
International Standard



7638

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Road vehicles — Brake anti-lock device connector

Véhicules routiers — Prise pour dispositif d'antiblocage du frein

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7638 was prepared by Technical Committee ISO/TC 22, *Road vehicles*.

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Road vehicles — Brake anti-lock device connector

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1 Scope and field of application

This International Standard specifies the dimensional and electrical characteristics required for interchangeability of electrical connections for brake anti-lock devices between towing and towed vehicles of road trains. Performance requirements and test methods are also specified to ensure transmission reliability of signals and orders.

2 References

ISO 611, *Braking of automotive vehicles and their trailers — Vocabulary.*

ISO 3768, *Metallic coatings — Neutral salt spray test (NSS test).*

IEC Publication 529, *Classification of degrees of protection provided by enclosures.*

3 Definitions

3.1 anti-lock device: (See ISO 611.)

3.2 park socket: A socket to store the plug and cable out of the way when the vehicle is disconnected.

3.3 ejector: A part of the socket (but not of the park socket) provided to disengage the plug automatically, if the locking device is not operative.

4 Dimensions

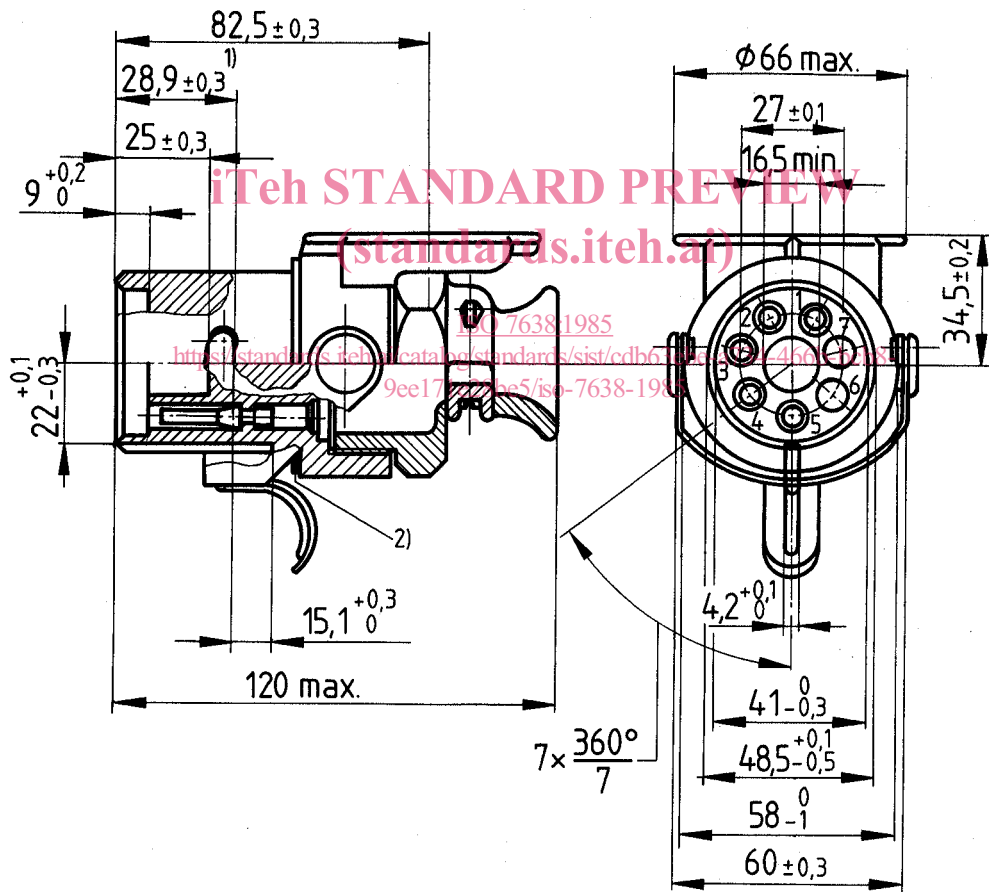
The plug, socket and park socket shall have the following dimensions. Dimensions not specified are left to the manufacturer's discretion.

NOTE — Figures 1 and 2 show positions for seven tubes and pins respectively, although the text refers to five. See note 2) to table 1.

4.1 Plug

The plug has five tubes for contacts 1 to 5.

