भारतीय मानक **IS 10792 : 2024**

Indian Standard

ट्रैक्टरों और ट्रेलरों के बीच वायवीय युग्मन — परीक्षण और स्वीकृति मानदंड

(पहला पुनरीक्षण)

Pneumatic Coupling Between Tractors and Trailers — Testing and Acceptance Criteria

(First Revision)

ICS 43.040.70; 65.060.10

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May 2024 **Price Group 4**

Transport Tractors, Trailors and Industrial Trucks Sectional Committee, TED 22

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Transport Tractors, Trailers and Industrial Trucks Sectional Committee and had been approved by the Transport Engineering Division Council.

This Standard was first published in 1984. This revision incorporates the experience gained with the use of this standard and brings the standard in line with the latest development in the field.

This standard had been formulated to specify the testing and acceptance criteria for pneumatic coupling between tractors and trailers.

The composition of the Committee responsible for formulation of this standard is given in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2: 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TESTING AND ACCEPTANCE CRITERIA OF PNEUMATIC COUPLING BETWEEN TRACTORS AND TRAILERS

(First Revision)

1 SCOPE

This standard specifies testing and acceptance criteria for pneumatic coupling between tractors and trailers as specified in IS 9905.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

IS No.	*Title*
IS 269 : 2015	Ordinary portland cement — Specification (*sixth revision*)
IS 1884 : 1993	Automotive vehicles — Electric horns — Specification (*third revision*)
IS 9000 (Part 5/Sec 12) : 1981	Basic environmental testing procedures for electronic and electrical items: Part 5 Damp heat (cyclic) test
IS 9000 (Part 16) : 1983	Basic Environmental testing procedures for electronic and electrical items: Part 16 Driving rain test
IS 9905 : 1981	Specification for pneumatic coupling between tractors and trailers

3 DEFINITIONS

For the purpose of this standard, the following definition shall apply:

3.1 Operative

A coupler shall meet the following torque and leakage requirements at ambient temperature of 25 °C ± 5 °C:

a) Coupling and uncoupling torque shall be not more than 17 Nm or less than 3 Nm at 7 bar and zero-line pressure respectively; and

b) A pair of coupler halves, when joined properly shall not show leakage more than 50 cm^3/min through the body or between packing faces at 10 bar line pressure when tested as per Annex A.

4 TESTS

Production test based on sampling shall be applicable to those tests which require 'operative' criteria of the coupler. Rest of the tests shall be considered as type tests.

4.1 Salt Spray Test

4.1.1 This test is intended to determine the ability of the couplers to withstand corrosion due to atmospheric conditions.

4.1.2 The test shall be carried out as specified in **8.10** of IS 1884.

4.1.3 A new pair of coupler, properly joined, shall be operative after being subjected to **4.1.2.**

4.2 Endurance Test

4.2.1 This test shall be carried out by coupling and uncoupling the couplers for 1 000 complete cycles (coupling and uncoupling is one cycle).

4.2.2 A new pair of coupler shall be pulled apart 100 times when connected to a line having 700 kPa pressure under a gradually applied load of not less than 250 N and more than 1 300 N along the hose axis.

4.2.3 A new pair of couplers shall be operative after being subjected to **4.2.1** and **4.2.2**.

4.3 Cold Test

4.3.1 This test is intended to determine the ability of couplers to be used or stored at low temperature.

4.3.2 New couplers shall be operative after being dropped from 2 m on to a concrete surface immediately after exposure to a temperature of - 40 °C for 6 h.

4.3.3 New pair of coupler (one properly coupled and one uncoupled) shall be exposed to a temperature of

– 40 °C for 6 h. While at this temperature, the leak rate shall not exceed 50 cm^3/minute on the coupled pair when pressurized to 10 bar and coupling torque on the uncoupled pair shall not be more than 22.5 Nm at zero-line pressure, when tested as per Annex A.

4.4 Dry Heat Test

4.4.1 This test is intended to determine the ability of couplers to be stored at high temperature.

4.4.2 A new pair of coupler (one properly coupled and one uncoupled) shall be exposed to a temperature of 52 °C for 24 h. While at this temperature, leak rate shall not exceed 50 cm^3/min on the coupled pair when pressurized to 10 bar and coupling torque on the uncoupled pair shall not be more than 17 Nm at zero-line pressure, when tested as per Annex A.

