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# International Standard



# 7578

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## Road vehicles — Sheath-type glow-plugs — General requirements and test methods

*Véhicules routiers — Bougies de préchauffage du type à fourreau — Caractéristiques générales et méthodes d'essai*

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**Descriptors** : road vehicles, internal combustion engines, diesel engines, preheating plugs, specifications, tests, marking.

## 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 7578 was prepared by Technical Committee ISO/TC 22, *Road vehicles*.

This second edition cancels and replaces the first edition (ISO 7578:1982), of which it constitutes a minor revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

# Road vehicles — Sheath-type glow-plugs — General requirements and test methods

## 1 Scope

This International Standard specifies general requirements and test methods for sheath-type glow-plugs with one insulated terminal.

## 2 Field of application

This International Standard applies to glow-plugs conforming to ISO 6550, designed for use with a nominal voltage of the installation of 12 V and used as a starting aid in compression ignition (diesel) engines.

## 3 Reference

ISO 6550, *Road vehicles — Glow plugs M12 × 1,25 and M14 × 1,25, sheath type, and cylinder head housing dimensions.*

## 4 General requirements and test methods

The tests shall be carried out at an ambient temperature of  $23 \pm 5$  °C.

### 4.1 Air leakage test

The sample shall be subjected to an air pressure of 40 bar above ambient air pressure on the sheath end, for a duration of 15 s.

The tightening torque shall be as specified in ISO 6550.

No continuous leakage through the body of the glow-plug is permissible.

### 4.2 Thermal and electrical functioning tests

The tests shall be carried out with a test installation in accordance with the figure equipped with a cooling device by which the temperature can be maintained below 30 °C, measured at the sealing seat of the glow-plug housing.

The tests shall be carried out at the nominal voltage of the glow-plug (as marked on it): a tolerance of  $\pm 0,1$  V is admitted.

#### 4.2.1 Glow-plug temperature

At the nominal voltage of the glow-plug, the sheath shall have reached a temperature of 850 °C at the hottest point within the measuring distance of 8 mm, as shown in the figure, after not more than 20 s for normal sheath-type glow-plugs, or not more than 10 s for fast warm-up sheath-type glow-plugs.

Under the same conditions the sheath shall have reached 1 000 °C within 60 s for normal types and 30 s for fast warm-up types.

For systems with electrical control, the glow-plug manufacturer and engine manufacturer shall agree on system performance.

Temperature measurements shall be made without direct contact. Before the test, the sample shall be pre-heated to oxidation at the nominal voltage of the glow-plug and then allowed to cool to ambient temperature.

The time for oxidation shall be as agreed between the glow-plug manufacturer and the engine manufacturer.

Dimensions in millimetres

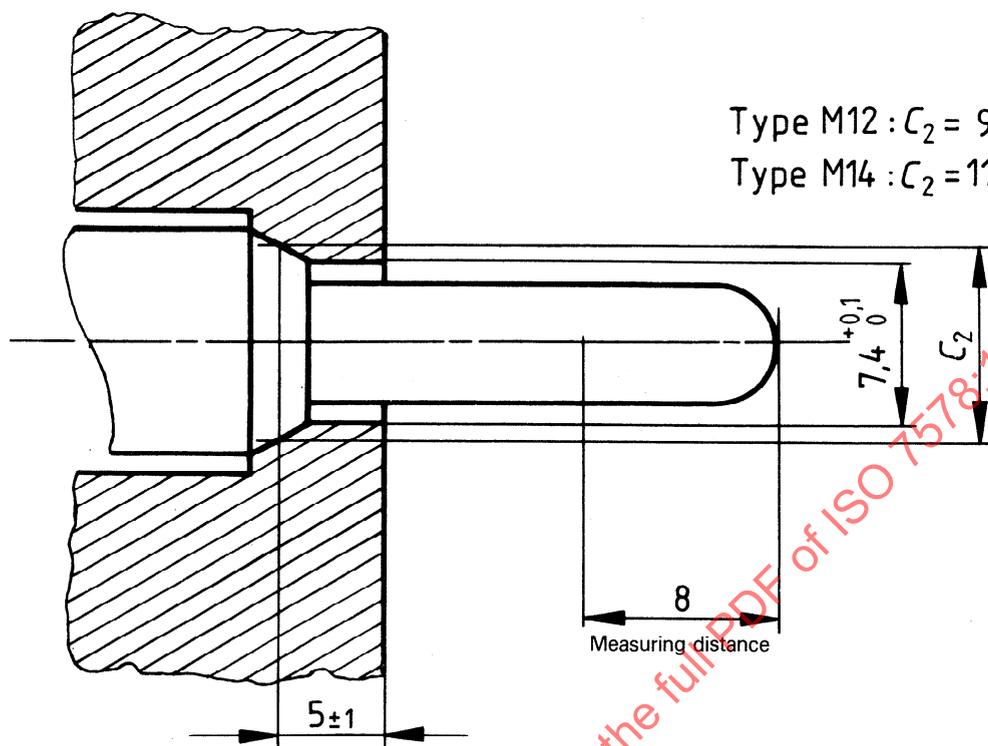


Figure — Test installation

## 4.2.2 Electrical performance

### 4.2.2.1 Cold resistance

The method used shall be such that the current through the glow-plug does not change by more than 2 % after 1 min.

Under these conditions, the minimum resistance of the glow-plug shall be 0,1  $\Omega$ .

NOTE — Contact resistances should be known, so that they do not induce significant errors.

### 4.2.2.2 Operational current

The operational current shall be read 30 s, for normal sheath-type glow-plugs, and 20 s, for fast warm-up sheath-type glow-plugs, after switching on.

The operational current shall not exceed 10 A for normal sheath-type glow-plugs and 12 A for fast warm-up sheath-type glow-plugs.

## 4.3 Overvoltage test

The test installation shall be in accordance with 4.2.

The test voltage, applied for 15 s, shall be 125 % of the nominal voltage of the glow-plug.

After this test, the glow-plug shall still meet the requirements of the thermal and functioning tests as specified in 4.2.

## 4.4 Overload test

The test installation shall be in accordance with 4.2.

Three different test voltages shall be applied to the glow-plug, each for a period of 2 min, one immediately after the other.

These test voltages shall be :

- the nominal voltage of the glow-plug;
- 110 % of the nominal voltage of the glow-plug;
- 115 % of the nominal voltage of the glow-plug.

After this test the glow-plug shall still meet the requirements of the thermal and functioning tests as specified in 4.2.

## 4.5 Vibration test

The purpose of this test is to check the physical integrity of the glow-plug under operational conditions.

Since the vibration stress will vary according to the engine and vehicle type, the test conditions shall be agreed between the engine manufacturer and the glow-plug manufacturer.

## 4.6 Endurance tests

### 4.6.1 Endurance when installed in engine

Since the electrical, thermal and chemical conditions will vary according to the engine type, the test conditions shall be agreed between the engine manufacturer and the glow-plug manufacturer.

### 4.6.2 Electrical endurance

The test shall be carried out at the nominal voltage of the glow-plug  $\pm 0,1$  V measured at the glow-plug terminal, with a test installation in accordance with 4.2.

The other test specifications, i.e. heating time, cooling time and the number of cycles, shall be as agreed between the engine manufacturer and the glow-plug manufacturer.

## 4.7 Marking of glow-plug

The glow-plug shall be marked with its nominal voltage and the name and/or trade mark of the glow-plug manufacturer. (The nominal voltage of the glow-plug is generally not identical to the nominal voltage of the installation.)

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