Dimensions in millimetres



1) Critical dimension for internal gasket.

2) The gasket shall be mounted such that it cannot become detached under normal use.

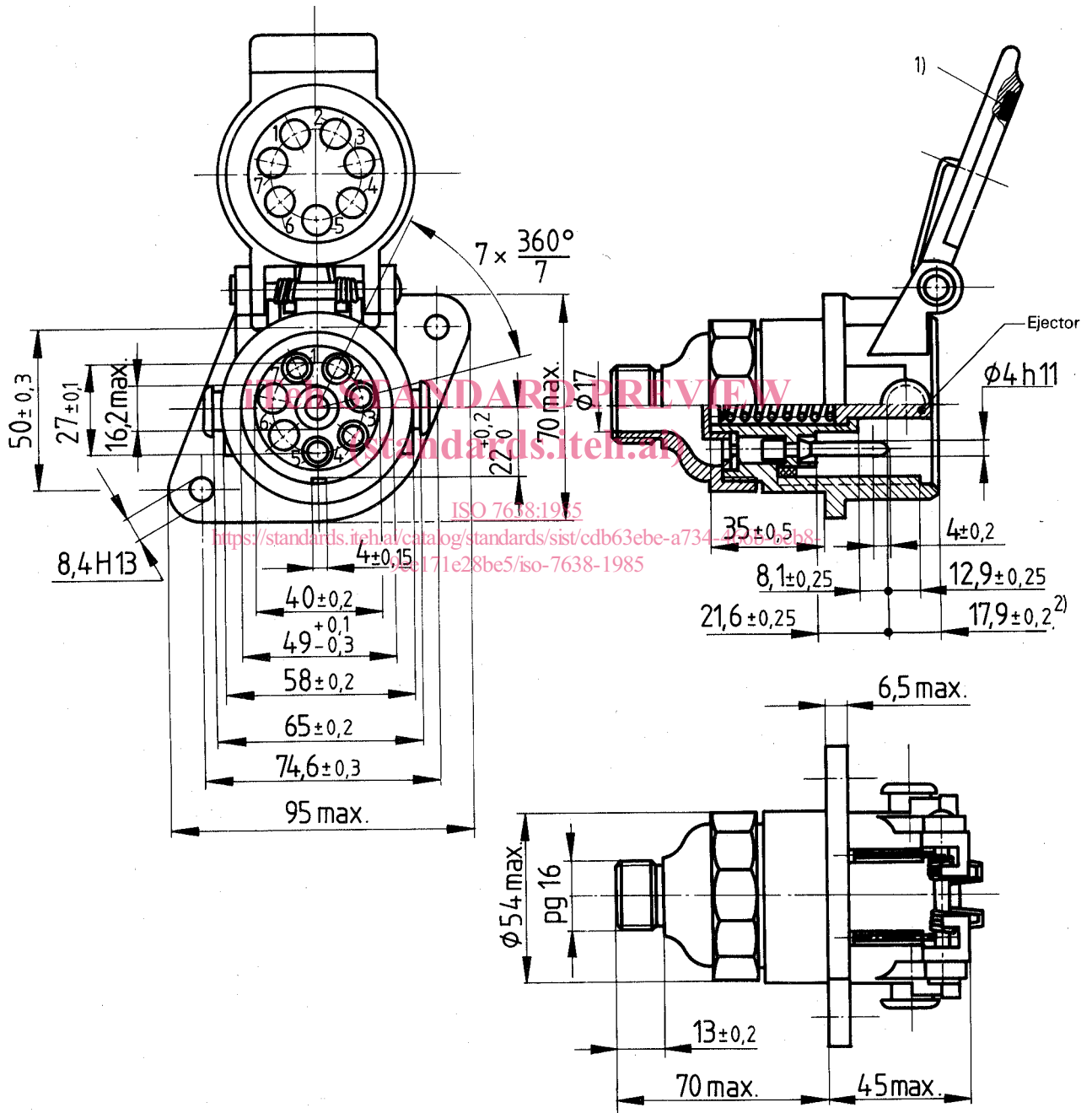
Figure 1 — Plug

4.2 Socket

The socket has five pins for contacts 1 to 5.

The cover is drawn in the open position : it shall close automatically when disconnecting the plug. Its opening angle shall be 120° min.

