IS 10109 (2002): Oil Pressure Stoves - Offset Burner Type
[MED 26: Oil Burning Appliances]

BLANK PAGE

भारतीय मानक

तेल दाब स्टोव — अन्तर्लम्ब बर्नर टाईप — विशिष्टि

(पहला पुनरीक्षण)

Indian Standard

OIL PRESSURE STOVES — OFFSET BURNER TYPE — SPECIFICATION

(First Revision)

ICS 75.160.20; 97.040.20

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Oil Burning Appliances Sectional Committee had been approved by the Mechanical Engineering Divisional Council.

This standard was first published in 1981. Since then many suggestions were received for improvement and with the result amendments 1, 2 and 3 were issued. This standard is being revised to incorporate the amendments issued and the suggestions received from time-to-time. In this revision the design of the stove has been left to the choice of the manufacturer. They may be made either in single burner or double burner assembly.

The offset burner type pressure stoves have become very popular with the consumers. The stoves of this type are more safe as the fuel tank is not directly attached to the burner.

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

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 : 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.

Indian Standard

OIL PRESSURE STOVES — OFFSET BURNER TYPE — SPECIFICATION

(First Revision)

1 SCOPE

This standard covers the requirements and tests for offset burner type oil pressure stoves, intended for domestic and commercial use, burning pressurized kerosene oil under a normal working pressure of 100 kN/mm^2 to 200 kN/mm^2 (1 kgf/cm^2 to 2 kgf/cm^2).

2 REFERENCES

The Indian Standards listed at Annex A 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 the standards.

3 TERMINOLOGY

For the purpose of this standard, the nomenclature of the different parts of the stove shall be as indicated in Fig. 1.

4 CAPACITIES

The stoves shall be made in 1.5 to 10 litres nominal capacities in steps of 0.5 litre capacities and shall be measured by filling oil to the maximum through the oil-filler cap which shall hold not more than 94 percent of the capacity of the tank.

5 MATERIAL

5.1 Material used in the manufacture of different parts shall be such that they would ensure safe handling and good performance of the stove throughout its reasonable life.

5.2 Fuel Container

The fuel container shall be made either from seamless steel pipe or from pipe welded from one piece steel sheet (*see* IS 513 or IS 1079). One piece dished plates shall be welded to the pipe at two ends.

5.2.1 The welding shall be sound and shall fully penetrate.

5.3 Typical material that are commonly used in the manufacture of other components are given in Annex B.

5.4 Plastic components (for example, handles) shall be free from fissures, distortions, blemishes and discolouration.

5.5 Materials for burners for oil pressure stoves shall be as given in IS 8808.

6 SHAPE AND DIMENSIONS

6.1 Common shape of an offset type burner shown in Fig. 1. It may be made in single-burner (as shown in Fig. 1) or double burner design.

6.2 The stove shall be made in sizes according to its capacity given at **4**. The overall dimensions of fuel tank, the frame and stove shall be left at the option of manufacturer. However, the stoves so manufactured should satisfy all the performance requirements. Also the vessel when kept on the stove shall not touch burner top.

6.3 Burners for stoves up to 3.5 litres capacity shall satisfy all the requirements of IS 8808. However, burners for stoves of more than 3.5 litres capacity shall satisfy test requirements of IS 8808. The flame ring shall conform to Fig. 2.

6.4 The minimum sheet thickness of the fuel container up to and including the capacity of 3.5 litres shall be 1.0 mm and for capacity above 3.5 litres shall be 1.6 mm when measured at any point.

