

TENDER SPECIFICATION

NO. CLW/ES/L2

ALT. - I

ENCLOSURES :

1. DRG.NO. CLW/ES/SK1/L2

ALT. - I

TOTAL NO. OF SHEETS IN THIS SPECN.

ALT. - I

SHEETS - 11

SPECIFICATION FOR LAMPS FOR 25 KV AC
ELECTRIC LOCOMOTIVES
CLASS : WAG-7, WAP-4

ISSUED BY -

DY. CHIEF ELECTRICAL ENGINEER (D&D)
CHITTARANJAN LOCOMOTIVE WORKS
P.O. : CHITTARANJAN - 713331
DIST. BURDWAN, WEST BENGAL, INDIA.

RETYPE

SPECIFICATION FOR
LAMPS

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DY. CEE. (D)

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वी.एस.एस. ऑफिस
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क्रमांक/NO. CLW/ES/L-2
दिनांक/DATE : 22-06-06

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DETAILS OF ALTERATIONS

1/1 75
Sheet

| ALT. NO. | DATE | DESCRIPTION | SIGNATURE | REMARKS |
|----------|----------|--|-----------|---------|
| A | - | - | - | - |
| B | - | - | - | - |
| C | - | - | - | - |
| D | 7-11-81 | Wattage specified at 120V | Sd/- | |
| E | 31-8-82 | 1) Nominal voltage changed to 120 Volts; Clause-5.7 & 5.8 modified. Wattage specified at 130V. | Sd/- | |
| F | 4-2-83 | Cl.No. 5,7; Burn-in-test time increased from 2 hours to 8 hours. | Sd/- | |
| G | 7-11-84 | Special condition in sheet NO.7; clause No.6 added. | Sd/- | |
| H | 13-12-89 | Note regarding material of Cap 27/27 in Sht-9 added. | | |
| I | 30-10-91 | 1) Wattage of 30 watt 120V lamps changed to 25 watt and 120V. Clause 4.A suitably modified. 11) The lamps covered under this specification generally conform to IS:897-1982. | Sd- | |

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SPECIFICATION FOR LAMPS.

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आदेश/NO. CLM/RS/L-2
दिनांक/DATE: 22-6-86

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1.0 SCOPE

1.1 This specification covers the manufacture and supply of lamps for use on the 25 KV, Single phase, 50 c/s.AC Electric Locomotives of Indian Railways.

2.0 GOVERNING SPECIFICATIONS:

Assistance has been taken for the preparation of this specification from IS Specification No.897 for Tungsten Filament Electric Lamps, for Railway Railing Stock, Besides dimensions & wattage at 120 volts the lamps covered by this specification, generally conform to IS:897.

3.0 SERVICE CONDITION:

3.1 As the lamps covered by this specification are mounted on locomotives, they shall be subjected to considerable vibrational and buffing shocks during service.

3.2 The lamps shall be suitable for working satisfactorily in dusty environment and an ambient temperature varying from 0°C to 55°C and a maximum relative humidity of 100%. The locomotive shall be working in an altitude upto a maximum of 1000 metres above mean sea level.

4.0 TECHNICAL SPECIFICATIONS:

4.1 The lamps shall be used for the purpose of illumination inside the locomotives and outside the locomotives in waterproof lamp fittings.

The lamps will have to encounter vibrations and shocks in service and therefore shall be designed and manufactured as traction duty lamps with reinforced and additional supports for the filament. The supplier shall normally bring out in his tender quotation how this aspect of design is fulfilled in his supplies.

The lamps shall be of tungsten filament in accordance with IS- No.897-1966 for Tungsten filament elec.lamps for railway railing stock except as modified by the following information in case of 120 V, 25 Watt lamps.

A. 25 Watts, 120 V Lamp

Nominal voltage - 120 Volts, DC

Voltage variation - The lamps shall be designed to withstand satisfactorily without impairment of life for voltage fluctuation upto 120 ±10% volts.