Dimensions in millimetres



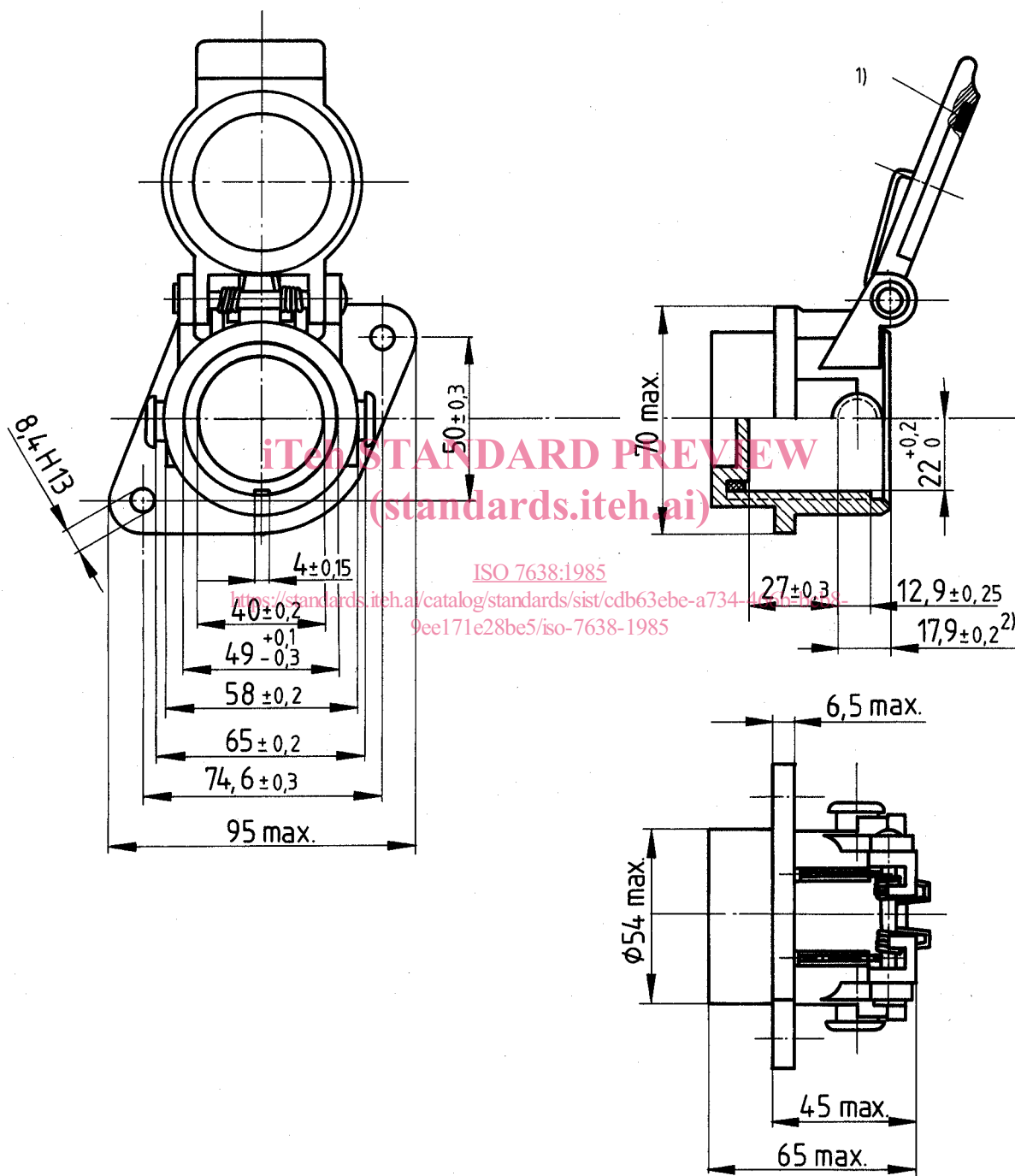
- 1) The gasket shall be mounted such that it cannot become detached under normal use.
- 2) Critical dimension for the external gasket.

Figure 2 — Socket

4.3 Park socket

The cover is drawn in the open position : it shall close automatically when disconnecting the plug. Its opening angle shall be 120° min.

Dimensions in millimetres



- 1) The gasket shall be mounted such that it cannot become detached under normal use.
- 2) Critical dimension for the external gasket.