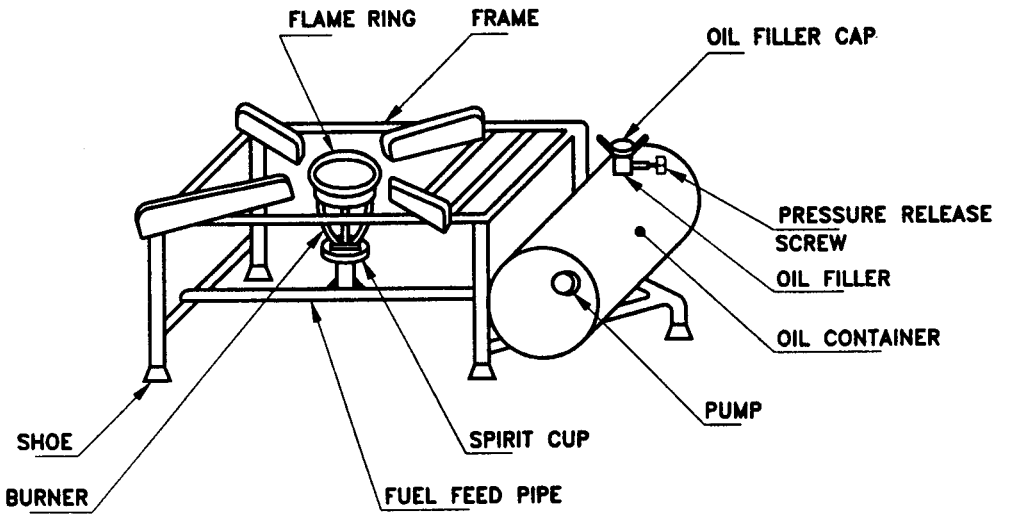
7 CONSTRUCTION

7.1 General

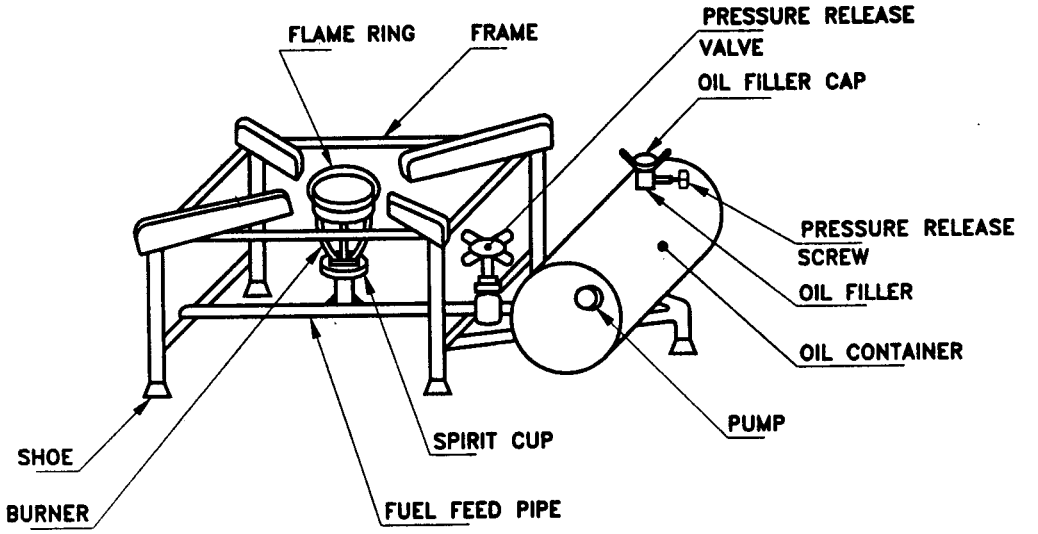
7.1.1 The frame of the stove shall be so made as to be firm on its base. The base of the fuel container shall be at least 15 mm clear from the ground. The fuel container may be of detachable type.

7.1.2 Stove, both when full of fuel and when empty, shall be capable of being tilted in any direction to an angle of 15° from the vertical, without overturning at that inclination or on being released.

7.1.3 Regulator near the socket of the burner may be provided for opening and closing of the fuel supply. In case the regulator is not provided, the kerosene oil should not come out of nipple when the tank is full under atmospheric pressure.