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SPECIFICATION FOR LAMPS

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क्रमांक/NO. CLW/E5/L-2
दिनांक/DATE: 22-06-2006

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- Wattage - 25 + 2 watts at 120 volts. Min. initial lumens of individual lamps - 20%
- Bulb finish - Clear.
- Dimensions of lamp - As per Drg.No. CLW/ES/SK-1/L-2/I
- Cap designation - Normal Bayonet cap B-22/25 x 26 (IS-897)

4.2 CAPS:

Caps shall be in accordance with the dimensions specified in 30 watt. lamps. The shells of caps may be of any suitable metal provides the caps are ordinarily resistant to atmospheric corrosion and withstand the tests specified.

4.3 ATTACHMENT OF CAPS TO BULBS.

The Caps shall be attached to the bulbs so strongly as to comply with a torsion test carried out in accordance with 1.3 of IS:897-1966 with a torsional moment of 30 kg.cm.

4.4 MARKING:

Each lamp shall be distinctly and indelibly marked with the following information:-

- a) Manufacturer's identification mark and month & yr. of manufacture.
- b) Rated voltage and wattage.
- c) Coiled coil/single coil.
- d) Country of manufacture.

5.0 TESTS:

5.1 SAMPLING: Samples for testing shall be selected from lamps belonging to one batch.

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SPECIFICATION FOR LAMPS

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 ক্রমিক/NO. CLW/ES/L-2
 তারিখ/DATE: 22-06-2006

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5.1.1 Batch Consisting of Loco Lamps Or less -

For batches consisting of 10 or less containers, lamps shall be selected from every container, if the batch consists of more than 10 containers then one-half of the total number of containers in the batch with minimum 10 containers.

Batch consisting of more than 1000 lamps -

Lamps shall be selected as far as possible from one-third of the total number of containers in the batch with minimum 10 containers.

5.1.2. Inspection Test Quantity-(ITQ) Inspection test quantity shall consist of 5 percent of the batch with minimum 35 & maximum 70 lamps.

5.1.3 Rating Test Quantity - (RTQ) - Rating test quantity selected from the lamps which have passed the inspection tests, shall be in between 25 and 50 lamps.

5.1.4 Life test quantity(LTQ) - Life test quantity, selected from the lamps which have passed the rating test, shall be in between 15 and 25 lamps.

5.2 Visual examination & checking for Mechanical & Physical requirements.

Each lamp of ITQ shall be examined visually as well as checked for physical, mechanical & marking requirements.

5.3 Inspection Tests.

Lamps under RTQ (ref. clause 5.1.3) shall be inserted in a special holder and fixed a suitable torsion testing machine and the test shall be carried out by twisting the bulb. The torque shall not be applied suddenly but increased gradually to the moment specified in 4.3 This test shall be carried out before and after life test.

5.4 Initial rating test.

Measurement shall be made for initial watts and initial lumens of rated voltage with a photometric integrater (Appendix-A of IS:897-1966). The accuracy of the voltmeter and ammeter, when used for the test, shall not be less than 0.2 & 0.3 percent respectively of full scale values. Before the lamps are subjected to photometric tests for the first time, they shall be aged for a period of approximately one hour at rated voltage.

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SPECIFICATION FOR
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क्रमांक/NO. CLW/ES/L-2
दिनांक/DATE : 22-06-2006

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5.5 Insulation Resistance of Bayonet Caps.

The insulation resistance between cap-shell and contacts shall be measured before ageing, with a 500 V.D.C. applied for one minute. Before testing, the lamps shall be removed from their wrappings, stored in dry surroundings for minimum 48 hours and the external surface of their insulation shall be wiped with a dry cloth. In case the insulation when first measured is found to be insufficient, the lamps shall be stored in a warm, dry atmosphere for a week and then retested for insulation. Measured value of insulation resistance shall not be less than 50 Meg. ohms.

5.6 Dielectric Test.

Dielectric test of 1 kv for 1 minute between terminals and the earthed metal cap.