Figure 3 — Park socket

5 Socket and plug positions on the vehicles

The sockets and plugs shall be mounted on the vehicles as follows.

5.1 Arrangement of the connection

The plug with the tubes shall always be the movable part of the connection (see figure 4).

When the cable with the plug is linked to the towing or to the towed vehicle through an extension cable, this shall be fitted with a device to obviate accidental disconnection.

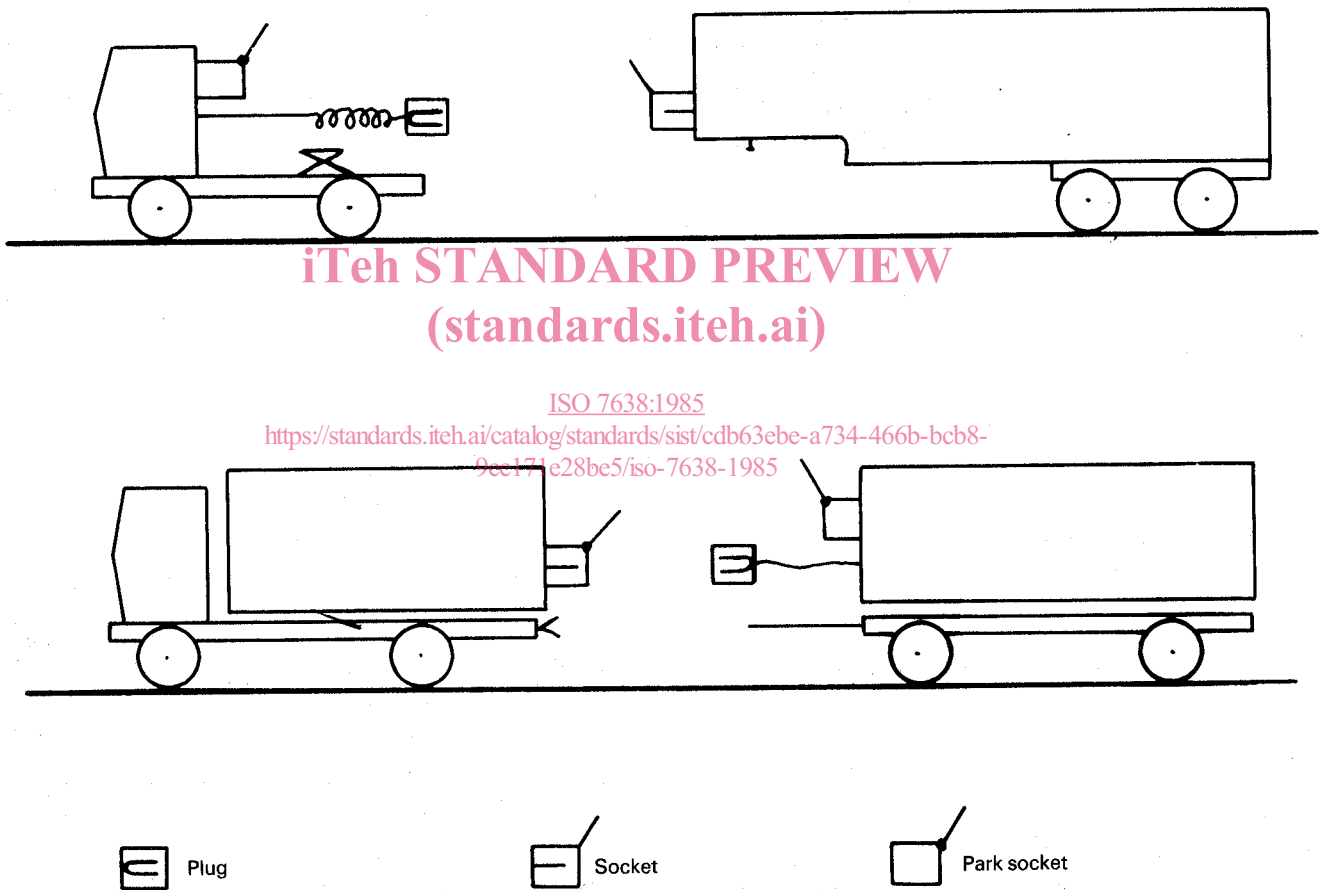
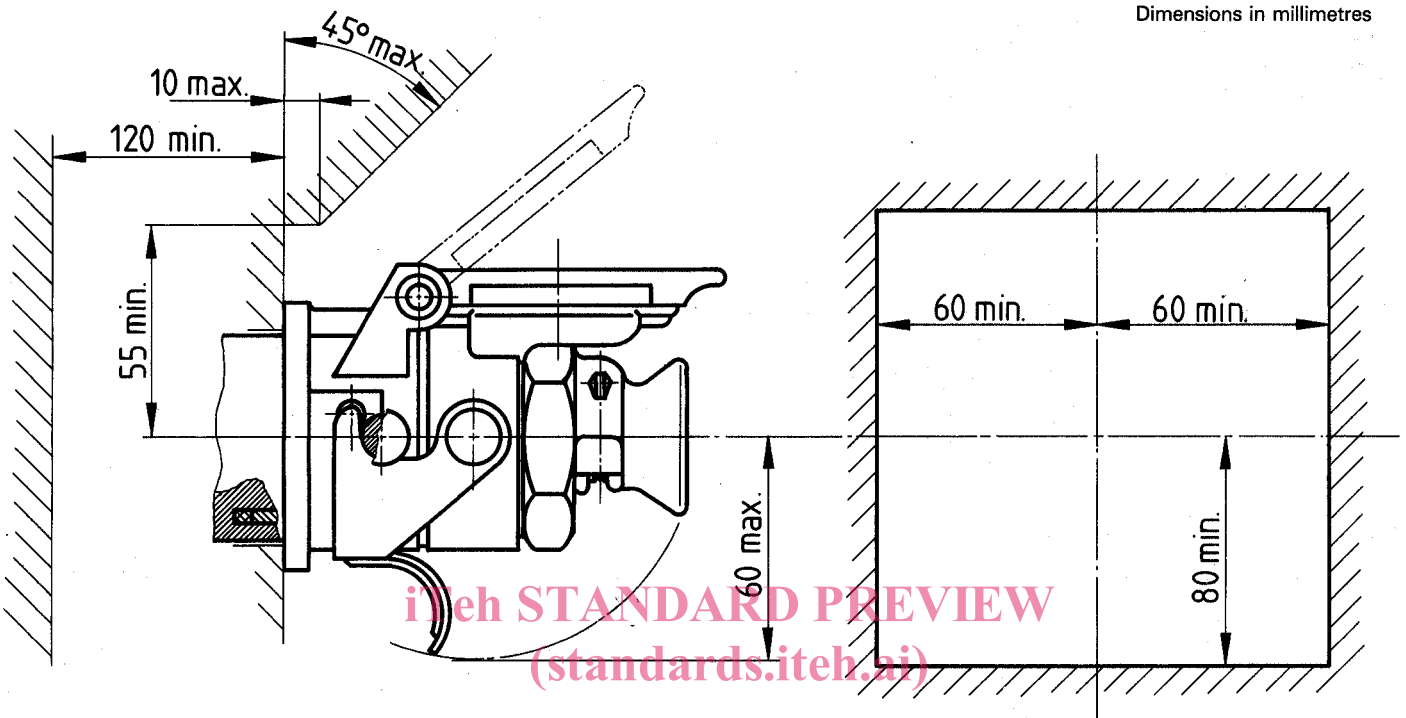