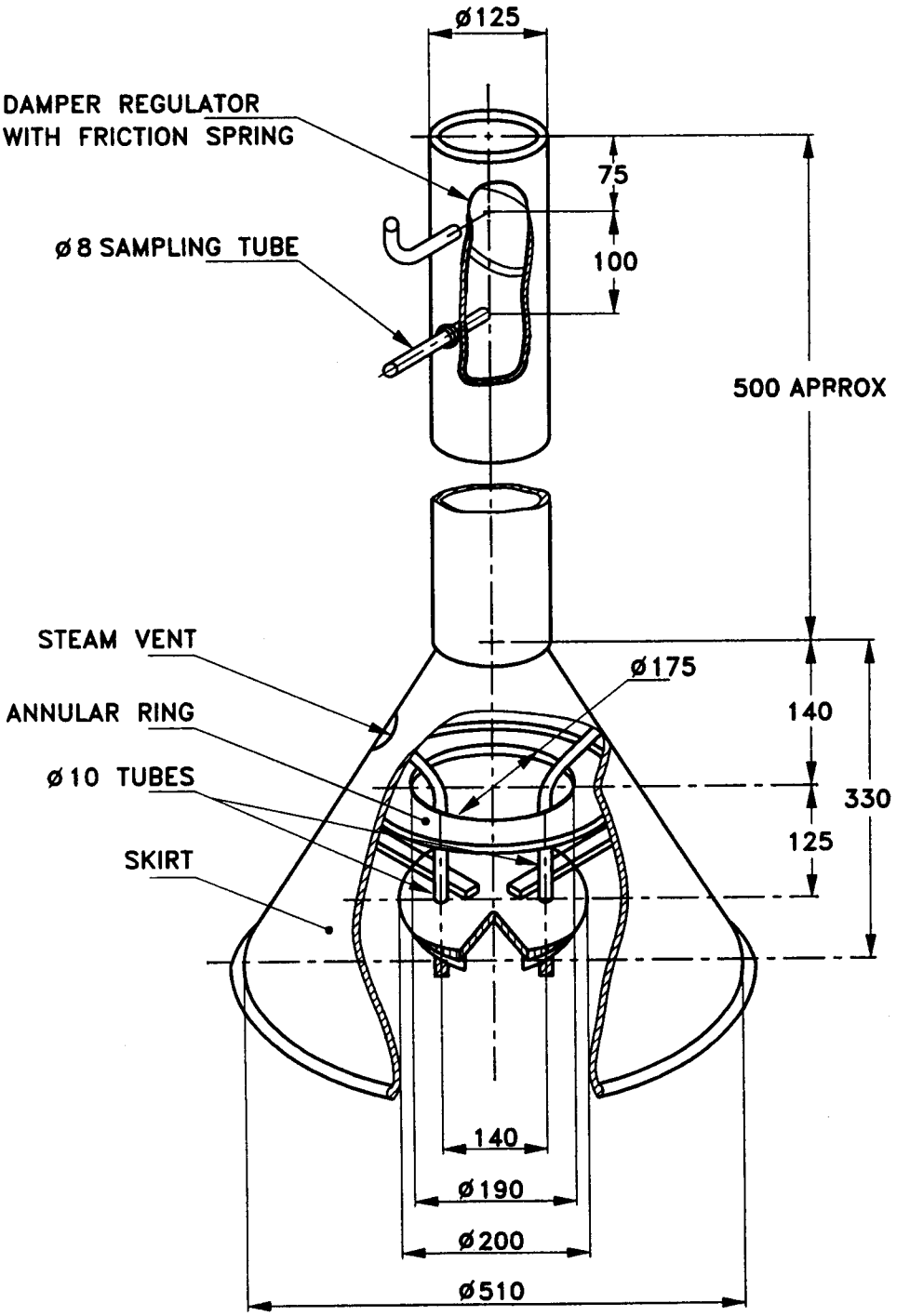


FIXED TYPE OIL CONTAINER



DETACHABLE TYPE OIL CONTAINER

FIG. 1 OIL PRESSURE STOVE, OFFSET BURNER TYPE, TYPICAL



NOTE — All dimensions specified are optional.

All dimensions in millimetres.

FIG. 2 HOOD FOR BURNER

7.2 Burner Assembly

Construction of all types of burner, for oil pressure stoves shall be as given in IS 8808.

7.3 Pump

The pump shall be of sound construction and shall be capable of developing and retaining a pressure of 250 kN/mm^2 (2.5 kgf/cm^2). The pump washer and non-return valve shall be removable.

7.4 Pressure Release Screw

The fuel container shall be fitted with a pressure release screw for releasing the container pressure quickly and safely.

7.5 Oil Filler Cap Assembly

The filler cap assembly shall be leak-proof at an air pressure of 250 kN/mm^2 (2.5 kgf/cm^2) (*see also* **12.1.1**). The oil filler cap assembly shall be so fitted that the oil container shall be able to retain oil up to the capacity of 94 percent of its full capacity.

7.6 Washers

7.6.1 The washer for oil filler cap shall be made from neoprene or other equally suitable material, which is resistant to heat and kerosene oil. It shall not become tacky or swollen when kept immersed in kerosene oil at 60°C for 24 h continuously and shall be capable of giving leak-proof seal after the above test.

7.6.2 The pump washer shall be in made from curried buffalo leather or other equally suitable material and shall be treated to avoid hardening and cracking.

7.7 Taps

In case of double burner design, the appliance shall have one tap for each burner. The 'ON' and 'OFF' shall be clearly and durably indicated on the taps.

7.8 Strength of Body of Stove

The top plate of the stove or vessel supports, which ever the case may be, shall be so designed as to be adequately strong to withstand the load calculated in accordance with the following:

a) *For circular top plate* — Diameter in cm of top plate expressed in kg, and

b) *For square frame* — Side of the square in cm expressed in kg.

7.8.1 The load as calculated above shall be applied uniformly distributed for a period of 1 h. At the end of the test, there shall not be any deformation or permanent set of any component of the stove.

7.9 Interchangeable Parts

7.9.1 The following parts shall be interchangeable:

a) Burner;
b) Nipple;
c) Flame ring;
d) Spirit cup;
e) Oil filler cap;
f) Pressure release screw; and
g) Components consisting of knob, rod, washer, cap, etc.

8 WORKMANSHIP AND FINISH

8.1 The surface shall show no defects when visually examined for pinholes, blisters, roughness and exposed areas of metal, which might give rise to rapid deterioration in the use.

8.2 All steel parts shall be painted by a heat-resistance paint. The painted surface shall not chip or flake during use. The pump rod and nut when made of mild steel shall be tin plated (*see* IS 1359) or zinc plated (*see* IS 1573) as desired by the purchaser.

8.3 Vitreous enamelled parts shall comply with the requirements of IS 3972.

8.4 Nickel and chromium plating of parts shall be according to IS 1068.

9 INSTRUCTIONS

Instruction for the safe use of the stove shall be supplied with the stove in Hindi, English and other regional language. These shall include the following:

a) Prior to lighting the stove, ensure that all the components are undamaged and properly assembled in accordance with the design;
b) Fill kerosene oil in the container (through a funnel with filter) not exceeding three-fourths capacity of the container. Do not use fuel other than kerosene oil.
c) Heat burner of the stove, adequately by spirit or kerosene-soaked external heater and then pump the air moderately to obtain a uniformly spread blue and stable flame;
d) Clean the clogged burner regularly to get the required flame;
e) Reduce the flame, just enough to keep the contents boiling, once the boiling conditions have reached;
f) Maximum oil consumption rate in g/h;
g) Expected thermal efficiency; and
h) Total oil filling capacity in litres.

