SPECIFICATION FOR LED TYPE FLASHING TAIL LAMP FOR LHB TYPE POWER CAR

1.0 SCOPE:

1.1 The flasher light unit is provided on the power car to attract the attention of driver of approaching train and cause him to stop the train in the event of any unsafe track conditions. It is necessary that the flasher light becomes clearly visible on straight track at a distance of atleast 2 Kms both during day and night.

1.2 Each power car will be provided with one LED type tail light fitting with one flasher unit. The flasher light must have the highest reliability under severe environment conditions of operation of power car i.e. dust, humidity, high ambient temperature, shocks and vibrations, electrical switching surges, Electro Static Discharge, variation in supply voltage etc.

1.3 This specification covers technical requirements of LED based flasher light for provision on Railway rolling stock. The specification has been finalized incorporating type of LEDs to be used with their parameters, LED operating current with associated current regulator and modification of providing hood on lamp unit to improve visibility of flasher light unit. It also specifies the test method and acceptance tests to ensure consistency of quality of equipment.

2.0 SERVICE CONDITIONS:

2.1 ENVIRONMENTAL CONDITIONS :

Ambient Temperature	: -5°C to 55°C
Maximum Relative Humidity	: upto 98% during the rainy season
Altitude	: Maximum 1000 Metres

2.2 WORKING CONDITIONS :

Train Speed	: 160 Km/Hr.
Vibration and Shocks	
a) Maximum Vertical Acceleration	: 1.0g
b) Maximum lateral Acceleration	: 0.5g
c) Maximum longitudinal Acceleration	: 3.0g
d) Frequency and amplitude	: Sinusoidal form of vibration, the frequency 'f' lies between 1Hz and 100Hz and their amplitude 'a' expressed in mm is given as function of 'f' by the equation a=25/f for values of 'f' between 1 and 10 Hz a=25/f2 for values of between 10 and 100 Hz

2.3 Electromagnetic and radio frequency interface pollution : High degree of electromagnetic pollution is anticipated and RFI produced through walkie talkie hand set of the driver and guard, where the equipment will be mounted. Necessary precautions should be taken in this regard.

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3.0 SCOPE OF SUPPLY:

3.1 One set of flasher unit consist of the following items:

- Lamp unit to drawing no. LP75001 :1 no.
- Flasher unit with VHF charging socket as per Drawing no LP73200, alt. 'c' : 1 no.

4.0 GOVERNING SPECIFICATIONS :

4.1 References shall be made to following standard/specifications.

IS:616	: Safety requirement for mains operated electronics.
IEC-60571 (1998-02)	: General requirements and tests for electronics equipment used on rail vehicles (second Edition).
IEC-77	: Environmental testing.
IEC-61000	: EMC
RDSO specification no. ELRS/SPEC/SI/0015	: Reliability of Electronics used in Rolling stock application.

5.0 TECHNICAL REQUIREMENTS:

5.1 The flasher unit shall comprise of the following:

5.2 LAMP UNIT

Consisting of high intensity LED lamp assembly with its current regulator, provided in water proof enclosure (IP65), window toughen front glass and hood protection against glare.

5.2.1 The system voltage of the unit shall be:

Maximum volts	136V DC
Nominal volts	110V DC
Minimum volts	70V DC

The flasher unit should work satisfactory for the voltage range defined above. However proportionate change in duration in "OFF" and "ON" period below the supply voltage of 70V will be acceptable. There should not be any damage to the equipment at voltage less than the minimum specified value for an indefinite period.

5.2.2 Flasher lamp unit shall be cluster of 120 high intensity Amber LEDs used in equally distributed cluster in rounded profile, LED's giving 7° view angle, arranged in series and parallel circuits to ensure average forward current and peak forward current through LEDs limited to 20mA and 30 mA respectively. The manufacturer will submit design details to provide that current through LEDs does not exceed the limits. The current regulation shall be better than 5% for the full working voltage range as per clause 5.2.1 checked at lamp terminal unit. It should work at nominal control voltage 110V DC.

5.2.3 The LEDs used in lamp unit shall be of type HLMP-ELXX-XXXX of Agilent Technologies or equivalent approved make with he following parameters at an ambient temperature of 25° C:

SYMBOL	PARAMETER	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
V_F	Forward Voltage	I_F=20 mA	1.7	2.25	2.6	V
V_R	Reverse Voltage	I_F=100 µA	-	5	-	V
I_R	Reverse current	V_R = 5V	-	-	100	µA
ΨP	Dominant Wavelength	I_F=20 mA	589.5	590	595	Nm
	Junction Temp.	-	-	130	-	° C
I_V	Luminous Intensity	I_F=20 mA	5.5	7.2	9.3	Cd
I_F	Forward Current	-	-	20	50	mA

Each LED shall have an electric shunt resistance across it. All the LEDs shall be configured in series parallel combination in such a way that failure of any LED shall not effect the working of the unit. LED of each circuit will be preferably intermixed so that radiated area is not affected in case of failure of LEDs.

5.2.4 Amber yellow LED with dominant wave length of 590 to 595 nano meters shall be used. Radiating area (where the LEDs are mounted) shall be as indicated in the drg. to drg. LP75001. The lux measured in axial direction shall not be less than 500lux at 1 metre and 55 lux at 3 metres.

5.2.5 The display area (formed by the cover glass) of the lamp unit shall have a diameter of 180±5 mm. The mechanical body of the lamp unit should be water proof sealed.

5.3 CONTROL UNIT:

Consisting of electronic hardware for two independent circuits to drive the above LED lamp unit. It will be provided in suitable enclosure with adequate protections, ON/OFF switch, and selector switch for main and standby circuit, audio visual indications and terminals. The flasher control unit shall also include VHF charging socket at 230V ac and a switch socket at 110V ac.

5.3.1 The flasher control unit shall be designed such that it works with input voltage 110V dc giving output for lamp unit. The PCB used in flasher control unit shall be **'wave soldered'** to ensure the consistency of product.

5.3.2 Each control unit shall have two separate PCBs for main and standby circuit to ensure the liability.

5.3.3 Two LEDs (dual color Red/Green) indication shall be provided on control unit to indicate working of main/stand by PCB.

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5.3.4 The indication of the above LEDs should be as under:

Main selection indication LED-1	Main O/P Indication LED-1	Stand by selection Indication LED-2	Stand by O/P Indication LED-2
Green Glow	Red Flashing	Green Glow	Red Flashing

5.3.5 A single pole main control switch shall be provided on the flasher control unit to switch "ON" or "OFF" the equipment. A double throw switch shall be provided to select main /standby circuit in the control unit. The switches shall be of standard make and their quality shall confirm the relevant BIS specification. Endurance test of 1 lacs operation should be ensured by the firm.

5.3.6 The ON-OFF period of flasher unit shall be of equal period with 40±5 flashes per minute. This shall be maintained for full voltage range as per clause 5.2.1.

5.3.7 Facility for monitoring whether flasher light is lit or not shall be provided in the form of repeater LED indication (Red colour) and audio sound in the guard cab on the control unit. The indication shall switch off if more than 20% of the lamp array fails.

5.3.8 Complete flasher unit cum VHF charging socket unit shall be as per drawing LP73200, alt. 'c'.

5.4 VISIBILITY:

The clear visibility of flasher light shall not be less than 2 Kms in clear day light and will not be affected by sun light glare.

5.5 CONSTRUCTION:

5.5.1 The LED lamp unit and flasher control unit shall be housed in two totally enclosed separate housing.

5.5.2 The overall arrangement of the tail lamp should be normally as per drawing LP75001.

5.5.3 LED lamp unit shall be housed in suitable enclosure as per enclosed drawing and the enclosure shall be protected against ingress of water under heavy rain and storm condition. It should confirm to IP65 protection.

5.5.4 The sheet used for the enclosure of control unit shall have thickness of 1.6 mm. The fabricated enclosure shall be given requisite surface treatment for anti-rust & anti-corrosion before finishing with powder coating of thickness not less than 100-125 microns to Siemens Grey shade No. 6102/08038 of M/s Nerolac Paints or 877 of M/s Berger Paints. The control unit shall have suitable opening for audio output.

5.5.5 The arrangement as shown in the enclosed drawing should be treated as tentative for prototype unit. After test and trials, the final dimensional drawing may be made for series production.

5.6 GENERAL DESIGN FEATURES:

5.6.1 The flasher unit should use only solid state device of industrial grade.

5.6.2 All PCBs should be wave soldered.

5.6.3 The electronics should be suitable for rolling stock application in heavily EMI polluted environment.

5.6.4 The unit shall be designed with switching mode operation to keep the heat sink size to minimum and avoid losses in any resistor in power circuit.

5.6.5 The wires/cables used for internal construction of the unit shall be of PTFE insulation and multi-strand copper conductors.