5.7 Burn-in-test:

5% lamps of the lot offered (120 V Lamp) shall be subjected at manufacturer's works to a burn-in-test for 8 hrs. @ 0.5 V. For a failure in excess of 5%, 10% of the lot should be put to this test. Finally, failure within 5% of the test quantity will be considered acceptable.

5.8 Life Test :

For 100 volt. loco in test voltage of 130 ± 0.5 V may be applied for reasons of economy. At this voltage a minimum life of 150 hrs. shall be the test voltage of 130 ± 0.5 volts. has been calculated in accordance with the formula in 5.6 of IS:897-1966, considering the 1000 hrs. life at a nominal voltage of 120 volts, obtained. A minimum life of 150 hrs at

5.9 Vibration tests.

5.9.1 The following assumptions are made :-

That the vibration is of sine wave form. That the frequency of vibration is between 1 and 50 cycles per second and that the amplitude 'a' expressed in mm. is given as a function of frequency 'f' by the following equation.

$$a = 25/f \text{ for values of 'f' from 1 to 10 C/s.}$$

5.9.2 That the stresses arising from sudden variation in vehicle speed correspond to maximum acceleration of ± g (g being the acceleration due to gravity).

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SPECIFICATION FOR LAMPS

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 क्रमांक/NO. CLW/ES/L-2
 तिथि/DATE : 22.06.2006

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5.9.3 The apparatus (lamps complete with holder fitting) is secured in a convenient position to a machine producing vibrations of the sine wave form with adjustable amplitude and frequency and is then subjected to the following tests :-

5.9.4 Test with sustained vibration

The lamp in energised condition is subjected to test with sustained vibration for a period of 2 hours at frequency of 10 c/s. The test is considered satisfactory if there is no resulting damage or out of course separation.

5.9.5 Test to simulate the effect of shunting shocks

In the direction corresponding to the longitudinal movement of the vehicle on which it is to be mounted, the apparatus is subjected for 2 minutes to 50 c/s. vibration of such a nature that the maximum acceleration is equal to 1 g.

5.10 Type Test/Routine Tests

The tests given under type test shall be conducted on prototype samples as well as on samples required for such tests from time to time to ascertain the consistency in the quality of the lamps. Routine tests shall be conducted on lamps drawn from each batch of production :-

| Sl. No. | Type Test | Routine test |
|---------|---|-----------------------|
| i) | Sampling. | Yes. |
| ii) | Dimensional checks. | Yes. |
| iii) | Visual examination & checking for mechanical & physical requirements. | Yes. |
| iv) | Insulation resistance. | Yes. |
| v) | D.w. Test | No. |
| vi) | Initial rating test. | Rating on samplings. |
| vii) | Burning test. | Burning on samplings. |
| viii) | Life test. | No. |
| ix) | Vibration test. | No. |
| x) | Torsion test. | Yes. |

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SPECIFICATION FOR
LAMPS

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क्रमांक/NO. CLM/ES/1-2/3
दिनांक/DATE : 22-06-2006

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5.11 Approval of samples

- 5.11.1 The supplier shall supply prototype samples of lamps proposed to be supplied by him for inspection/tests to Dy. Chief Elect. engineer (Design), CLW/Chittaranjan.
- 5.11.2 The supplier shall not offer lamps of series production to the inspector authorised under the contract until the prototype has been finally approved.

6.0 Technical documents to be furnished by the suppliers

6.1 The following documents shall be supplied by the supplier :-

i) Type Test Report

This shall be supplied in standard 'A4' size of sheets, with punched holes for filing. It shall be suitably enclosed in a cover. Type test reports shall have to be signed both by the suppliers' engineers & CLW's engineers. Ordinarily 10 copies of the report shall be supplied.

ii) Routine Test Certificate

This shall be supplied in standard 'A4' size of sheets with punched holes for filing. Routine test certificates shall be submitted along each batch of the lamps in 6 copies.