10 MARKING

10.1 Each stove shall be marked with the manufacturer's name, initial or his registered trade-mark and the capacity of fuel container. The stove shall also be marked with the following:

'Fuel consumption rate in g/h with a tolerance of ± 15 percent (stickers may be used)'.

10.2 BIS Certification Marking

10.2.1 Each product may also be marked with the Standard Mark.

10.2.1.1 The use of the Standard Mark is governed by the provisions of *the Bureau of Indian Standards Act*, 1986 and the Rules and Regulation 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.

11 PACKING

11.1 Each stove shall be packed in cardboard box together with the instruction sheet and the following accessories:

a) Prickers (three);
b) Pump washer (one);
c) Filler cap washer (one);
d) Burner washer (one);
e) Funnel with filter (one);
f) Spanner for burner (one);
g) Flame ring (one);
h) Spanner for nipple (one); and } if required by the purchaser
j) Nipples (two).

12 TESTS

12.1 Pressure Test

12.1.1 *Air Pressure Test*

Each fuel container fitted with pump valve, burner and oil cap, shall withstand an internal air pressure of 250 kN/m^2 (2.5 kgf/cm^2) and shall not show any sign of leakage or deformation.

12.1.2 *Safety Pressure Test*

The container, without burner and pump valve shall be subjected to an internal hydraulic pressure of 600 kN/m^2 (6 kgf/cm^2) for a period of 5 min. The container shall not show any sign of leakage or any appreciable deformation.

12.1.3 *Bursting Pressure Test*

When the container selected in **12.1.2** is further subjected to a hydraulic pressure of 1 000 kN/m^2 (10 kgf/cm^2), it shall neither burst nor unduly distort. Slight leakage of the hydraulic fluid shall be permissible, provided the pressure is capable of being maintained for duration of not less than 5 min.

12.2 Thermal Efficiency

When tested in accordance with the method described in Annex C the thermal efficiency of the stove shall be not less than:

a) 55 percent for stove with roarer type burner, and
b) 58 percent for stove with silencer type burner.

12.3 Surface Temperature and Fuel Temperature of the Surface

Temperature of any part of the stove that may be necessary to touch during its operation as well as the maximum fuel temperature attained during three hours continuous operation of the stove shall not exceed 60°C,when measured in accordance with method prescribed in Annex D.

12.4 Combustion Efficiency

When tested in accordance with the details laid down in Annex E, the carbon monoxide/carbon dioxide ratio of exhaust gases of each burner, while burning with maximum blue flame, shall not exceed 0.02.

12.5 Resistance to Draught

There shall be no extinction of the flame on any of the burners operating at maximum combustion when the appliance is placed in a normal (not localized) current of air with a velocity of 2 m/s, as measured with a rotating vane anemometer. The location of the appliance relative to neighbouring walls and the direction of the draught shall be varied to correspond to likely conditions of appliance installation. This applies for pressures from 2.452 kN/m^2 to 3.432 kN/m^2 (25 gf/cm^2 to 35 gf/cm^2).

12.6 Fuel Creep

When operated under normal conditions with the fuel container filled to its three-fourths capacity, there shall be no spreading of fuel over any part of the appliance so as to cause undesirable odour or any increase in flame size.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*	*IS No.*	*Title*
210 : 1993	Grey iron castings — Specification (*fourth revision*)	1459 : 1974	Specification for kerosene (*second revision*)
280 : 1977	Specification for mild steel wire for general engineering purposes (*third revision*)	1573 : 1986	Specification for electroplated coatings of zinc on iron and steel (*second revision*)
319 : 1989	Free cutting leaded brass bars, rods and sections – Specification (*fourth revision*)	2039 (Parts 1 to 3) : 1991	Steel tubes for bicycle and cycle rickshaws — Specification (*second revision*)
513 : 1994	Cold rolled low carbon steel sheets and strip (*fourth revision*)	2062 : 1999	Steel for general structural purposes — Specification (*fifth revision*)
1068 : 1993	Electroplated coatings of nickel plus chromium and copper plus nickel plus chromium (*third revision*)	3972 : 1968	Methods of test for vitreous enamelware
1079 : 1994	Hot rolled carbon steel sheets and strips — Specification (*fifth revision*)	6527 : 1995	Stainless steel wire rod (*first revision*)
1239 (Part 1) : 1990	Mild steel tubes, tubulars and other wrought steel fittings: Part 1 Mild steel tubes (*fifth revision*)	6913 : 1973	Stainless steel tubes for the food and beverage industry
1359 : 1992	Electroplated coatings of tin (*third revision*)	8808 : 1999	Burner for oil pressure stoves and oil pressure heaters (*second revision*)

ANNEX B

(*Clause* 5.3)