5.6.6 In view of limited space availability, the equipment shall be designed as compact as possible.

5.7 INTERFACING WITH OTHER EQUIPMENTS:

Flasher light shall also have provision for interfacing with others microprocessor based system. Two nos. of potential free contact of rating 10A, 110V dc will be provided to communicate activation and failure of flasher light.

5.8 PROTECTIONS:

5.8.1 The flasher light should be so designed that it is capable to withstand the direct short circuit current at the out put terminals without any damage to the equipment. The short circuit current shall be limited to a minimum possible value. The equipment shall function normal after the short circuit at out put terminals is removed. The lamp and control unit will independently checked for the protection.

5.8.2 Suitable backup fuse protection for both main/standby circuits shall be provided as protection against component failure. The fuse shall not blow with output terminals shorted.

5.8.3 The current regulator provided in the lamp unit shall have over current protection. The lamp shall have built in reverse polarity protection and input fuses protection.

5.8.4 The flasher unit (control unit and lamp unit) will have high efficiency i.e. losses in circuit will be minimum and total power consumption of unit will be declared under Annexure-B and will be tested during type test.

5.9 MARKING :

The following shall be punched on each of the unit on the anodized aluminium plate on control unit and lamp unit.

1. Manufacturer's Name
2. Serial number

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3. Input/output voltage & current on control unit.
4. input voltage & current on lamp unit.
5. LED type/make on lamp unit.

6.0 INPSECTION:

6.1 The whole material or fitting used in the construction of equipment shall be subjected to inspection by inspecting officer and shall be to his entire satisfaction.

6.2 The inspecting officer shall have the power to:

6.2.1 Adopt any means he may consider to satisfy himself that all the material or fittings specified are actually used throughout the construction.

6.2.2 Visit at any reasonable time and without previous notice, either contractors work or his sub-contractor's work to inspect the manufacturers and the quality of the work at any stage.

6.2.3 To reject any material or fitting that do not conform to the relevant standard specifications or have not been manufactured in accordance with the approved practice. The rejected materials or fittings shall be marked in a distinguishable manner and shall be disposed off in such manner as the inspecting officer may direct to avoid its inadvertent use in the product order as per this specification.

6.2.4 Testing of equipment and fittings shall, as far as possible be carried out at the works of the manufacturer. Testing of bought out components may also be carried out at sub-contractor's premises, if so required. The contractor shall provide free of charge, such material or fittings as may be required for testing whenever at his own or his subcontractor's premises. The test for which facilities are not available may be carried out at any government approved laboratory for which the testing charges shall be payable by the supplier.

6.2.5 The inspecting officer shall select all the equipments and fittings required for the test and tests shall be carried out in his presence.

6.2.6 No material shall be packed or dispatched until the inspecting officer has passed it. The contractor's responsibility for its efficiency in every way shall remain the same as if the work has been manufactured and tested by him.

6.2.7 Should any part required alteration or any defect appear during the test or trial the contractor shall without any extra charges make such alteration or rectify the defects to the satisfaction of the inspecting officer.

6.2.8 Copies of maker's test certificate, guarantee the performance of the equipment and technical literature shall be supplied in duplicate along with the delivery of each set of equipment.

7.0 TESTS:

7.1.1. TYPE TEST:

All the tests mentioned in clause 7.2 shall be carried out on a prototype unit. The firm manufacturing for the first time shall get the prototype approved from CEE/RCF.

7.1.2 ROUTINE TEST:

Routine tests mentioned in clause 7.2 shall be carried out on each unit by the manufacturer at his works to ensure compliance with the specification and the drawings.

7.1.3 ACCEPTANCE TEST:

Acceptance test mentioned in clause 7.2 are to be carried out by an inspecting authority nominated by the purchaser at the works of the manufacturer, on the samples picked up by the inspecting authority.

All the acceptance tests shall be carried out at firm's premises at the manufacture's cost. Inspecting officer will witness the tests. A copy of the internal tests conducted by the firm shall be supplied to inspecting/purchasing authority.

7.2 Following tests will be carried out on the prototype unit as per relevant IEC specification or mutually agreed test program. Manufacturer will bear the expenses of these tests:

Sr. No.	Test	Clause	Type test	Routine test	Accept. Test
1	Visual inspection	IEC60571.1 clause 10.2.1	√	√	√
2	Tolerance and dimension		√	√	√
3	Cooling	IEC60571 clause 10.2.3	√		
4	Insulation resistance	IEC60571 clause 10.2.9	√	√	√
5	Dielectric	As per clause 7.5	√	√	√
6	Vibration and shock	IEC60571 clause 10.2.11	√		
7	Performance test	IEC60571 clause 10.2.2	√	√	√
8	Lux test	IEC60571 clause 7.9.2.2 (b)	√	√	√
9	Voltage surge Test	IEC60571clause 10.2.6.2	√		
10	Electrostatic discharge test	IEC60571 clause 10.2.6.4	√		
11	Transient burst susceptibility test	IEC60571clause 10.2.7	√		

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12	Radio interference test	IEC60571clause 10.2.8	√		
13	Salt mist test	IEC60571clause 10.2.10	√		
14	Damp heat	IEC60571clause 10.2.5	√		
15	Dry heat	IEC60571clause 10.2.4	√		
16.	Burn-in	As per Burn-in cycle attached as Annexure-C	√		
17.	Water ingress test	As per IP65 for lamp unit	√		√
18.	Over voltage test	As per clause no. 7.10.2	√		
19.	Short circuit test	As per clause no.7.9.1.3	√		√
20.	Reverse polarity test	As per clause no. 7.10.3	√	√	√
21.	Power consumption test	As per clause no. 7.10.4	√		
22.	Endurance test	As per clause no. 7.11	√		√
23.	Visibility test	As per clause no. 7.8	√		√
24.	Measurement of luminous intensity	As per clause no. 7.9.2.2(d)	√		
25.	Measurement of dominant wave length	As per clause no. 7.9.2.2(c)	√		

The following clarifications are issued on the above tests.

7.3 VISUAL INSPECTION

7.3.1 Check for general workman ship of the fitting, finish and mounting arrangement as per approved drawing of purchaser.

7.3.2 Check for proper water tight fitting of LED lamp unit.

7.3.3 Check that main components i.e. switches, transistors, capacitors and devices are as per check list supplied by the manufacturers and approved by the purchaser.

7.3.4 Check terminals switches, indications, type number etc. as per approved drawing.

7.3.5 The requirement listed in the latest reliability specification (ELRS/SPEC/SI/0015) for quality of PCB and other hardware will be checked and confirmed clause by clause.

7.3.6 Check from supplier record that the unit has been subject to "burn in" procedure and there was no failure of any component. In case there was a failure of any component, check that the card has been again subjected to "burn in" test.

7.3.7 **VISUAL INSPECTION AND TOLERANCE & DIMENSION:**

The object of visual inspection is to check that the equipment is free from defects and the equipment are as per approved drawing. All the important dimensions will be measured and should be in permissible tolerance. Bill of material will be submitted. The make, rating of equipments, sub-assemblies will be checked with the details as per approved design. If a change is needed in make or rating of important equipments, sub-assemblies, it should be intimated and should have approval from CEE/RCF. Flasher light equipment with modified assemblies will be given separate revision number.

7.4 INSULATION RESISTANCE:

The insulation resistance with 500 V megger shall be more than 50 M ohms at 70% RH for all the circuit. The period of the test should not be less than 60 sec.

The following minimum requirements at the highly humid condition are to be ensure as per given below:

- 110V circuit and earth : 20 M ohms
- Control electronics and earth : 10 M ohms
- Screen to earth : 10 M ohms
- Lamp unit to earth : 10 M ohms

7.5 DIELECTRIC TEST:

1500V, 50 Hz supply shall be applied for 1 minute between shorted connection and metallic supporting frame the test shall be considered as unsatisfactory if either a disruption discharge of flash over occur or dielectric equipment trips before 1 minute during the test.

7.6 BURN IN TEST:

The cards used on the equipment will be subjected to burn-in for 75 hours as per temperature cycle in Annexure-2. The cards will be kept functional during the tests. This will be part of internal test by manufacturer, whose result will be submitted during routine testing.

7.7 Documents to be submitted as the time of renewal of prototype.

- Changes in bill of material.
- Changes in MCP after the test approval.
- Warranty failure and compliances.
- Quantity supplied to different consignee and status.

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7.8 VISIBILITY TEST:

The equipment will be checked to verify that it meets the visibility requirements laid in clause 5.4.

7.9 PERFORMANCE TEST:

7.9.1 CONTROL UNIT:

7.9.1.1 The unit shall be operated for 8 hours continuously at specified voltage. The number of "ON and OFF" of the flasher per minute shall be recorded. The frequency rate shall not be less than 40±5 fpm for the above said voltage variations.

7.9.1.2 VOLTAGE VARIATION TEST:

At the input voltage as per clause no. 5.2.1. Output voltage should be 110VDC.