Figure 4 – Electrical connection positions

5.2 Open space around the connection

An uncluttered open space shall be provided around the connection (see figure 5).

Dimensions not specified are left to the manufacturer's discretion.



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 Figure 5 – Clearance dimensions

6 General requirements

6.1 Contact arrangement

The contacts shall be arranged as shown in figures 1 and 2.

6.2 Contact allocation and electrical requirements

The contact allocation, current carrying capacities and cross-sections of the conductor connected at the rear terminal of the pin and tube shall be as given in table 1.

Table 1

| Contact number | Function | Current carrying capacity A | Minimum cross-sectional area of the conductor connected at the rear terminal of the pin and tube mm ² |
|----------------|---------------------|--------------------------------|---|
| 1 | plus electrovalve | 30 ¹⁾ | 6 or 2 × 2,5 |
| 2 | plus electronics | 2 | 1,5 |
| 3 | minus electronics | 2 | 1,5 |
| 4 | minus electrovalve | 30 ¹⁾ | 6 or 2 × 2,5 |
| 5 | warning device | 2 (24 V) | 1,5 |
| 6 | spare ²⁾ | | |
| 7 | spare ²⁾ | | |

1) Maximum current for short duration.

2) Positions 6 and 7 do not have pins and tubes. The allocations of these contacts will be covered in a future revision of this International Standard.

These positions shall, however, be planned to allow contacts equivalent to contacts 1 and 4. The holes to positions 6 and 7 in both the plug and the socket should be covered by stoppers at the junction point to provide for later insertion of pins in these tubes.

6.3 Warning device

It is essential that any failure of the brake anti-lock device on the trailer shall be indicated to the driver by a tell-tale lighting up on the dashboard. To achieve this, the wire to pin 5 of the trailer connector shall be connected to the corresponding contact of the warning device on the trailer. This circuit shall remain open under normal working; a failure of the anti-lock device shall close the contact to the negative line of the circuit (see figure 6).

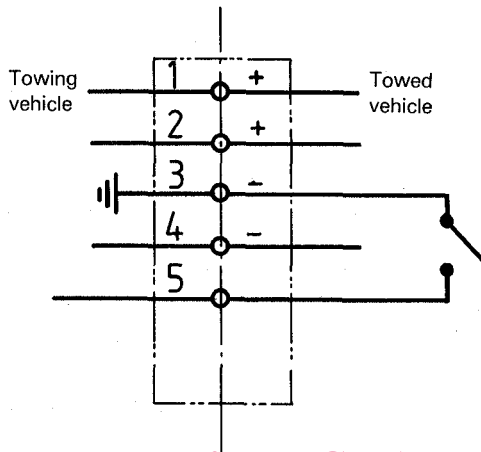


Figure 6 — Warning device

To confirm the correct operation of the warning device, the tell-tale shall be lit up briefly by the warning device each time the engine is started.

7 Performance requirements

NOTE — For test procedures, see clause 8.

No cracks and/or deformation of the connection shall appear during or after the tests.

7.1 Static load

The different parts of the plug shall withstand a static load of at least 500 N (test procedure, see 8.1).

7.2 Strength of locking device

The locking device shall withstand a withdrawal force of at least 1 500 N (test procedure, see 8.2).

7.3 Insertion, withdrawal and locking forces

7.3.1 Insertion and withdrawal forces

The insertion and withdrawal forces of the connection shall be within the range of 5 to 15 N, ignoring the influences of the ejector and the locking device (test procedure, see 8.3.1).

7.3.2 Pressure force of the ejector

The ejector shall produce a force within the range of 35 to 75 N, including any force variation over the ejector spring travel (test procedure, see 8.3.2).

7.3.3 Operational force of the locking device

The force needed to operate the locking device shall not exceed 160 N (test procedure, see 8.3.3).

7.4 Current carrying capacity (overheating)

Contacts 1 and 4 (electrovalve) shall be capable of carrying 25 A simultaneously for a period of 30 min. The temperature rise shall not exceed 20 °C (The initial temperature of the contacts is ambient temperature.) For test procedure, see 8.4.

7.5 Permissible voltage drop

The voltage drop between the pins and the corresponding tubes after 10 insertions shall not exceed the following values:

- 3 mV/A between the terminal of each pin and the terminal of the corresponding tube;
- 0,5 mV/A between each terminal and the conductor connected to it.

For test procedure, see 8.5.

7.6 Flash resistance

The insulation between the contacts and between each contact and the case (when metallic) shall withstand 1000 V r.m.s. (50 or 60 Hz) for 1 min (test procedure, see 8.6).

7.7 Ability to withstand extreme temperature

The requirements defined in 7.3 and 7.6 shall be achieved after subjecting the plug and socket to the temperature cycle test specified in 8.7.

7.8 Cover holding ability

The socket and park socket cover closing springs shall retain the cover closed when subjected to the test in 8.8.

7.9 Resistance to vibration

After subjecting the mated plug and socket to the vibration test specified in 8.9, verify the requirements in 7.11 and 7.12 successively.

Then check that the insertion and withdrawal forces are as specified in 7.3.1; the values shall not vary more than 50 % from those measured initially.

Then check that the voltage drop of the connection (see 8.5) does not vary by more than 50 % from that measured initially.

7.10 Neutral salt spray

No marks of corrosion shall be visible after subjecting the connection to the salt spray test in 8.10 for a period of 48 h.