MATERIALS COMMONLY USED IN THE MANUFACTURE OF COMPONENTS OF OIL PRESSURE STOVES, OTHER THAN THOSE SPECIFIED IN 5.2

Sl No.	*Component*	*Material*	*Recommended Specification*
i)	Fuel feed pipe	ERW mild steel tube minimum thickness, 1.0 mm	IS 1239 (Part 1)
ii)	Frame	Grey cast iron or Mild steel wire or Steel tube	IS 210 IS 280 IS 2039 (Parts 1 to 3)
iii)	Pump tube	Mild steel tube or Stainless steel tube	IS 1239 (Part 1) IS 6913
iv)	Pump valve body	Brass rod	IS 319
v)	Pump rod, nut and washer	Brass rod or Mild steel rod or Stainless steel rod	IS 319 IS 2062 IS 6527
vi)	Pump valve screw	Brass rod or Steel tube or Mild steel wire	IS 319 IS 2039 (Parts 1 to 3) IS 280
vii)	Pump cap	Mild steel rod	IS 2062
viii)	Pump piston	Steel tube or Brass rod	IS 2039 (Parts 1 to 3) IS 319
ix)	Spirit cup	CRCA sheet	IS 513
x)	Burner socket	Mild steel rod	IS 2062

ANNEX C

(*Clause* 12.2)

TEST FOR THERMAL EFFICIENCY

C-1 THERMAL EFFICIENCY

Thermal efficiency of a stove may be defined as the ratio of heat actually utilized to the heat theoretically produced by complete combustion of a given quantity of fuel (which is based on the net calorific value of the fuel).

C-2 CONDITIONS FOR CARRYING OUT THERMAL EFFICIENCY TEST

C-2.1 Test Room Conditions

C-2.1.1 The air of the test room shall be free from draught likely to affect the performance of the stove. The room temperature shall be maintained at 25°C to 30°C.

C-2.1.2 At the start of the test, the stove and the kerosene in its, container shall be at room temperature.

C-2.2 Test Kerosene

C-2.2.1 The kerosene to be used in conducting the test shall conform to IS 1459.

C-2.3 Setting of the Stove

C-2.3.1 The stove whose efficiency is to be determined shall be fitted with a burner of corresponding designation. Prior to the test, the stove shall be checked and examined to ensure that all components are undamaged and properly assembled according to the manufacturer's instruction. The stove shall be lighted and allowed to burn for a period of 10 min at a working pressure of 100 kN/m^2 to 200 kN/m^2 (1 kgf/cm^2 to 2 kgf/cm^2) during which a blue flame shall be obtained. Now a vessel containing water shall be placed on the stove and the pressure shall be readjusted to get a maximum blue and stable flame.

In the manner prescribed above, the stove shall be operated at the maximum blue flame, height for two periods of approximately 2 h each during which it shall be observed for any abnormal performance or leakage.

C-3 METHOD OF TEST

C-3.1 Fuel Consumption Test

The stove, whose efficiency is to be determined shall be filled with kerosene up to three-fourths of its capacity. The stove shall be lighted and brought up to working pressure of 140 kN/m^2 (1.4 kgf/cm^2) within 5 min.

After burning for 5 min, the lighted stove shall be weighed on a sensitive balance with an accuracy of 1 g. The stove allowed to burn for 1 h with an aluminium pan having sufficient water in it. At the end of 1 h, weight of the burning stove shall be noted after removing the aluminium pan. The difference in the initial and final weight of the burning stoves shall give the kerosene consumption rate in grams per hour. A suitable pan for corresponding fuel consumption rate for the stove under test shall be selected in accordance with Table 1.

C-3.2 A cylindrical flat-bottomed aluminium pan (selected according to fuel consumption rate as given in Table 1) provided with an aluminium lid shall be used for this purpose. The lid shall have two holes, one for inserting the cork for holding a thermometer and the other for the stirrer (made of aluminium wire) required for stirring the water.

C-3.3 The pan along with the lid and the stirrer shall be weighed first and then filled with the required amount of water (as given in Table 1) and initial temperature of water shall be kept within ±2°C from the actual room temperature. The fuel container of the stove shall be connected to a pressure gauge and the fuel container filled to nearly three-fourths of the capacity. The stove shall be lighted at an average working pressure of 140 kN/cm^2 (1.4 kgf/cm^2) and shall be maintained. After burning the stove for 5 min, weight of the stove, time and initial temperature of the water in the pan shall be noted. The pan shall be covered with a lid fitted with a test quality mercury thermometer inserted into the cork in such a way that the bulb of the thermometer immersed to half the depth of the water in the vessel. The thermometer shall be mercury-in-glass thermometer of accuracy 0.5°C. The free end of the stirrer shall come out of the lid.

C-3.4 The pan shall be placed on the stove after the initial weighing of the stove and the stop-watch shall be started immediately. As soon as the temperature of the water reaches 90 ± 1°C the stop-watch shall be stopped. The stove shall be weighed again after 1 h of its previous weighing.

NOTE — Care should be taken to see that the same average working pressure is maintained throughout the test and the water stirred gently during heating.

C-3.5 In case hourly fuel consumption obtained during the test as per **C-3.4** falls above the highest or below the lowest limit of the range of kerosene consumption rate, on the basis of which the pan was selected earlier, then the test should be repeated with a pan based upon

fuel consumption obtained during test as specified in **C-3.4**. The average of both calculations would give thermal efficiency of the stove.