7.9.1.3 SHORT CIRCUIT TEST:

The output terminal should be shorted and the unit switched on with maximum input voltage specified in the specification. The unit shall be kept "ON" under such condition for 10 minutes. The unit shall be tested for item 7.9.1.1 and 7.9.1.2 after this test and there should not be any changes in performance or any damage to the unit.

7.9.1.4 A test shall be done to verify that when the flasher light is switched "ON". There is a clear audio visual indication.

7.9.2 LAMP UNIT:

Following tests to be carried out to ensure the quality of the LEDs.

7.9.2.1 The LED parameters shall be as per clause 5.2.3 of the specification.

(a) GLOW SENSITIVITY TEST:

LEDs are highly sensitive to the applied voltage and will glow as soon as the voltage across the diodes exceeds the rated forward voltage of the P-N junction.

(b) GASKET:

The rubber gasket shall be of adequate thickness and shall not be loose in the body.

(c) LED:

LED used in module shall have an absolute maximum forward current rating of at least 40% in excess of the rated operating current.

(d) PIV TEST:

The protection provides for the peak inverse voltage across the LEDs to remain within permissible limit will be verified.

7.9.2.2 Following tests shall be done on complete lamp unit:

a) **WATER TIGHTENESS TEST:**

The test shall be carried out as per IEC-60571, clause 10.2.12. The lamp unit is to be tested for shower test to ensure water tightness of the unit.

b) **LUX TEST:**

Lux shall be measured in axial direction with the lamp unit ON at the rated voltage. It shall not be less than 500 lux at 1 meter & 55 lux at 3 meter under specified conditions. For conducting lux test, the frequency of flasher unit shall be 40±5 cycles/min and average forward current through LEDs shall not be more than 20 mA.

c) **MEARSUREMENT OF DOMINANT WAVE LENGTH:**

The dominant wave length of LEDs shall confirm to para 5.3.4. The dominant wave length shall lie between 590 to 595 nm namo-meter.

d) **LUMINOUS INTENSITY TEST:**

High intensity industrial grade LEDs shall be used for light intensity, as per clause 5.2.3 will be verified.

7.10 COMPLETE UNIT TEST:

7.10.1 VIBRATION SHOCK AND BUMP TEST:

The test shall be carried out as per IEC-60571, clause 10.2.11 with equipment mounted and energized as in service.

7.10.2 OVER VOLTAGE TEST:

1.8 times the nominal system voltage shall be applied to the unit for two minutes and the unit shall work satisfactory after the test.

7.10.3 REVERSE POLARITY TEST:

The flasher light control unit and lamp unit should withstand the built-in reverse polarity protection. The equipment shall function normal after the reverse polarity at input terminal removed.

7.10.4 POWER CONSUMPTION TEST:

Power consumption will be measured under rated condition and will not exceed value as per design.

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7.10.5 DRY HEAT TEST:

The temperature of the equipment is to be raised to 75°C at the rate of 1°C at 1.5 minute and to be kept at that temperature for 6 hours. In this test equipment should be in energized condition and check the working of the system. Cool it to the room temperature (recovery period 3 hours) and carry out insulation test, Dielectric test as 85% voltage of the pervious test and performance test.

7.10.6 DAMP TEST:

Damp heat test shall be done keeping the equipment in de-energized condition. It is to be ensured that the RH of the oven should be between 80 to 100% during the above test. The temperature of the equipment is to be raised from ambient to 55°C in 3 hours and kept that temperature for 6 hours. The temperature of the equipment 55°C should be brought down to ambient in 3 hours. The cycle to be repeated at least two times and carry out insulation test, Dielectric test at 85% voltage of the pervious test and performance test.

7.10.7 COOLING:

Bring down the temperature of the equipment to 0°C ±2 and keep it at the temperature for 2 hours and carry out the insulation test, dielectric test at 85% voltage of the pervious test and performance test after the recovery period of 3 hours.

7.11 ENDURANCE TEST (ONLY FOR SWITCHES):

The mechanical parts, which need frequent operations, are to be subjected to endurance test for 1,00,000 cycle of operations. At the end of the above cycles, these mechanical parts will be inspected for physical wear and tear. The spring used, if any, should regain at least 50% of the operational height when released at the end of the endurance test cycle of 1,00,000 operations. Finally the device will be checked for its satisfactory performance. In lieu of actual test, the supplier may furnish a certification of such a type test from original manufacture of the control switch.

7.12 SURGE TEST:

The test shall be conducted as per IEC-60571, clause 10.2.6.2. The surge pulse shall be 1.8KV, 1.2/50 micro Sec.

7.13 TRANSIENT BURST SUSCEPTIBILITY TEST:

This test shall be conducted as per IEC 1000-4-4. the complete system in simulated installed condition shall be put for the test as specified in IEC. The recommendation test severity level is level 4 with direct coupling for power line & with capacitive coupling for communication & signal lines. The EFT of defined severity shall be applied on communication line. Analog and digital input lines as follows:

SEVERITY FOR LEVEL 4		
	Power lines	Signal lines
Repetition rate	2.5 Khz	5Khz
Applied voltage	4 KV	2 KV
Rise time	5 nos ± 30%	5 nos ± 30%
Impulse duration	50 nos ± 30%	50 nos ± 30%
Burst duration	15 ms ± 20%	15 ms ± 20%
Burst period	300 ms ± 20%	300 ms ± 20%
Connection/ period	Direct coupling both positive & negative side for 60 second each side	Capacitive coupling both positive & negative side for seconds each side.

During the test equipment shall be watched for manufacturing or erratic behaviour. Data recorded in the memory of the system during test shall also be downloaded and evaluated through evaluation software for the performance of the system as well as Data recording & download system.

No degradation of the system & manufacturing should be allowed during or after test. For more details refer IEC 1000-4-4.

7.14 RADIO INTERFERENCE TEST:

7.14.1 RFI RADIATED/RADIATED SUSCEPTIBILITY :

This test shall be conducted as per IEC 1000-4-3. The complete system simulated installed condition shall be put in to the radiation chamber & desired radiation as defined bellow shall be applied.

Freq. Range : 80 to 1000 Mhz
Field strength : 10v/m
Amplitude Modulation : 80% 1Khz sinusoidal

During the test equipment shall be watched for manufacturing or erratic behaviour. Data recorded in the memory of the system during test shall also be downloaded & evaluated through evaluation software for the performance of the system as well as Data recording & Downloaded system. No degradation of the system & manufacturing should be allowed during or after test. For more details refer IEC 1000-4-3.

7.14.2 INDUCED RF FIELD CONDUCTED/CONDUCTED RF SUSCEPTIBILITY:

This test shall be conducted as per IEC 1000-4-6. The complete system simulated installed condition shall be put for the test specified in IEC, the desired radiation as defined bellow shall be applied on DC power in lines of recorder cum indicator & analog and digital input lines of equipment.

Freq. Range : 0.15 to 80 Mhz
Field strength : 10V/m
Amplitude Modulation : 80% at 1Khz sinusoidal

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During the test equipment shall be watched for manufacturing or erratic behaviour. Data recorded in the memory of the system during test shall also be downloaded & evaluated through evaluation software for the performance of the system as well as Data Recording & Downloaded system.

No degradation of the system & manufacturing should be allowed during or after test. For more details refer IEC 1000-4-6.

8.0 ENCLOSURE:

- LP73200 alt. 'c'
- LP75001 alt. nil

ANNEXURE "A"

"BURN IN PROCEDURE FOR ELECTRONIC UNIT"

1.0 Each flasher unit containing semi-conductor devices, resistor, capacitor etc. must be "Burn In" to eliminate infant mortality in components. The components are stressed thermally by connecting to power supply bus and running at an elevated ambient of 70°C. Burn in is to be completed before final testing of the unit.

2.0 BURN IN PROCEDURE

2.1 The unit shall be connected as per relevant circuit diagram and power supply. Due care should be taken for connection, recording serial number of card, unit failed component if replaced.

2.2 Power Supply: Voltage should be set at 110v with tolerance of +10%. The supply bus must be protected by fuse. The use of fast acting fuse is recommended.

2.3 Temperature- The ambient temperature inside the burn in chamber is to be 75°C±5%.

2.4 Duration- Each card/unit is to be given a burn in for a period not less than 72 hours.

2.5 Replacement of component/components- During panel testing or after the burn in test, if it is found necessary to replace any component, the device/component failure must be recorded. On completion of the electronic tests on such cards, the card must be treated as "New" and as such must be given a "Burn in" again and retested before releasing the unit. Proper record of failures, if any, must be kept and a certificate must be issued along with the unit giving particulars, I.e card number, unit number, date of burn in conducted, duration, tested by, passed by etc.