4.5 Damp Heat Cycling Test

4.5.1 This test is intended to find out whether the coupler under test is suitable for operation under conditions of high relative humidity at elevated temperature.

4.5.2 This test shall be conducted according to the method specified in IS 9000 (Part 5/Sec 12).

4.6 Dust Test

4.6.1 This test is intended to determine satisfactory performance of the couplers when operated in fine dusty atmosphere.

4.6.2 This test shall be conducted for 5 h according to the following procedure:

4.6.2.1 A sample unit with any drain hole closed shall be mounted in its normal operating position, 150 mm from the wall in a box measuring 900 mm in all directions, containing 5 kg of fine powdered cement conforming to IS 269. At intervals of 15 min, this dust shall be agitated by compressed air or fan blower by projecting blasts of air for a 2 s period in a downward direction into the dust in such a way that the dust shall be completely and uniformly diffused throughout the entire cube. The dust is then allowed to settle. This test shall be continued for 5 h.

4.6.2.2 After this test, the exterior surface shall be cleaned, uncoupled and torque specified in **3.1** shall be complied. After uncoupling, there shall be no ingress of powdered cement particle inside coupling surface, it shall be considered as adequately dust tight.

4.7 Water Spray Test

4.7.1 This test is intended to determine the suitability of the couplers to withstand conditions of water spray.

4.7.2 This test shall be conducted according to the method specified in IS 9000 (Part 16). The test duration shall be 25 h.

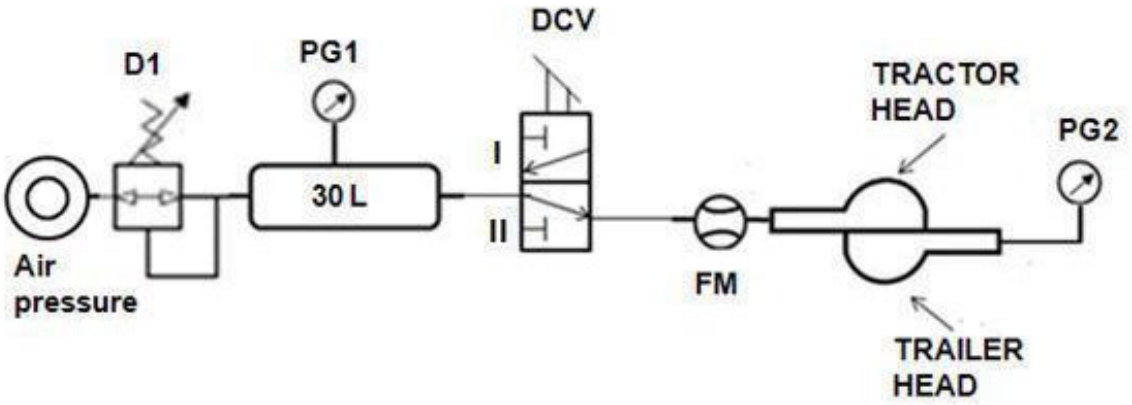
4.8 A new pair of couplers shall work smoothly after being subjected to **4.5**, **4.6** and **4.7**.

ANNEX A

[*Clauses* 3.1 (b), 4.3.3 *and* 4.4.2]

LEAK TEST PROCEDURE FOR COUPLER

A-1 LEAK TEST SETUP



D1 — Pressure regulator (0 bar to 10 bar)
PG1 and PG2 — Pressure gauges (0 bar to10 bar)
DCV — 3/2 Direction control valve
FM — Flow meter (0 to 150 cm^3/min)

A-2 TEST PROCEDURE

A-2.1 Adjust the D1 and set the pressure at 10 bar.

A-2.2 Ensure the pressure 10 bar at PG1.

A-2.3 Switch the DCV for position II.

A-2.4 Ensure the pressure 10 bar at PG2.

A-2.5 Note the leak rate (cm^3/min) in flow meter.

A-2.6 Switch the DCV for position I and remove the coupling from the test setup.

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Transport Tractors, Trailers and Industrial Trucks Sectional Committee, TED 22

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