INTERNATIONAL STANDARD 3470

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Road vehicles — Windscreen demisting equipment for passenger cars — Test method

Véhicules routiers — Dispositif de désembuage du pare-brise de voiture particulière — Méthode d'essai

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

International Standard ISO 3470 was drawn up by Technical Committee ISO/TC 22, *Road vehicles,* and circulated to the Member Bodies in May 1974.

It has been approved by the Member Bodies of the following countries :

Austria	Italy	Switzerland
Belgium	Japan	Thailand
Bulgaria	Netherlands	Turkey
Czechoslovakia	Poland	United Kingdom
Germany	Romania	U.S.A.
Hungary	South Africa, Rep. of	Yugoslavia
Iran	Sweden	

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Austrâlia
France

Printed in Switzerland

Road vehicles — Windscreen demisting equipment for passenger cars — Test method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a test method for passenger car windscreen demisting systems.

2 REFERENCES

ISO 1176, *Road vehicles — Weights — Vocabulary.*

ISO . . ., *Road vehicles — Definition of the "R" point.*[1)]

3 DEFINITIONS

For the purposes of this International Standard, the following definitions shall apply :

3.1 mist : A film of condensation on the inside surface of a vehicle windscreen.

3.2 demist : The restoration of visibility through the windscreen following a mist condition, by the operation of demisting systems.

3.3 "R" point : The "seating reference point" ("R" point) is the manufacturer's design reference point which

a) establishes the lowest and rearmost normal driving or riding position of each seat provided by the vehicle manufacturer;

b) has co-ordinates established relative to the designed vehicle structure;

c) simulates the position of pivot centre of the human torso and thigh ("H" point).

3.4 road load : The power output required to move the vehicle on a flat road at a specified speed through still air at 20 °C with standard barometric pressure (1 013 mbar), the vehicle being at its complete vehicle kerb weight as specified in ISO 1176 plus 180 kg (mass of the driver included). Road load includes transmission friction, rolling friction and air resistance.

4 TEST EQUIPMENT AND PREPARATION

4.1 All necessary vehicle preparation such as cleaning and marking of the windscreen and instrumentation necessary to ensure a satisfactory test and for recording demist test conditions shall be carried out prior to the temperature stabilization referred to in 4.3.

4.2 A thorough degreasing operation shall be carried out on the inside of the windscreen using methylated spirit, white spirit, or an equivalent degreasing agent. When dry, a solution of ammonia of not less than 3 % and not more than 10 % shall be applied, allowed to dry and finally wiped with a dry cotton cloth.

4.3 The vehicle shall be placed in a cold chamber for sufficient time to ensure that engine coolant, lubricants and vehicle internal air temperature are stabilized at a temperature of − 3 ± 2 °C.

5 STEAM GENERATOR SPECIFICATION

The steam generator to be used in the test shall be similar to that shown schematically in the figure.

5.1 The capacity shall be at least 2,25 l.

5.2 The heat losses at boiling point shall be less than 75 W in ambient condition at − 3 ± 2 °C.

5.3 The fan shall have a capacity of 0,07 to 0,10 m^3/min at 50 Pa static pressure.

5.4 Six steam outlet holes of 6,5 mm diameter shall be provided around the top of the generator.

5.5 The generator shall be calibrated at − 3 ± 2 °C up to an input of at least n times 70 ± 5 g/h, where n is the number of seating positions designated by the manufacturer.

1) In preparation.

6 DEMISTER TEST CONDITIONS

6.1 The test chamber temperature shall be measured at the same height as the middle of the windscreen at a location such that it is not significantly affected by heat from the vehicle under test.

6.2 The horizontal component of the velocity of the air cooling the chamber at the windscreen shall be measured immediately prior to the test at a point located on the centre line of the vehicle 300 mm ahead of the base of the windscreen at a level halfway between the top and the bottom of the windscreen. The velocity of this component shall be as low as possible and in any case less than 8 km/h.