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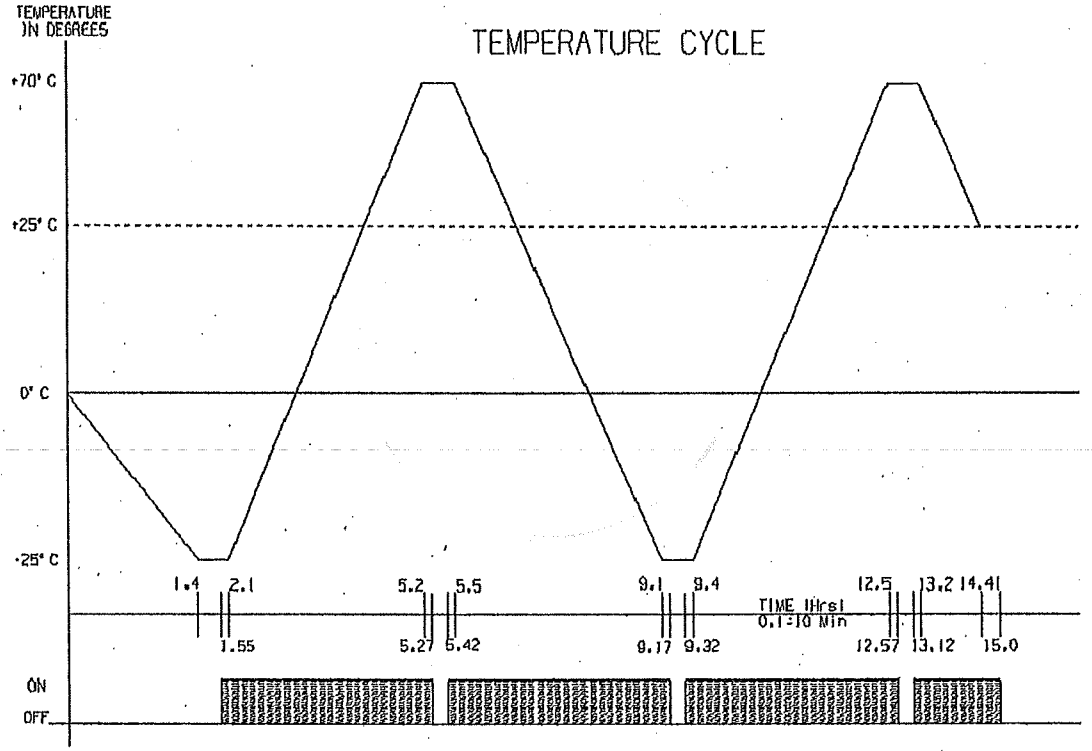
ANNEXURE "B"

INFORMATION TO BE SUPPLIED BY THE MANUFACTURER ALONGWITH THE OFFER

1.	Type/Make	.....
2.	Input voltage range	.....
3.	LED lamp current regulation	.....
4.	Lux measured at 1 metre at 3 metres	..... Lux ..... Lux
5.	Colour of light beam	.....
6.	Number of arrays	.....
7.	Number of LEDs in each array	.....
8.	Flasher Frequency	..... Flasher/Min. On time ..... Off time .....
9.	Dielectric strength	.....
10.	Short circuit current at lamp terminals and unit capacity to withstand his fault current	.....
11.	Insulation resistance	.....M. ohms
12.	Operating temperature range	.....
13.	Power consumption	.....
14.	Voltage output of control unit	.....
15.	Component rating	
16.	Circuit diagram	
17.	Dimensional drawing	
18.	Other particulars: The manufacturer may like to furnish detail such as: Units already manufactured and supplied to impart type test, service performance, if already in service etc.	
19.	Test results in case the manufacturer has already tested the unit.	

Annexure-2
EDTS215

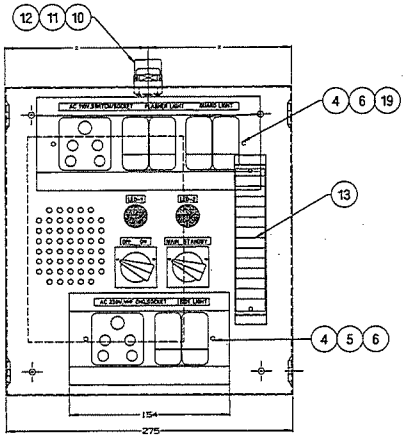
BURN-IN TEST

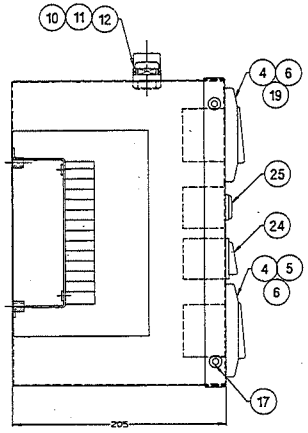


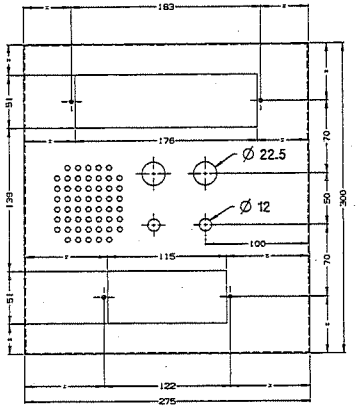
EDTS215	NIL	25/02/06				17 of 17
SPEC.NO.	REV.	DATE	SE/CAD	SSE/CAD-1	DY.CEE/D&D	

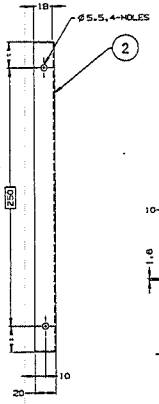
R.C.F.

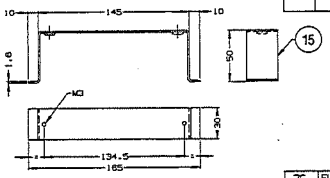
ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY
a	30/04/2004	ALL ALL ALL ALL ALL	1-GUARD LIGHTS SWITCH PROVIDED. 2-ITEM-3 DELETED & OPC OF ITEM-4,5&6 CHANGED FORM 1 TO 2. 3-FOR ITEM 13 CAT.NO. CHANGED 261-210 TO 261-212. 4-ITEM-15 MODIFIED. 5-ITEM-10,11&12 MODIFIED AND CAT.NO.REVISED ACCORDINGLY.	DIC.NO. ED040001
b	13/08/2004	ALL ALL ALL	1-DESCRIPTION FOR ITEM-1 & 2 MODIFIED. 2-ITEM-7,8,9 & 14 DELETED. ITEM-18,19,20,21,22 & 23 ADDED.	DIC.NO ED040006
c	25/02/2006	ALL ALL all	1-ITEM-18,21,22 & 23 DELETED. 2-ITEM-24,25 & 26 ADDED. 3. NOTE-7 ADDED.	DIC.NO. ED060004

