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Draft Indian Standard

**Road Vehicles - Liquefied Petroleum Gas (LPG) Specific Equipment –
Gas Mixing Piece
ICS No. 43.060.40;75.160.30**

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FOREWORD

(Formal clauses will be added later)

In the formulation of this standard, considerable assistance has been derived from United Nations Regulation No. 67 (Revision 2 - Amendment 2 : Supplement 8 to the 01 series of amendments: Date of entry into force: 3 February 2008), 'Uniform Provisions Concerning: Part I — Approval of specific equipment of motor vehicles using liquefied petroleum gases in their propulsion system.'

Following documents may be referred to for latest update on statutory requirements related to use of LPG fuel system in Internal Combustion Engine Vehicles:

Central Motor Vehicle Rules 1989 (CMVR) (As amended form time to time)

Motor Vehicle Act, 1988 (MVA) (As amended form time to time)

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the results of a test or analysis, shall be rounded off in accordance with IS 2:1960 '*Rules for rounding off numerical values (revised)*.' The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1 SCOPE

1.1 This Standard specifies definitions, general design requirements, performance and test methods of gas mixing piece of LPG specific equipment of motor vehicles of category L, M and N as defined in IS 14272 using LPG in their propulsion system.

1.2 This Standard is applicable to LPG specific equipment intended to use on vehicles using liquefied petroleum gas (LPG) in accordance with CMVR.

1.3 This Standard is not applicable to the LPG specific equipment used in agricultural tractors and construction equipment vehicles.

2 REFERENCES

The following documents contain provisions, which, through reference in this text, constitute provisions 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 the standards indicated below:

- 14272: 2009 Automotive Vehicles – Types – Terminology (*under revision*)
- Doc: TED 26(732) Road vehicles – Liquefied Petroleum Gas (LPG) specific equipment –Definitions, Classification and General Requirements
- Doc: TED 26(733) Road vehicles – Liquefied Petroleum Gas (LPG) specific equipment - General Design Rules, Performance and test methods.

3 DEFINITIONS

For the purpose of this standard, definitions given in TED 26 (732) shall apply.

4 CLASSIFICATIONS OF COMPONENTS

4.1 The gas mixing pieces are classified in accordance with Doc: TED 26 (732) according to the regulated pressure during operation as given in Table 1:

Table 1 Classification of Components
(Clause 4.1)

Classification	Classification Pressure (kPa)	Details of components
Class 2	450	for the part with a maximum regulated pressure during operation of 450 kPa.
Class 2A	120	for the part with a maximum regulated pressure during operation of 120 kPa.

5 DESIGN TEMPERATURES

The components of gas mixing piece shall be designed for temperature of -20° C to 120° C, when the fuel pump, if provided, is mounted outside the container. For temperatures exceeding the above-mentioned values, special test conditions shall be applicable.

6 GENERAL DESIGN RULES

6.1 Following requirements of TED 26 (733), as applicable, shall be applicable.

Clause 4.1 - Provisions regarding the electrical insulation.

Clause 4.1.1 - Provisions regarding the insulation class.

Clause 4.2 - Provisions when the power is switched off.

Clause 4.3.1 - Heat exchange medium (compatibility and pressure requirements).

7 TESTS AND TEST PROCEDURES

7.1 Applicable tests and tests procedures for type approval are given below:

Table 2
(Clause 7.1)

Test (1)	Procedure (Clause nos of IS-- TED26(733)) F (2)
Over pressure test	7
External leakage	8
High temperature	9
Low temperature	10
LPG compatibility	14 ²⁾
Corrosion resistance	15 ¹⁾

¹⁾ Only for metallic parts.

²⁾ Only for non-metallic parts.

8 MARKING

8.1 Each gas mixing piece shall be permanently and legibly marked with the following information:

- Manufacturers name or trade-mark, if any;
- Maximum regulated pressure or Class;
- Part no / Unique Identification mark / Type No / Model No;
- Month and year of manufacture or codes thereof or batch number; and
- Approval number, if any or BIS mark.

8.2 BIS CERTIFICATION MARKING

8.2.1 Each Gas mixing piece may also be marked with the BIS Standard Mark.

8.2.2 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

9 TECHNICAL INFORMATION TO BE SUBMITTED BY THE COMPONENT MANUFACTURER

Technical information to be submitted by the component manufacturer for component type test (type approval) shall contain at least following:

- a) Name of the manufacturer;
- b) Manufacturing Plant address;
- c) Class;
- d) Part no / Unique Identification mark / Type No /Model No;
- e) Maximum operating pressure;
- f) Operating temperature range; and
- g) Drawings with relevant dimensions and material.

10 ACCEPTANCE TEST (CONFORMITY OF PRODUCTION)

For the purpose of acceptance test, gas mixing piece manufactured shall conform to the following test requirements as specified in relevant clauses of this standard:

- a) Overpressure test;
- b) External Leakage test; and
- c) LPG compatibility test (for non-metallic parts).

11 CHANGES IN TECHNICAL SPECIFICATIONS OF A TYPE APPROVED COMPONENT AND EXTENSION OF APPROVAL

11.1 Any functional modification in technical specification declared in accordance with 9 shall be intimated to the test agency

11.2 Testing agency may then consider, whether,

- a) The component with modification complies with specified requirements, or
- b) Any further test / verification is required.

In case of b), checks for those parameters, which are affected by the modifications, only need to be carried out.

In the event of a) or in the case of b), after successful compliance to requirements, the certificate of compliance shall be validated for the modified version.

For deciding whether any further verification is required, guidelines given in table 3 shall be followed: -

Table 3
(Clause 11.2)

Serial no	Parameter / Criteria	Whether verification is required.
1	Change of class from 2A to 2	All tests mentioned in 7.1 related to change in pressure to be carried out.
	Change of class 2 or 2A	No verification required
2	Change in material from metallic to non-	Tests related to non-metallic

	metallic parts.	parts only needs to be carried out.
3	Increase in working pressure within the same class	Overpressure and external leakage tests are required.
	Decrease in working pressure	No tests required.
4	Change in operating temperature range	No tests are required if the change is within the range specified for tests.
5	Addition of parts to change direction of out let or inlet	No verification required

11.3 For any change in parameters mentioned in **9** and not covered in table above, no re-type approval is required.