Table 1 Aluminium Vessels for Thermal Efficiency Test

(*Clauses* C-3.1, C-3.2 *and* C-3.3)

Consumption Rate g/h at Thermal Efficiency Test Pressure	Pan Diameter (External) mm ±5 percent	Pan Height (External) mm ± 5 percent	Total Pan Mass with Lid g ±10 percent	Mass of Water in Pan kg
(1)	(2)	(3)	(4)	(5)
151 - 180	245	130	632	4.8
181 - 200	260	140	750	6.1
201 - 240	285	155	853	7.7
241 - 270	295	165	920	9.4
271 - 300	320	175	1 100	11.4
301 - 330	340	185	1 200	12.5
331 - 360	350	195	1 310	14.0
361 - 390	370	200	1 420	16.0
391 - 420	380	210	1 530	18.0
421 - 450	400	215	1 640	20.0
451 - 480	410	225	1 750	22.0
481 - 510	420	230	1 860	24.0
511 - 540	435	240	2 000	26.5
541 - 570	450	245	2 130	29.0
571 - 600	460	250	2 240	31.0
601 - 630	470	255	2 320	33.0
631 - 660	480	260	2 440	35.0
661 - 700	490	265	2 520	38.0
701 - 750	500	270	2 650	41.0
751 - 800	510	275	2 720	44.0
801 - 850	530	280	3 050	47.0
851 - 900	540	285	3 190	50.0
901 - 950	550	290	3 330	53.0
951 -1 000	560	300	3 480	57.0

NOTE — For fuel consumption rate above 700 g/h, the upper limit of tolerance on the total weight with lid of the pan (col 4) may be increased to 30 percent.

C-4 CALCULATION

C-4.1 Thermal efficiency of the stove shall be calculated as follows:

a) Heat gained by vessel $= M \times 0.214\ (t_2 - t_1)$ kcal

b) Heat utilized for heating water $= m \times 1\ (t_2 - t_1)$ kcal

c) Total heat utilized $= M \times (0.214 + m)\ (t_2 - t_1)$ kcal

d) Heat produced by fuel $= \dfrac{W \times T \times 10\,500}{60}$ kcal

e) Thermal efficiency $= \dfrac{\text{Heat utilized}}{\text{Heat produced}} \times 100$

$$= \frac{M \times (0.214 + m)\ (t_2 - t_1) \times 60 \times 100}{W \times T \times 10\,500}$$

where

M = mass in kg of the vessel complete with lid and stirrer,

t_1 = initial temperature of water in °C;

t_2 = final temperature of water in °C;

W = mass in kilogram of fuel consumed in one hour; and

T = time in minutes taken to heat the water to 90 ± 1°C, and

m = mass in kg of water in the pan.

NOTE — Specific heat of aluminium is 0.214. Net calorific value of kerosene is 10 500 kcal/kg.

ANNEX D

(*Clause* 12.3)

METHOD OF MEASUREMENT OF SURFACE TEMPERATURE AND FUEL TEMPERATURE

D-1 PREPARATION OF STOVE

The stove shall be tested with the fuel container containing approximately 75 percent of the amount of fuel, which it would hold when full. The stove shall be lit and run at the full output (at a working pressure of 140 kN/m^2 to 200 kN/m^2) for 1 h before starting the measurement of temperature, with the vessel containing water placed over it.

D-2 PROCEDURE

D-2.1 The temperature of all parts of the stove which may be necessary to touch during its operation shall be measured by using a mercury bulb thermometer. The temperature of each such part shall be measured thrice every 30 min to get three concordant readings. While measuring the temperature, the thermometer shall be covered with a felt pad and kept in contact with that part for sufficient period of time until maximum temperature is reached.

D-2.2 During the operation of the stove under **D-2.1**, the maximum temperature of fuel in the container shall also be recorded. The final reading shall be taken at the end of 3 h running operation.

ANNEX E

(*Clause* 12.4)

TEST FOR COMBUSTION EFFICIENCY

E-1 EQUIPMENT

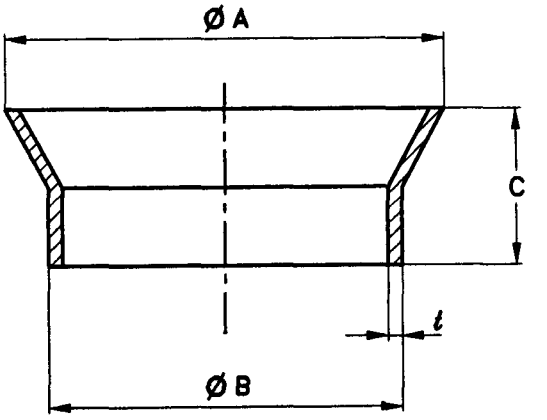
E-1.1 The stove shall be tested with its fuel container filled with kerosene to nearly three-fourths of its capacity. Before starting the test, a pan of the type and size as described in **C-3.1** and containing water sufficient for the test shall be placed over the burner. In addition, a collecting hood (*see* Fig. 3) suitable for stove under examination shall be used.