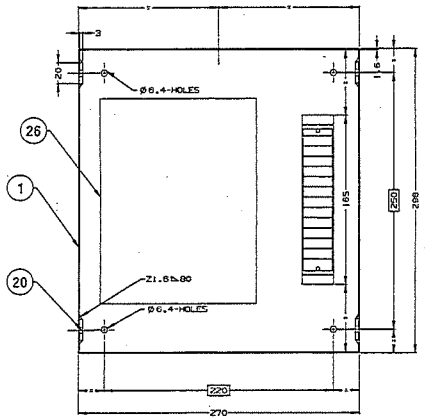


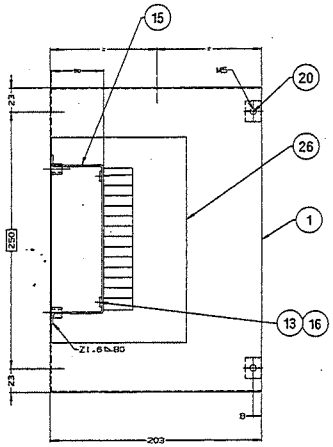


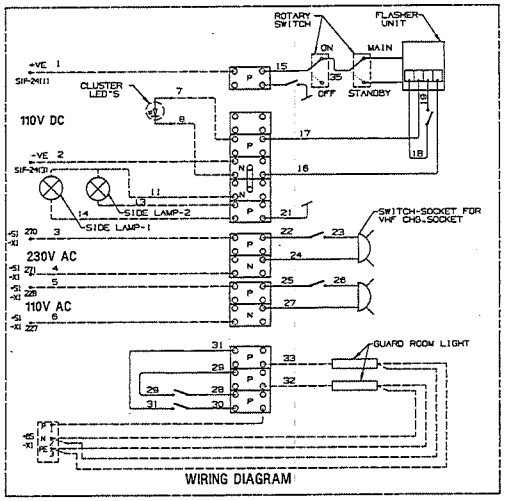












26	FLASHER UNIT	01	NIL	NIL	SEE NOTE-7
25	LED TYPE INDICATION (TWO DUAL COLOR RED/GREEN) LIGHT.110V.DC	02	NIL	NIL	OF M/S
24	ROTARY SWITCH 1-POLE WITH OFF DOUBLE THROW CHANGE OVER SWITCH (60)	02	CAT.NO. D16-61025	NIL	OF M/S
~~23~~	~~SPRING WASHER M5~~	~~04~~	~~T-1,TY-A~~	~~NIL~~	~~NIL~~
~~22~~	~~CH.HD.SCREW M5X10~~	~~04~~	~~IS: 1366-88 4.6.TAB 1&3~~	~~NIL~~	~~NIL~~
~~21~~	~~SCREWING PIECE Ø 10X10~~	~~04~~	~~IS: 2062~~	~~NIL~~	~~NIL~~
20	SCREWING PIECE 20X20X3.15	04	IS: 2062	NIL	NIL
19	COVER FRAME 3 GANG WITH POWDER COATED STEEL PLATE	01	CAT.NO. EL265	NIL	OF M/S SSK
~~18~~	~~FLASHER UNIT~~	~~01~~	~~ICF/SK-7-Z -401~~	~~NIL~~	~~COL II~~
17	CH.HD.SCREW M5X6	04	IS: 1365-78	NIL	NIL
16	CH.HD.SCREW M3X5	02	IS: 1365-78	NIL	NIL
15	CLAMP FOR TERMINAL CONNECTOR	01	IS: 513-94 GRADE-00	NIL	NIL
~~14~~	~~DIN RAIL 35MM (LENGTH 50MM)~~	~~01~~	~~210-113~~	~~NIL~~	~~OF M/S WAGO OR OTHER APPRD.MAKE~~
13	TERMINAL CONNECTOR CAGE CLAMP TYPE	01	CAT.NO. 261-212	NIL	OF M/S WAGO OR OTHER APPRD.MAKE
12	FLAT GASKET	01	SVM4-21	NIL	OF M/S PMA OR OTHER APPRD.MAKE
11	LOCK NUT PG21	01	BMN21	NIL	OF M/S PMA OR OTHER APPRD.MAKE
10	END FITTING PG21	01	BVMV P213	NIL	OF M/S PMA OR OTHER APPRD.MAKE
~~9~~	~~ROTARY SWITCH 1-POLE WITH OFF DOUBLE THROW CHANGE OVER SWITCH (60)~~	~~01~~	~~CAT.NO. D16-61025~~	~~NIL~~	~~OF M/S~~
8	LED TYPE INDICATION LIGHT.110V.DC	01	PL22 DL2	NIL	OF M/S
~~7~~	~~TIMER (CYCLIC ON/OFF)~~	~~01~~	~~MICON SERIE 225-20M0T0~~	~~NIL~~	~~OF M/S L&T OR OTHER APPRD.MAKE~~
6	6 AMP/250V AC 5 PIN SOCKET WITHOUT POWDER COATED STEEL PLATE & COVER FRAME	02	CAT.NO. EL220	NIL	OF M/S SSK OR OTHER APPRD.MAKE
5	COVER FRAME 2 GANG WITH POWDER COATED STEEL PLATE	01	CAT.NO. EL263	NIL	OF M/S SSK OR OTHER APPRD.MAKE
4	TWIN SWITCH 6AMP/250VAC.1-WAY	03	CAT.NO. EL201	NIL	OF M/S SSK OR OTHER APPRD.MAKE
~~3~~	~~SWITCH SOCKET COMBINE 5-PIN 6AMP/250VAC FITTED WITH POWDER COATED STEEL PLATE & COVER FRAME~~	~~01~~	~~CAT.NO. EL243~~	~~NIL~~	~~NIL~~
2	TOP COVER 1.6MM	01	IS: 513-94 GRADE-00	NIL	NIL
1	HOUSING 1.6 MM	01	IS: 513-94 GRADE-00	NIL	NIL

7. FLASHER UNIT (ITEM-26) SIZE SHALL BE 200(H)X150(W)X130(D) AND TECHNICAL DETAILS SHALL BE AS PER SPEC.NO.EDTS215.
6. HOUSING (ITEM-1) AND TOP COVER(ITEM-2) SHALL BE FABRICATTED FROM CRCA SHEET TO SPEC.NO. IS:513-94.
5. WIRING TO BE DONE WITH 1.5 SQ.MM TEFLON INSULATED CABLES TO PART NO.0085 105 'OLFLON FEP'OF M/S LAPP KABEL OR EQUIVALENT OF M/S RR KABEL.
4. ALL STEEL ITEMS EXCLUDING HARDWARW SHALL BE GIVEN SURFACE TREATMENT FOR ANTI-RUST & ANTI-CORROSION BEFORE FINISH WITH POWDER COATING.THICKNESS OF POWDER COATING SHALL BE NOT LESS THAN 50 MICRONS TO WHITE COLOUR(SHADE NO.023"SNOW WHITE" OF M/S BERGER OR EQUIVALENT SHADE OF REPUTED MAKE PAINT)WITH GLOSSY FINISH FROM INSIDE & OUTSIDE.
3. ALL ITEMS INCLUDING PAINT SHALL BE FIRE RETARDENT.
2. FRAMED MOUNTING DIMENSIONS ARE TO BE STRICTLY ADHERED TO BY JIG PUNCHING.

NOTE:- 1. ALL DIMENSIONS IN MM.

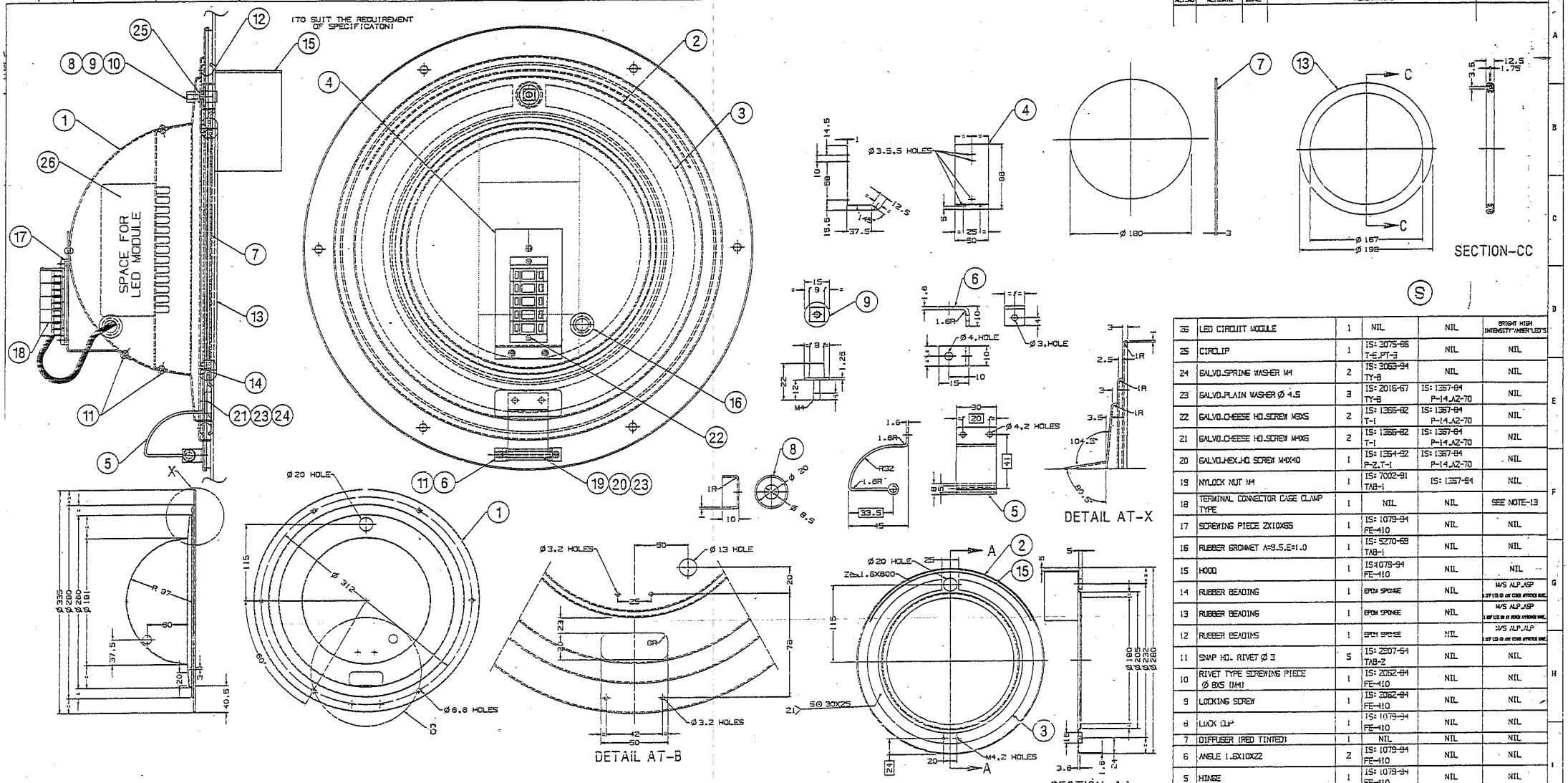
WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	BPASSLY DETAIL DRG	MATL. & SPEC.	REMARKS
NIL M	GROUP	ELECTRICAL	SUPERSEDES: lp73200 ALT b		
WEIGHT	FILE	D:\home\jwgl\lp73200a.prt			
NIL KG		FLASHING UNIT SYSTEM AND	SCALE	SSE/ED	
S.AREA				CHD	
NIL M²		VHF CHARGING SOCKET		DRN	
~~LENGTH/DIA~~					
NIL M		RAIL COACH FACTORY, KAPURTHALA	REF.DRG.No. NIL		
~~WIDTH/THICK.~~					
NIL M		INDIAN RAILWAYS STANDARD	PL NO.	NIL	
HEIGHT			DRG.NO.	LP73200	
NIL M		SEE/D&D DY.CEE/D&D	ALT.	c	SIZE A1 SHEET 1/1

ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.

DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE.

FOR UNTOLERANCED DIMENSIONS REFER MDG0008

DATE OF FIRST ISSUE 10/12/2003



ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY

	ITEM	DESCRIPTION & DIMENSIONS	QPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS
26		LED CIRCUIT MODULE	1	NIL	NIL	BRIGHT HIGH INTENSITY WHITE LED'S
25		CIRCLIP	1	IS: 3075-66 T-E.PT-3	NIL	NIL
24		GALVD.SPRING WASHER M4	2	IS: 3063-94 TY-B	NIL	NIL
23		GALVD.PLAIN WASHER Ø 4.5	3	IS: 2016-67 TY-B	IS: 1367-84 P-14.A2-70	NIL
22		GALVD.CHEESE HD.SCREW M6X5	2	IS: 1366-82 T-1	IS: 1367-84 P-14.A2-70	NIL
21		GALVD.CHEESE HD.SCREW M4X6	2	IS: 1366-82 T-1	IS: 1367-84 P-14.A2-70	NIL
20		GALVD.HEX.HD SCREW M4X40	1	IS: 1364-92 P-2.T-1	IS: 1367-84 P-14.A2-70	NIL
19		NYLOCK NUT M4	1	IS: 7002-91 TAB-1	IS: 1367-84	NIL
18		TERMINAL CONNECTOR CASE CLAMP TYPE	1	NIL	NIL	SEE NOTE-13
17		SCREWING PIECE 2X10X65	1	IS: 1079-94 FE-410	NIL	NIL
16		RUBBER GROMMET A-9.5.E=1.0	1	IS: 5270-69 TAB-1	NIL	NIL
15		HOOD	1	IS:1079-94 FE-410	NIL	NIL
14		RUBBER BEADING	1	EPDM SPONGE	NIL	M/S ALP.,ASP
13		RUBBER BEADING	1	EPDM SPONGE	NIL	M/S ALP.,ASP
12		RUBBER BEADING	1	EPDM SPONGE	NIL	M/S ALP.,ALP
11		SNAP HD. RIVET Ø 3	5	IS: 2207-84 TAB-2	NIL	NIL
10		RIVET TYPE SCREWING PIECE Ø 8X5 (M4)	1	IS: 2052-84 FE-410	NIL	NIL
9		LOCKING SCREW	1	IS: 2062-84 FE-410	NIL	NIL
8		LOCK CLIP	1	IS: 1079-94 FE-410	NIL	NIL
7		DIFFUSER (RED TINTED)	1	NIL	NIL	NIL
6		ANGLE 1.6X10XZ2	2	IS: 1079-94 FE-410	NIL	NIL
5		HINGE	1	IS: 1079-94 FE-410	NIL	NIL
4		BRACKET 1X50X140	1	IS: 1079-94 FE-410	NIL	NIL
3		RING	1	IS: 2062-84 FE-410	NIL	NIL
2		FRONT COVER	1	IS: 1079-94 FE-410	NIL	NIL
1		DOME	1	IS: 737-86	NIL	M

1. ALL DIMENSIONS IN MM.
2. FRAMED MOUNTING DIMENSIONS ARE TO BE STRICTLY ADHERED TO BY JIG PUNCHING.
3. ALL ITEMS INCLUDING PAINT TO BE FIRE RETARDENT.
4. PACKING OF THE FITTING SHALL BE AS PER PACKING CONDITION NO.EDG0002(VERSION-2).
5. ALL METRIC FASTENERS SHALL BE ZINC ELECTRO PLATED AND PASSIVATED TO IS:1573-1986.
6. ALL STEEL ITEMS EXCLUDING HARDWARE SHALL BE GIVEN SURFACE TREATMENT FOR ANTI-RUST & ANTI-CORROSION BEFORE FINISHING WITH POWDER COATING.THICKNESS OF POWDER COATING SHALL NOT BE LESS THAN 50 MICRONS TO GREY COLOUR (SHADE NO.686 'HAVELL'S GREY' OF M/S BERGER OR EQUIVALENT SHADE OF REPUTED MAKE PAINT) WITH GLOSSY FINISH FROM INSIDE AND OUTSIDE.
7. SCHEMATIC DIAGRAM,MANUFACTURER'S INSIGNIA SHALL BE SCREEN PRINTED ON AL.PLATE AND P.O. NO. & S.NO.IN THE FORM OF 'YYYYMMNNN' WHERE 'YYYY' STANDS FOR YEAR,'MM' STANDS FOR MONTH AND 'NNN' STANDS FOR RUNNING S.NO.SHALL BE PUNCHED ON IT AND RIVETED AT THE BACK SIDE OF THE FITTING.
8. ONLY TIG/SPOT WELDING SHALL BE DONE AS PER THE REQUIREMENT.
9. ITEM-1 SHALL BE DEEP DRAWN IN SINGLE PIECE FROM ALUMINIUM OF S-1 GRADE OF M/S HINDALCO OR EQUIVALENT OF M/S BALCO/INDALCO OR DESIGNATION 19000 HZ TO IS:737-86 & BRIGHT ANODIZED FROM INSIDE & OUTSIDE TO IS:1868-82 Gr.AC 2.5.
10. ALL BEADINGS SHALL BE MADE OF EPDM SPONGE.FIRM SHALL TAKE PRIOR APPROVAL FROM CEE/RCF.
11. FINISH OF THE FITTING SHALL BE EXCELLENT WITHOUT ANY UNDULATION/WAVERING IN THE COMPONENTS.
12. FRONT COVER OF THE FITTING IN CLOSED POSITION SHALL BE WATER PROOF TO PROTECTION DEGREE IP-65 TO IS:12063-87.
13. TERMINAL CONNECTOR SHALL BE CAGE CLAMP TYPE OF WAGO MAKE OR ANY OTHER APPROVED MAKE AS INDICATED IN TABLE-1.
14. WIRING TO BE DONE WITH 1.5 SQ.MM TEFLON INSULATED CABLES TO PART NO.0065 105 'OLFLON FEP'OF M/S LAPP KABEL OR EQUIVALENT OF M/S RR KABEL.
15. PROTOTYPE SAMPLE SHALL BE GOT APPROVED FROM CEE/RCF BEFORE BULK SUPPLY.

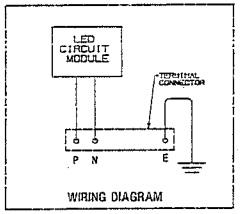
NOTE:-

LEGEND PLATE

MANU. INSIGNIA	DATE:	SCHEMATIC DIAGRAM
P.O.NO.	S.NO.	

TABLE-1
DETAILS OF TERMINAL CONNECTOR

DESCRIPTIONS	CAT.NO.	QTY/FITTING
TERMINAL STRIPS WITH FIXING FLANGES	281-205	1



WIRING DIAGRAM

WELD LENGTH	NIL M
WEIGHT	NIL KG
S.AREA	NIL M²
LENGTH/DIA.	NIL M
WIDTH/THICK.	NIL M
HEIGHT	NIL M

GROUP	ELECTRICAL
FILE	//NAS/ELEC/LASB/LP/LP75001.PRT
SUPERSEDES:	NIL

LED TYPE TAIL LIGHT(FOR POWER CAR)
(TO SPEC.NO.EDTS-215)

RAIL COACH FACTORY, KAPURTHALA

INDIAN RAILWAYS STANDARD

SCALE	SSE/ED
	CHD
	DSN
REVISION	LW76010
PL NO.	NIL
DRG.NO.	LP75001
ALT.	NIL SIZE A1 SHEET 1 OF 1

SEE/D&D — DY.CEE/D&D

ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID. | DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE. | FROZEN

FOR UNTOLERANCED DIMENSIONS REFER MDG0008 | DATE OF FIRST ISSUE

R.C.F.