6.3 Engine bonnet (hood), doors, windows and vents, except the air intakes and outlets of the heating system, shall be closed during the misting period. One or two windows may be open a total vertical distance of 25 mm during the demisting period.

6.4 The steam generator containing at least 1,7 l of water shall be brought to boiling point and stabilized to generate 70 ± 5 g/h of steam for each seating position designated by the manufacturer. This may be performed inside the vehicle provided that any steam generated before the start is piped away from the vehicle and the pre-test period is not more than 20 min.

7 TEST METHOD

7.1 The steam generator shall be located with its outlets on the vehicle centre line at a height of 580 ± 80 mm above the "R" point of the driver's seat. It shall normally be positioned immediately behind the front seat back-rests with the seat backs set at the designated angle, if adjustable, but where the vehicle design precludes this, the generator may alternatively be located in a convenient forward position nearest to that mentioned above.

7.2 After the generator has been operating for 5 min inside the vehicle, either one or two observers shall enter the front of the vehicle and the output of the generator shall be reduced by 70 ± 5 g/h for each observer.

7.3 One minute after the observer(s) have entered the vehicle, the engine shall be started as indicated by the manufacturer. The test period shall be reckoned from the time when the engine is started.

7.4 Notwithstanding the times specified in 7.2 and 7.3, the test shall commence if water run-off commences from the area under test.

7.5 Throughout the test, either the engine speed shall not exceed 50 % of the speed at which it develops maximum power, or the engine speed and load shall not exceed the speed and equivalent road load at 40 km/h in the gear and with the tyre pressure(s) recommended by the manufacturer for the road load. Additionally :

7.5.1 The voltage during the test may be not more than 20 % above the nominal system ratings at either the supply end of the motor dropping resistor, if fitted, or, if not fitted, at the blower motor, if fitted.

7.5.2 Vehicle demister controls shall be set as recommended by the vehicle manufacturer.

7.5.3 The battery shall be in a fully charged condition.

7.6 After a period of 10 min from the start of the demist test, the demist pattern shall be recorded.

7.7 At the completion of the test a scale drawing of the windscreen showing the demist areas and demist patterns shall be prepared.

7.8 This test may be repeated and the demist areas averaged.

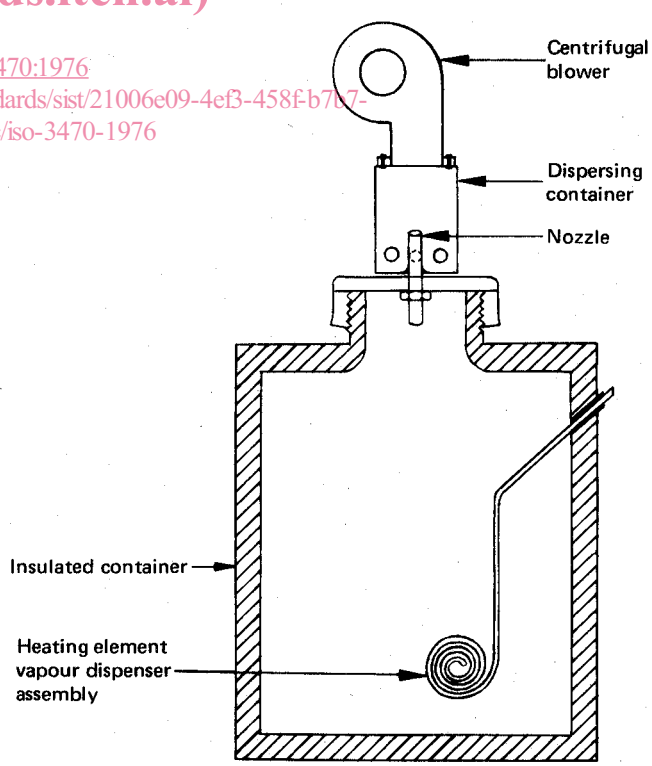

FIGURE – **Schematic drawing of typical steam generator**