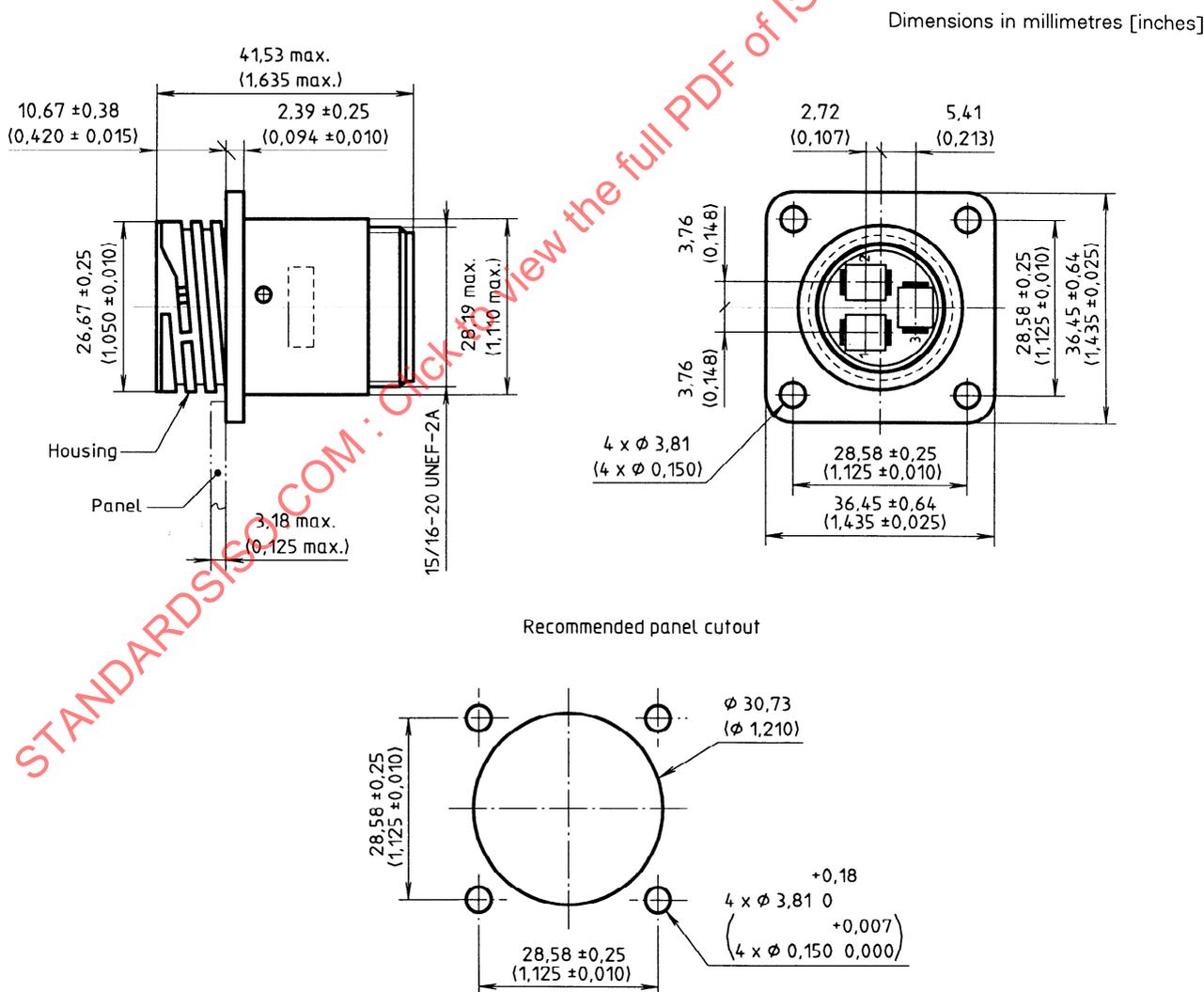


Figure 3 — Socket on tractor

The plug on the implement contains the mating contacts.

## 5.2 Requirements

The socket shall be connected to the tractor direct current 12 V electrical system.

The connector shall provide continuous current at an ambient temperature of 85 °C and 12 V as shown in table 1.

More than one socket in or behind the operator's area, if any, shall be usable either at maximum current (47,5 A) alternatively or simultaneously at equivalent reduced current with any of the other sockets.

The circuits which pass through pins 1 and 2 shall be protected against circuit-overload by the appropriate size fuses and/or circuit breakers on the tractor.

Covers shall be attached to the socket and plug to prevent contamination of the contacts when not mated.

## 5.3 Pin layout and allocation

The layout of the pins in the socket and the contact sockets in the plug shall be as defined in 5.1. Pins shall have the allocation specified in 5.2. Improper orientation during mating shall be prevented by means of design.

## 5.4 Location on tractor

The socket or sockets shall be placed on the right side of the operator's seat and within 0,5 m of the mounting point for the external equipment controls as specified in ISO 8935:1990, subclause 3.2.

The socket at the rear of the tractor shall be placed as close as possible to the towing vehicle lighting socket specified in ISO 1724:1980, subclause 3.3. The axis of the connector shall be parallel to the PTO shaft within 10°.

Space adjacent to the sockets on the tractor shall be provided to allow proper connection of the plug.

Table 1

Pin number	Amperage	Voltage
	A	V
1	40	12, switched
2	7,5	12, unswitched
3	47,5	ground

This page intentionally left blank

STANDARDSISO.COM : Click to view the full PDF of ISO/TR 12369:1994