सत्यमेव जयते

TECHNICAL SPECIFICATION FOR SIGNAL LAMP BURNER (TENTATIVE)

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SIGNAL DIRECTORATE
RESEARCH DESIGNS & STANDARDS ORGANISATION
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Abstract

This document specifies Technical specification for signal lamp burner.

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AMENDMENTS

Version	Chapter/ Annexure	Amendment	Effective date
IRS: S1-1932		FIRST ISSUE	1932
IRS: S1-1935		Revision 1	1935
IRS: S1-1947		Revision 2	1947
IRS: S1-1953		Revision 3	1953
IRS: S1-1958		Revision 4	1958
IRS: S1-1962		Revision 5	1962

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GOVERNMENT OF INDIA
MINISTERY OF RAILWAYS
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INDIAN RAILWAY
STANDARD SPECIFICATION
FOR
SIGNAL LAMP BURNER
(TENTATIVE)
SERIAL No. S 8-62.

0. FOREWARD.

0.1. These specification are issued under the fixed serial No. S-8; the final number indicates the year of original adoption as standard, or in the case of revision, the year of last revision.

Adopted, 1932; Revised, 1935, 1947, 1953, 1958, 1962.

0.2. The revision of the year 1962 has been made to introduce the metric units. However, equivalents in F. P. S. system are also given in brackets for guidance. They are not necessarily exact conversions and the F.P.S. units shall be dropped altogether at a later date.

0.3. This specification requires reference to the following Indian Railway Standard and Indian Standard specification:-

IRS: S 9 Signal Lamp Wick.
IRS: S 10 Signal & interlocking fittings.
IS : 410 Rolled Brass plate , Sheet, Strip and Foil.
IS : 513 Special qualities of Steel Sheets.
IS : 1330 General plan for Metric Screw threads with ISO profile (Diameter range 0.25 to 300 mm.).
IS : 1448 (Pt.I) Methods of Test for petroleum and its products.
IS : 1459 Specification for Kerosines.

0. 4. Whenever a reference to any specification appears in this specification or purchaser's drawings it shall be taken as reference to the latest version of that specification.

0.5. This specification is intended chiefly to cover the technical provisions, and so does not include all the necessary provisions of a contract.

1. SCOPE.

1.1. This specification specifies the requirements of one- day type Signal Lamp Burner, Comprising Burner and Fount, suitable for use in Signal and point Indicator Lamps burning kerosene at atmospheric pressure from a Wick.

1.2. The manufacturer shall ensure that in addition to all the provisions of this specification, the requirements of the Indian Railway Standard Specification No. S-10 are fully complied with before the Burners are approved by the purchaser or the Inspecting Officer.

2. TERMINOLOGY.

For the purpose of this Standard, the following definitions shall apply:-

2.1. Burner. - The upper part of the Lamp Burner from which the flame produced is given proper shape and height.

2.2. Fount .- The lower part of the Lamp Burner which form the reservoir of oil.

2.3. Wick.- Fibrous material by which the lamp flame is kept supplied with kerosine oil.

3. MATERIAL.

3.1. The Burner shall be made of brass sheet. Grade 3 to Indian Standard Specification. No. 410 and have a nickel plated finish unless otherwise specified by the purchaser.

3.2. The fount shall be made of steel sheet to Indian Standard Specification No. 513 and tinned for a bright finish. The tinning shall be with a tin – lead alloy containing not less than 50% pure lead .

3.3. The winding shaft and wheels shall be of hard brass and securely attached by pressing and not soldered.

4. DIMENSIONS.

4.1. The Signal Lamp Burner shall be strictly to the dimensions shown on purchasers drawings.

4.2. The design shall be such as to ensure inter changeability of Burners Founts and Wicks and similarity in flame shape and height with a given grade of kerosene oil.

4.3. To ensure the requirements of Clause 4.2 above , certain mating dimensions have been specified wherever considered necessary; other dimensions not necessary for this purpose are intentionally left out so as not to restrict development and prevent acceptance of improved types of one day Lamp Burners.

4.4. The inside dimensions of the passage for the wick shall be 10 mm. X 2.25mm (13/32" x 1/8") wide suitable for a flat wick 9 mm X 2.25 mm (3/8" x 1/8") thick to IRS specification No.S 9.

4.5. The winding shaft shall be 45 mm (1 ¾") long.

4.6. The centre line of the flame shall be 44 mm (1 11/16") from the collar of the burner and 124 mm (4 7/8") from the button of the fount.

