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**DRAFT IN WIDE
CIRCULATION**

DOCUMENT DESPATCH ADVICE

Ref: TED 26/T - 24

Date: 01-09-2010

**AUTOMOTIVE VEHICLES RUNNING ON NON-CONVENTIONAL ENERGY SOURCES
SECTIONAL COMMITTEE, TED 26**

ADDRESSED TO:

1. All Interested Members of Transport Engineering Division Council, TEDC
2. All Members of Automotive Vehicles Running on Non-Conventional Energy Sources Sectional Committee, TED 26
3. All Others Interested.

Dear Sir(s),

Please find enclosed the following draft Indian Standards:

- 1) TED 26(786)W Road vehicles – Liquefied Petroleum Gas (LPG) Specific equipment – LPG Filter unit
- 2) TED 26(787)W Road vehicles – Liquefied Petroleum Gas (LPG) Specific equipment – Gas mixing piece
- 3) TED 26(788)W Road vehicles – Liquefied Petroleum Gas (LPG) Specific equipment – Fuel Rail
- 4) TED 26(789)W Road vehicles – Liquefied Petroleum Gas (LPG) Specific equipment – Pressure and/or Temperature sensor

Kindly examine these draft Indian standards and forward your views stating any difficulties which you are likely to experience in your business or profession, if these are finally adopted as National Standards.

Last date for comments: **31-10-2010**

Comments, if any, may please be made in the enclosed format and mailed to the undersigned at the above address.

These documents are also available on BIS website www.bis.org.in

Thanking you,

Yours faithfully,

Encl.: As above

(T. V. Singh)
Sc `F' & Head (Transport Engg.)

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Draft Indian Standard
**Road Vehicles - Liquefied Petroleum Gas (LPG) Specific Equipment –
LPG Filter Unit**
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 the definitions, general design requirements, performance and test methods of LPG Filter unit of LPG specific equipment of motor vehicles of category L, M and N as defined in IS 14272 using LPG in their propulsion system.

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

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

2 REFERENCES

The following standards 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:

IS No. / Doc. No.	Title
14272 (Part 1): 1995	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 as given in Doc- TED 26(732) shall apply.

4 CLASSIFICATION OF LPG FILTER UNIT

4.1 LPG Filter Unit are classified in Doc- TED 26(732) according to the maximum operating pressure, as given in table 1.

Table 1 Classification of LPG filter unit.
(Clause 4.1)

Classification	Classification Pressure (kPa)	Details of components
Class 1	3000	High pressure LPG Filter Unit containing liquid LPG or vapour LPG at vapor pressure or increased vapor pressure up to 3,000 kPa.
Class 1A	2000	High pressure LPG Filter Unit containing liquid LPG or vapour LPG at vapor pressure or increased vapor pressure up to 2,000 kPa.
Class 2	450	Low pressure LPG Filter Unit containing vaporized LPG with a maximum operating pressure below 450 kPa and over 120 kPa above atmospheric pressure.
Class 2A	120	Low pressure LPG Filter Unit for a limited pressure range containing vaporized LPG with a maximum operating pressure below 120 kPa and over 20 kPa above atmospheric pressure.

5 DESIGN TEMPERATURES

The components of LPG filter unit shall be designed for temperature of – 20 °C to 120 °C. For temperatures exceeding 120 °C, special test conditions shall be applicable.

6 TESTS AND TEST PROCEDURES

6.1 Applicable tests and tests procedures for type approval of class 1, 1A, 2 and/or 2A LPG filter units are given below:

Tests	Procedure (Clause no of IS – TED 26 (733) W)	
	Class 1 / 1A	Class 2 / 2A
Over pressure test	7	7
External leakage	8	8
High temperature	9	9
Low temperature	10	10
LPG compatibility	14 ²⁾	14 ²⁾
Corrosion resistance	15 ¹⁾	15 ¹⁾
Resistance to dry heat	16 ²⁾	--
Ozone ageing	17 ²⁾	--
Creep	18 ²⁾	--
Temperature cycle	19 ²⁾	--

¹⁾ Only for metallic parts.

²⁾ Only for non-metallic parts.

7. MARKING

7.1 Each LPG Filter Unit shall be permanently and legibly marked with the following information:

- a) Manufactures' name or trademark if any;
- b) Part No or unique identification mark or type no or Model no;
- c) Inlet (word or arrow mark)
- d) Maximum operating pressure or Class
- e) Approval no., if applicable or BIS mark.

7.2 BIS Certification Marking

7.2.1 Each LPG Filter Unit may also be marked with the BIS Standard Mark.

7.2.2 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 license for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

8 TECHNICAL INFORMATION TO BE SUBMITTED BY THE COMPONENT MANUFACTURER.

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

- 1) Name and address of the manufacturer;
- 2) Manufacturing plant address;
- 3) Part No. / Unique Identification mark / Type No / Models no;
- 4) Class;
- 5) Working Pressure;
- 6) Maximum Operating Temperature; and
- 7) Drawings with relevant dimensions and material.

9. ACCEPTANCE TEST (CONFORMITY OF PRODUCTION)

For the purpose of acceptance tests, LPG filter units manufactured shall conform to the following minimum test requirements as specified in relevant clauses of this standard:

SI No.	Applicable Tests	Applicable to class
(1)	(2)	
i)	Overpressure test	Class 1, 1A, 2 and 2A
ii)	External Leakage	Class 1, 1A, 2 and 2A
iii)	Temperature cycle test ¹⁾	Class 1, 1A
iv)	LPG compatibility ¹⁾	Class 1, 1A, 2 and 2A

¹⁾ Only for non-metallic parts.

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

10.1 Any functional modification in technical specification declared in accordance with **8** shall be intimated to the test agency

10.2 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 **b)**, after successful compliance to requirements, the certificate of compliance shall be validated for the modified version.

For deciding whether any further verification/test is required in case of **(b)**, guidelines given below shall be followed: -

Serial no	Parameter / Criteria	Whether verification is required.
1	Change of class from 2 or 2A to 1 (or) 1A, or 1A to 1.	All tests mentioned in 6.1 related to change in pressure to be carried out.
	Change of class 1/1A to 2 or 2A (or) 1 to 1A.	No verification required
2	Change in material from metallic to non-metallic parts.	1) If there is change in the main body, relevant tests need to be carried out. 2) Otherwise tests related to non-metallic parts only need to be carried out.
3	Change in material from non-metallic to metallic parts.	1) If there is change in the main body, relevant tests need to be carried out. 2) Otherwise tests related to metallic parts only need to be carried out.
4	Increase in working pressure within the same class	Overpressure, external leakage, creep and temperature cycles, as applicable, are required.
	Decrease in working pressure	No verification required.
5	Change in operating temperature range	No tests are required if the change is within the range specified for tests.
6	Addition of parts to change direction of out let or inlet	No verification required
7	Change in material of non-metallic parts	Ozone ageing test, LPG compatibility test and resistance to dry heat, creep tests and temperature cyclic test, as applicable
8	Change in location or direction of inlet and outlet.	No verification required.

10.3 For any change in parameters mentioned in **8** and not covered in Table above, no re-type approval is required.