AMENDMENT NO.1 TO SPECIFICATION NO.EDTS215

This Amendment is issued to RCF Spec.no.EDTS215, Rev-'nil' for Led Type Flashing Tail Lamp for LHB type Power-car to change the colour of the LED's used in the equipement.Accordingly the following clauses of the specification are amended.

Clause 5.2.3: Shall be read as:-
The LED's used in Lamp unit shall be of type HLMP-ELXX-XXXX OF Agilent Technologies or equivalent approved make with the following parameters at an ambient temperature of 25° C.

SYMBOL	PARAMETER	TEST CONDITION	MIN.	TYPE	MAX.	UNIT
VF	Forward Voltage	IF=20 mA	1.7	2.25	2.6	V
VR	Reverse Voltage	IF=100µA	-	5	-	V
IR	Reverse current	VR=5V	-	-	100	µA
ψP	Dominant Wavelength	IF=20mA	629.5	630	635	Nm
	Junction Temp.	-	-	130	-	° C
IV	Luminous Intensity	IF=20mA	5.5	7.2	9.3	Cd
IF	Forward Current	-	-	20	50	mA

Each LED shall have an electric shunt resistance across it. All the LED's shall be configured in series parallel combination in such a way that failure of any LED shall not effect the working of the unit. LED of each circuit will be preferably intermixed so that radiated area is not affected in case of failure of LED's.

Clause 5.2.4: Shall be read as:-
Red colour LED's with dominant wavelength of 630 to 635 nano meters shall be used. Radiating area (where the Led's are mounted) shall be as indicated in the Drg.no.LP75001.The Lux measured in axial direction shall not be less than 500Lux at 1 metre and 55 Lux at 3 meters.

Clause 5.3.9 added:- Shall be read as:-
Push-button for buzzer:- One additional Push-button (acceptance) to be provided in front of the Flasher unit for ON/OFF the audio sound of the buzzer.

Performance Test: CL 7.9.2.2
c) Measurement of Dominant Wavelength:- shall be read as:-The dominant wave length of LED's shall confirm to Para 5.2.4.The dominant wave length shall lie between 630 to 635 nm nano meter.

EDTS215	1	06.08.09			1 OF 1
SPEC.NO.	Amdt.	DATE	SSE/CAD	DY.CEE/D&D	PAGE

(48/2)

Ammendment-2 to Specification no. EDTS-215, Rev-Nil, Am-1

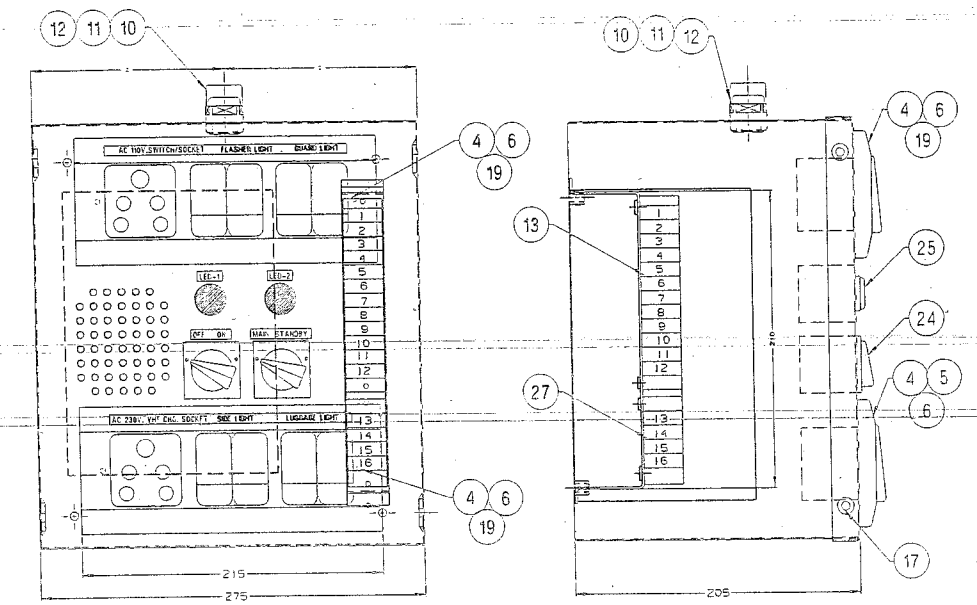
Ammendment-2 to Specification no. EDTS-215, Rev-Nil, Am-1 for LED Type Flashing Tail Lamp for LHB Type Power Car is being issued in reference to modification sheet to no. RDSO/PE/MS/AC/0081-2020 Rev-0 issued by RDSO to incorporate Twin switches 6A/250V (One Way) in VHF/Charging Box Provided in Guard Compartment for controlling Luggage Lights from Guards Compartment. The relevant drawing no. LP73200 alt 'c' is modified to drawing no. LP73200 alt'd' accordingly.

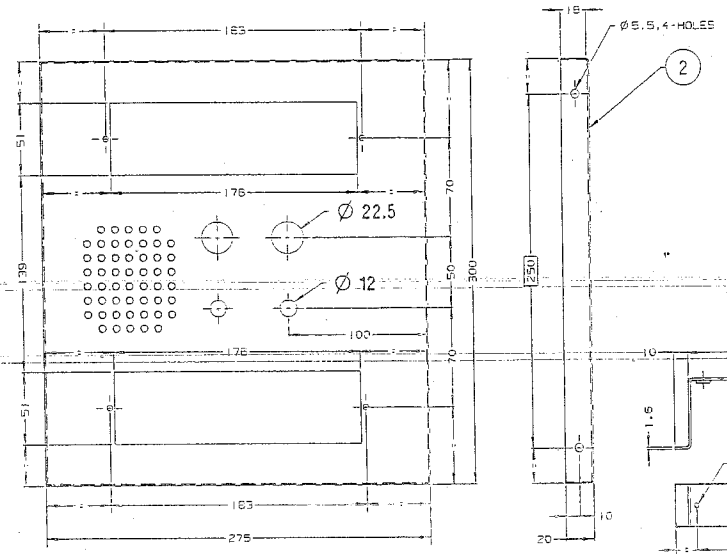
The reference drawing no. LP73200 alt 'c' mentioned at Clause no. 3.1, 5.3.8 & 8.0 shall be read as LP73200 alt'd'.

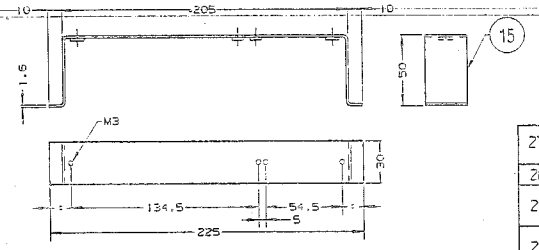
EDTS215, Rev-Nil, Am-1	2	21.10.2020				1 of 1
SPEC.	Amdt.	Date	SSE/CAD	SEE/D&D	Dy.CEE/D&D	Page