E-1.1.1 The hood shall be so designed that, while not interfering in any way with the normal combustion of the burner it collects a fairly high proportion of the flue gases. Also it shall be such that the sample collected represents the whole of combustion gases and not those from one particular point. When using hood, the damper provided shall be set, or an additional flue pipe added, so that spillage of the flue gases around the skirt is minimized.

E-2 PROCEDURE

E-2.1 With the hood in position over the stove under investigation, the stove shall be lit and run at full output for a few minutes till a stable flame is achieved. Then a sufficient number of samples shall be collected.

E-2.2 The flue gas shall be analyzed by using any of the recognized methods. For carbon monoxide, it is recommended that co-indicator of prescribed accuracy or iodine pentoxide method or catalytic method, for example, Drager method, the Katz method or infra-red analysis method may be used. Carbon dioxide may be tested by using Orsat apparatus, or Haldane apparatus, or by the infra-red analysis.



Stove Capacity Litres	Ø *A* mm ± 0.5	Ø *B* mm ± 0.5	*C* mm ± 0.5	Sheet Thickness at Any Point (*t*) mm, *Min*
Up to 1.2	52	41	20	0.6
1.3 to 2.2	67	50	22	0.7
2.3 to 3.5	86	68	30	1.0

NOTE — Dimensions *A*, *B* and *C* are optional.

FIG. 3 FLAME RING

E-2.3 The carbon monoxide and carbon dioxide content of the product of combustion shall be determined by the methods capable of an accuracy of 0.001 percent and 0.5 percent, respectively of the volume of the sample.

ANNEX F

(Foreword)

COMMITTEE COMPOSITION

Composition of Oil Burning Appliances Sectional Committee, ME 26

Organization	*Representative(s)*
Petroleum Conservation Research Association, New Delhi	SHRI U. P. SINGH (***Chairman***) SHRI PARAMJIT SINGH (*Alternate*)
Ashok Iron & Steel Fabricators Pvt Ltd, Rajkot	SHRI H. V. BARCHHA SHRI VINODRAI V. VARCHHA (*Alternate*)
Consumer Guidance Society of India (Regd), Mumbai	SHRI G. S. ABHYANKAR SHRIMATI RENU TALWANI (*Alternate*)
Darshna Udyog, Rajkot	SHRI M. VINODRAI V. BARCHHA SHRI RAM K. H. BARCHHA (*Alternate*)
Indian Institute of Petroleum, Dehra Dun	SHRI H. K. MADAN SHRI K. N. DOBHAL (*Alternate*)
Indian Oil Corporation Ltd, Mumbai	SHRI S. P. DUBEY SHRI R. K. PAULASTYA (*Alternate*)
International Burner Manufacturing Co, Mumbai	SHRI M. J. KANSARA SHRI D. M. KANSARA (*Alternate*)
Ministry of Defence (DGQA), New Delhi	LT-COL J. S. DUGGAL SHRI R. P. BHATNAGAR (*Alternate*)
Office of the Development Commissioner (SSI), New Delhi	SHRI M. K. BHAT SHRI V. D. NARANG (*Alternate*)
Premier Industrial Corporation, Coimbatore	SHRI R. SHYAM SUNDER SHRI R. SIVA KUMAR (*Alternate*)
The Bombay Light & Stove Merchant's Association, Mumbai	SHRI MAHESH D. BAKHAI SHRI G. Y. KAPASI (*Alternate*)
The South India Kerosene Wick Stove Manufacturers Association, Madurai	SHRI C. KASI SHRI T. CHIDAMBARAM (*Alternate*)
BIS Directorate General	SHRI M. L. CHOPRA, Director & Head (MED) [Representing Director General (*Ex-officio*)]

Member Secretary
SHRI S. B. ROY
Director (MED), BIS

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act,* 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc : No. ME 26 (0489)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters :

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002
Telephones : 323 01 31, 323 33 75, 323 94 02

Telegrams : Manaksanstha
(Common to all offices)

Regional Offices :		Telephone
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110 002	323 76 17 323 38 41
Eastern	: 1/14 C.I.T. Scheme VII M, V. I. P. Road, Kankurgachi KOLKATA 700 054	337 84 99, 337 85 61 337 86 26, 337 91 20
Northern	: SCO 335-336, Sector 34-A, CHANDIGARH 160 022	60 38 43 60 20 25
Southern	: C.I.T. Campus, IV Cross Road, CHENNAI 600 113	254 12 16, 254 14 42 254 25 19, 254 13 15
Western	: Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400 093	832 92 95, 832 78 58 832 78 91, 832 78 92

Branches : AHMEDABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR. NALAGARH. PATNA. PUNE. RAJKOT. THIRUVANANTHAPURAM. VISAKHAPATNAM.

Printed at Prabhat Offset Press, New Delhi-2

AMENDMENT NO. 1 OCTOBER 2005
TO
IS 10109 : 2002 OIL PRESSURE STOVES — OFFSET BURNER TYPE — SPECIFICATION

(First Revision)

(*Page* 1, *clause* **1**, *line* 5) — Substitute the following for the existing:

'100 kN/m^2 to 200 kN/m^2 (1 kgf/cm^2 to 2 kgf/cm^2)' *for* '100 kN/mm^2 to 200 kN/mm^2 (1 kgf/cm^2 to 2 kgf/cm^2).'