4.7. The Screwed neck of the burner shall be 22 mm(7/8")diameter, screwed with M 22X1.0 f (24 Threads per inch) to Indian Standard Specification No. 1330 .

4.8. The fount shall be made of 0.8mm (No. 22 BG) Sheet Steel to IS Specification No. 513 and tinned. The body of the fount shall be pressed out of one piece, with top soldered on. The fount shall be fitted with fount collar and a brass burner collar screwed inside to suit the screwed neck of the burner.

4.9. The external diameter of the burner collar and the internal diameter of the fount collar shall be true to the dimensions and tolerances and shall not allow any access for air to get inside.

4.10. Burners when required separately to the founts shall be supplied complete with burner collar screwed on to the burner unless otherwise specified by the purchaser.

5. ILLUMINATING OIL.

5.1. The Kerosine oil used in Signal and point Indicator Lamps shall be of Grade I to Indian Standard Specification No. 1459 , the Burning Quality having been evaluated according to Method B of Indian Standard Specification No. 1448 (Part –I).

6. TESTS.

6.1. The burner shall pass a type test which shall be made in the following manner with Illuminating oil to the above Indian Standard Specification No. 1459 .

6.2. The test of the Lamp Burner shall be carried out in an I.R.S . Signal Lamp.

6.3. The Lamp shall be placed level so that it is at least 30 cm. from any other lamp or any wall.

6.4. The lens shall be removed from the lamp and replaced by a piece of plain glass.

6.5.. The screwed neck of the burner and the burner collar in the fount shall be tested by standard screw gauges.

6.6. In order that the height of the flame may be accurately measured. a sight gauge made of Metal strip about 13 m.m in width graduated for 40 m.m. (1.5") in 1 mm. (0.05") graduation fixed to the burner or to the fount with zero mark corresponding with the top of the burner, (i.e, with the top of the perforated cone) shall be used. The gauge shall not be less than 13 m.m. from the flame.

6.7. A new standard wick, to I.R.S. Specification No. S 9 shall be used for each test. Before use each wick shall be dried for half an hour at 100 º C (212 º F) to 105 º C (220 º F) and then immersed in the oil to be used. The Lamp shall be burnt in a well ventilated room, reasonably free from draughts.

6.8. The prepared wick shall be placed in the burner and trimmed level by means of a straight cut with a razor or a sharp pair of scissors.

6.9. Before commencing each test, the lamp and burner shall be thoroughly cleaned and freed from all traces of carbonaceous deposits from previous tests and the fount cleaned and dried.

6.10. The standard one – day fount shall be filled with 285 milliliters (10 fluid ounces) of the oil to be used.

6.11. The wick shall be adjusted to produce a flame of maximum height without smoking.

6.12. After burning for one hour, the wick shall be readjusted, if necessary after which no other adjustment shall be made during the test period which shall be for a continuous 24 hours.
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6.13. At the beginning of the test period , the maximum height of the flame shall be between 29 mm. (1.15") and 30 m.m. (1.20") unless otherwise specified.

6.14. During the test period the height of the flame shall not fall to less than 20 m.m (0.75").

The flame shall remain bright , steady, symmetrical and free from smoke throughout the test period.

6.15. Observation shall be made during the test period , to ensure that the burner is behaving in accordance with these requirements.

6.16. At the end of the test period, the height of the flame shall not have fallen to less than 20 mm. (0.75"), no appreciable hard incrustation shall have formed on the wick and no appreciable amount of soot shall have formed on the lamp top and lens.

6.17 . The consumption of illuminating oil shall be accurately measured and it shall be about 210 milliliters (7 1/2 fluid ounces) in 24 hours.

7. TESTING FACILITES.

7.1. The testing and inspection shall be carried out to ensure that all requirements of this specification and all relevant specification mentioned on purchasers drawings are complied with.

7.2. Facilities shall be provided by the manufacture at his own cost for tests being carried out at his works by the purchaser or his nominee.

8. REJECTION.

8.1. Any material not conforming to the provisions of this specification and Indian Railway Standard Specification No. S10 is liable to rejection by the purchaser or Inspecting Officer.

8.2. No Material shall be supplied by the manufacturer until and unless he has received notice in writing from the purchaser or Inspecting Officer that it has been approved .

9. MARKING.

9.1. The lamp Burners shall have the letters – 'I.R.S.' and the manufactures name , initials or trade mark stamped on them.

10. PACKING.

10.1. Burners with burner collar completed , or with founts complete, shall be suitably packed in wooden packing cases or crates of a size or strength suitable for handling and to prevent loss or damage in transit.