7.1 Tender Papers

All tender documents including the quotation shall be submitted in duplicate including any correspondence till a contract is finalised.

The tenderer shall give sufficient information to prove that his factory has adequate facilities and capacity to manufacture the lamps, to meet fully the technical requirements of the specification & quality of materials & workmanship.

Quotations shall not be considered complete unless all information is furnished & are therefore liable to be rejected.

7.2 Conditions of Contract

The standard IRS Conditions of contract will be applicable for the supply of the equipment.

- 7.3 **Guarantee** : The supplier shall give a guarantee of clear 12 months on all lamps from the date of commissioning of the lamps on the locomotive and lamps with any damage or defect, noticed during the period due to defective material or workmanship, will be replaced by the supplier free of cost.

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SPECIFICATION FOR
LAMPS


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क्रमांक/NO. CLW/ES/L-2
दिनांक/DATE : 22-06-2006

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8.0 SPECIAL CONDITION

Once a prototype is approved no contractor shall change his source of supply of Sub-contractor for purchased components and sub-assemblies without CLW's approval.

9.0 CLW reserves the right to procure material only from ISO certified firms.


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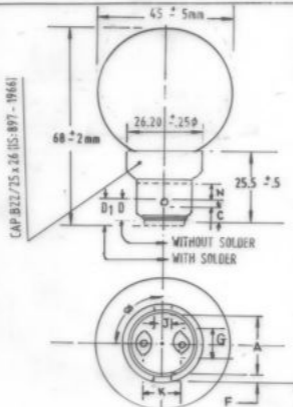
SPECIFICATION FOR
LANPS



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आदेश/NO. : CLW/ES/12/1
दिनांक/DATE : 22.06.2006



| DIMENSIONS (IN mm.) | A | C | D | D1 | E | F | G | J | K | N | φ |
|---------------------|-------|-----|-----|-----|-----|-----|------|-----|------|-----|---------|
| MINIMUM | 21.75 | 1.5 | 6.0 | - | 1.8 | 2.3 | 10.0 | 4.0 | 10.0 | 6.7 | 82° 30' |
| MAXIMUM | 22.15 | - | 7.0 | 8.0 | 2.2 | 2.7 | - | - | 11.3 | - | 97° 30' |

1. USE :- i) Recapitulation Lamp.
 ii) Cab Ceiling Lamp (Spot Light).
 iii) AC-2 Panel Lamp.

**LAMPS FOR ELECTRIC
LOCOMOTIVES**

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 दिनांक./DATE : 22 / 06 / 2006

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 M. B. ...
 CHKD
 22/06/2006

ANNEXURE 'A' TO SPECIFICATION NO. CLW/ES/L-2/ I
FOR LAMPS.

Along with the tender documents the following data must be supplied by the tenderers in a separate sheet, failing which their offer will be considered incomplete and is likely to be ignored:

1. The tenderers should indicate whether they have supplied/ are supplying identical/similar items/equipments to Indian Rlys./Public sector undertakings/other agencies. If so, full details should be furnished alongwith the service performance of their products.
2. Full technical details with regard to manufacturing facilities, plant & Machineries, testing procedure, measuring instruments, tools/gauges available & with them should be furnished which are required for the purpose of evaluating their offers.
3. The tenderers should furnish full details with regard to the quality assurance department working in their factory together with the full details of the documents maintained by their inspectors. They should also ensure that to sustain the quality of their products, type tests are conducted by them at appropriate intervals without effecting the delivery stipulations to suit CLW's loco production requirements.
4. They must ensure that the hardware items, such as bolts, screws etc. are being procured by them from the manufacturers of repute. It should also be ensured that necessary identification marks are available on the supplies at conspicuous locations.
5. Complete data sheet of the product clearly indicating the deviations, if any with respect to the specn./drgn. is to be enclosed. In case such deviation is not required a specific mention. No deviation is required "shall be indicated" by the tenderers.

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SPECIFICATION FOR
LAMPS

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