(*Page* 1, *clause* **5.2**) — Substitute the following for the existing matter:

'The fuel container shall be made either from seamless steel pipe or from pipe welded from one piece steel sheet (*see* IS 513 or IS 1079). One piece dished plates shall be welded to the pipe at two ends. Alternatively fuel container shall be either pressed or spun. After fabrication, minimum specified thickness shall be maintained and shall be stress relieved. It shall withstand the pressure requirements and conforms to other tests as laid down in **12.1.1**, **12.1.2**, **12.1.3** and **12.2**.'

(*Page* 1, *clause* **6.4**) — Insert the following new clause at the end:

'**6.5** To ensure maximum utilization of the fuel in the tank to the maximum possible extent, the maximum height of the fuel feed pipe into the oil container from its bottom may be 10 mm up to and including 3.5 litres capacity and 15 mm for more than 3.5 litres capacity.'

(*Page* 3, *Fig.* 2, *Hood for Burner*) — To be renumbered as 'Fig. 3'.

(*Page* 4, *clause* **7.3**, *line* 3) — Substitute the following for the existing matter:

'250 kN/m^2 (2.5 kgf/cm^2)' *for* '250 kN/mm^2 (2.5 kgf/cm^2)'.

(*Page* 4, *clause* **7.5**, *line* 2) — Substitute the following for the existing matter:

'250 kN/m^2 (2.5 kgf/cm^2)' *for* '250 kN/mm^2 (2.5 kgf/cm^2)'.

(*Page* 4, *clause* **7.6.1**) — Substitute the following for the existing matter:

'The washer for oil filler cap shall be made from neoprene or other equally suitable material, which is resistant to heat and kerosene oil. It shall not become tacky or swollen when kept immersed in kerosene oil at 60°C for 24 h continuously (in three durations of 8 h each).'

(*Page* 4, *clause* **7.8**) — Substitute the following for the existing:

7.8 Strength of Body of Stove — The top plate of the stove or vessel supports, whichever the case may be, shall be so designed so as to be adequately strong to withstand the minimum load calculated in accordance with the following:0

a) *For circular top plate* — Diameter in cm of top plate expressed in kg, and

b) *For square frame* — Side of the square in cm expressed in kg.'

Load as mentioned in (a) and (b) may be applied by standard vessel plus water. Standard vessel shall be selected from Table 1.

(*Page* 4, *clause* **7.9**) — Substitute the following for the existing clause:

'**7.9 Interchangeable Parts**

7.9.1 The following parts shall be interchangeable in the same type of stove:

a) Burner,
b) Nipple,
c) Flame ring,
d) Spirit cup,
e) Oil filler cap,
f) Pressure-release screw,
g) Oil cap plug,
h) Pump valve,
j) Pump washer, and
j) Pump cap.'

7.10 Pricker — The pricker shall have a steel wire of diameter 0.05 mm less than the diameter of the nipple hole and shall be fixed in a steel/tin plate strip.'

(*Page* 4, *clause* **8.2**) — Substitute the following for the existing matter:

'All steel parts shall be painted by heat-resistance paint. The painted surface shall not chip or flake during use. The pump rod and nut when made of mild steel shall be in tin plated (*see* IS 1359) or zinc plated (*see* IS 1573) or powder coating *(see* IS 13871) as desired by the purchaser.'

(*Page* 4, *clause* **9**) — Insert the following matter at the end:

j) Thermal efficiency when declared in accordance with **12.3.1** may use green label.

(*Page* 5, *clause* **10.1**) — Insert the following new subclause at the end:

'**10.1.1** Thermal efficiency when declared in accordance with **12.3.1** may use green label.'

(*Page* 5, *clause* **12.2**) — Insert the following new clause and renumber the remaining clauses:

'**12.2 Fuel Consumption**

Each stove shall give within ±15 percent of the manufacturer's specified fuel consumption in g/h when tested in accordance with Annex C.'

(*Page* 5, *clause* **12.3**) — Insert the following new suclause:

'**12.3.1** Thermal efficiency may be declared, if it is more than 60 percent and above for stove of roarer type burner and 62 percent and above for stove of silencer type burner.'

(*Page* 6, *clause* **12.6**) — Insert the following at the end:

'**13 SAMPLING.**

The relevant requirement given in **12** of IS 1342 shall apply.'

(*Page* 6, *Annex* A) — Insert the following at the end:

'IS 13871 : 1993 Powder coating – Specification'

(*Page* 7, *Annex* C, sub*clause* **C-2.3.1**) — Insert the following at the end:

'(This test should be done in draught-free room)'.

(*Page* 7, *Annex* C, *clause* **C-3.3**, *line* 9) — Substitute the following for the existing:

'140 kN/m^2 (1.4 kgf/cm^2)' *for* '140 kN/mm^2 (1 kgf/mm^2)'.

(*Page* 9, *Fig.* 3, *Flame Ring*) — To be renumbered as 'Fig. 2'.

(ME 26)