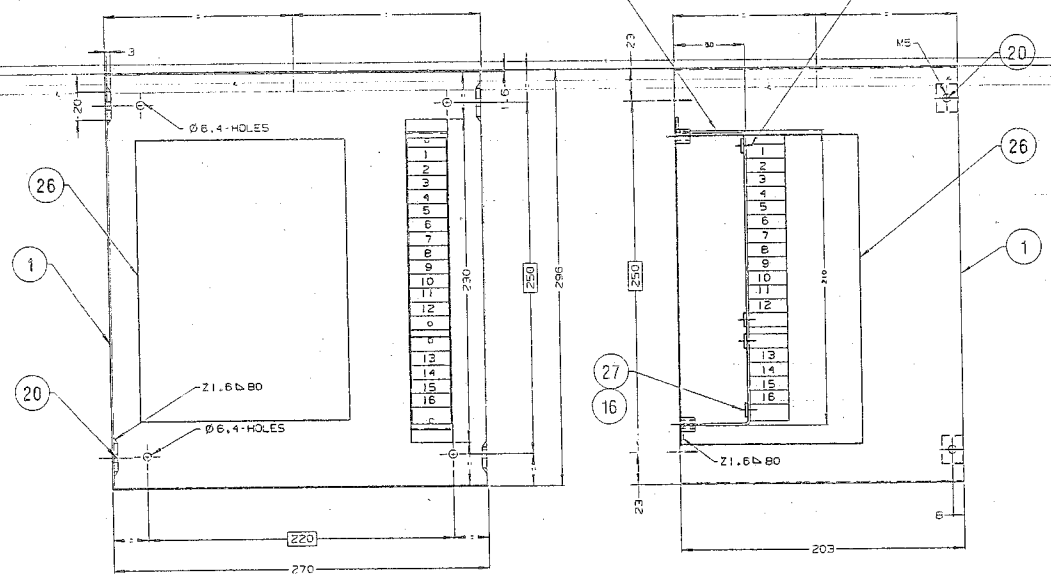
15/2

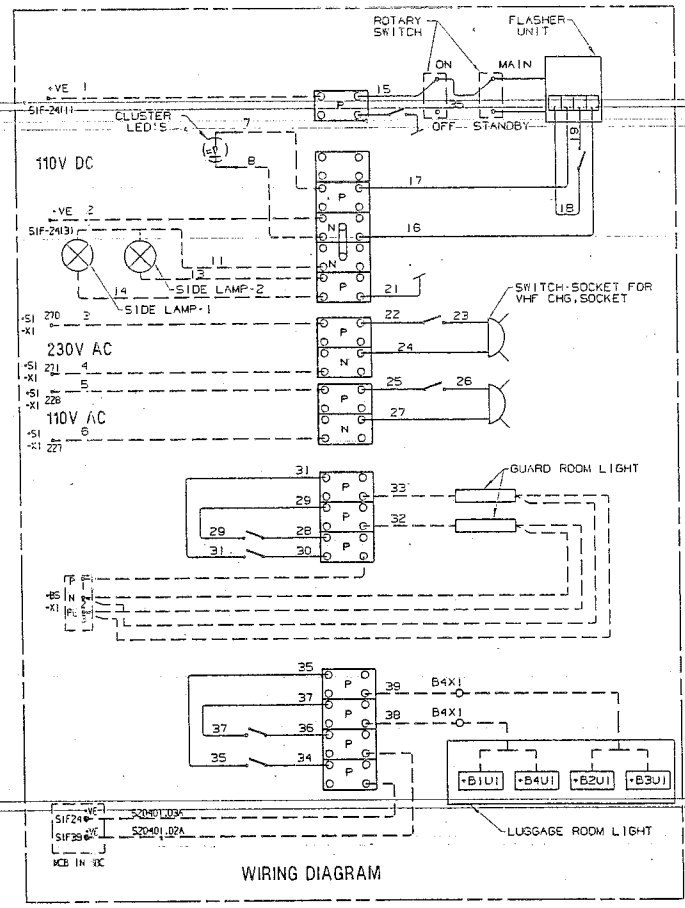
ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY
a	30/04/2004	ALL	1-GUARD LIGHTS SWITCH PROVIDED.	DIC.NO. ED040001
		ALL	2-ITEM-3 DELETED & OPC OF ITEM-4,5&6 CHANGED FORM 1 TO 2.	
		ALL	3-FOR ITEM 13 CAT.NO. CHANGED 261-210 TO 261-212.	
		ALL	4-ITEM-15 MODIFIED.	
		ALL	5-ITEM-10,11&12 MODIFIED AND CAT.NO.REVISED ACCORDINGLY.	
b	13/09/2004	ALL	1-DESCRIPTION FOR ITEM-1 & 2 MODIFIED.	DIC.NO ED040006
		ALL	2-ITEM-7,8,9 & 14 DELETED.	
		ALL	ITEM-18,19,20,21,22 & 23 ADDED.	
c	25/02/2006	ALL	1-ITEM-18,21,22 & 23 DELETED.	DIC.NO. ED060004
		ALL	2-ITEM-24,25 & 26 ADDED.	
		ALL	3. NOTE-7 ADDED.	
d	12/10/2020	ALL	1.PROVISION OF LUGGAGE LIGHT SWITCH AND TERMINAL CONNECTOR. 2.LENGTH OF ITEM-13 HAS BEEN INCREASES FROM 145MM TO 210MM. 3.ITEM-NO-5 DELETED. 4.OPC OF ITEM-NO-4,16 & 19 REVISED. 5.ITEM NO-27 ADDED.	











27	TERMINAL CONNECTOR CAGE CLAMP TYPE	01	261-204	NIL	OF M/S WAGO OR OTHER APPRD.MAKE
26	FLASHER UNIT	01	NIL	NIL	SEE NOTE-7
25	LED TYPE INDICATION (TWO DUAL COLOR RED/GREEN) LIGHT,110V.DC	02	NIL	NIL	OF M/S
24	ROTARY SWITCH 1-POLE WITH OFF (DOUBLE THROW CHANGE OVER SWITCH (6D)	02	CAT.NO. D16-61025	NIL	OF M/S
~~23~~	~~SPRING WASHER M5~~	~~04~~	IS:3063-88 T-1,TY-A	~~NIL~~	~~NIL~~
~~22~~	~~CH.HD.SCREW M6X16~~	~~04~~	IS: 1366-88 4.6,TAB 1&3	~~NIL~~	~~NIL~~
~~21~~	~~SCREWING PIECE Ø 16X16~~	~~04~~	~~IS:2062~~	~~NIL~~	~~NIL~~
20	SCREWING PIECE 20X20X3.15	04	IS: 2062	NIL	NIL
19	COVER FRAME 3 GANG WITH POWDER COATED STEEL PLATE	02	CAT.NO. EL265	NIL	OF M/S SSK
~~18~~	~~FLASHER UNIT~~	~~01~~	ICF/SK-7-2 -401	~~NIL~~	~~COL 11~~
17	CH.HD.SCREW M5X6	04	IS: 1365-78	NIL	NIL
16	CH.HD.SCREW M3X5	04	IS: 1365-78	NIL	NIL
15	CLAMP FOR TERMINAL CONNECTOR	01	IS: 513-94 GRADE-DD	NIL	NIL
~~14~~	~~DIN RAIL 35MM (LENGTH 50MM)~~	~~01~~	~~210-113~~	~~NIL~~	OF M/S WAGO OR OTHER APPRD.MAKE
13	TERMINAL CONNECTOR CAGE CLAMP TYPE	01	CAT.NO. 261-212	NIL	OF M/S WAGO OR OTHER APPRD.MAKE
12	FLAT GASKET	01	SVN4-21	NIL	OF M/S PMA OR OTHER APPRD.MAKE
11	LOCK NUT PG21	01	BMN21	NIL	OF M/S PMA OR OTHER APPRD.MAKE
10	END FITTING PG21	01	BVNV P213	NIL	OF M/S PMA OR OTHER APPRD.MAKE
~~9~~	ROTARY SWITCH 1-POLE WITH OFF DOUBLE THROW CHANGE OVER SWITCH (6D)	~~01~~	CAT.NO. D16-61025	~~NIL~~	OF M/S
8	LED TYPE INDICATION LIGHT,110V.DC	01	PL22 DU2	NIL	OF M/S
~~7~~	~~TIMER (CYCLIC ON/OFF)~~	~~01~~	MICON SERIE 225-20MDT0	~~NIL~~	OF M/S L&T OR OTHER APPRD.MAKE
6	6 AMP/250V AC 5 PIN SOCKET WITHOUT POWDER COATED STEEL PLATE & COVER FRAME	02	CAT.NO. EL220	NIL	OF M/S SSK OR OTHER APPRD.MAKE
~~5~~	COVER FRAME 2 GANG WITH POWDER COATED STEEL PLATE	~~01~~	CAT.NO. EL263	~~NIL~~	OF M/S SSK OR OTHER APPRD.MAKE
4	TW.N SWITCH 6AMP/250VAC,1-WAY	04	CAT.NO. EL201	NIL	OF M/S SSK OR OTHER APPRD.MAKE
~~3~~	SWITCH SOCKET COMBINE 5-PIN (SAME 250VAC) FITTED WITH POWDER COATED STEEL PLATE & COVER FRAME	~~01~~	CAT.NO. EL243	~~NIL~~	~~NIL~~
2	TOP COVER 1.6MM	01	IS: 513-94 GRADE-DD	NIL	NIL
1	HOUSING 1.6 MM	01	IS: 513-94 GRADE-DD	NIL	NIL

7. FLASHER UNIT (ITEM-26) SIZE SHALL BE 200(H)X150(W)X130(D) AND TECHNICAL DETAILS SHALL BE AS PER SPEC.NO.EDTS215.
6. HOUSING (ITEM-1) AND TOP COVER(ITEM-2) SHALL BE FABRICATED FROM CRC# SHEET TO SPEC.NO. IS:513-94.
5. WIRING TO BE DONE WITH 1.5 SQ.MM TEFLON INSULATED CABLES TO PART NO.0085 105 'OLFLON FEP'OF M/S LAPP KABEL OR EQUIVALENT OF M/S RR KABEL.
4. ALL STEEL ITEMS EXCLUDING HARDWARW SHALL BE GIVEN SURFACE TREATMENT FOR ANTI-RUST & ANTI-CORROSION BEFORE FINISH WITH POWDER COATING,THICKNESS OF POWDER COATING SHALL BE NOT LESS THAN 50 MICRONS TO WHITE COLOUR(SHADE NO.023"SNOW WHITE" OF M/S BERGER OR EQUIVALENT SHADE OF REPUTED MAKE PAINT)WITH GLOSSY FINISH FROM INSIDE & OUTSIDE.
3. ALL ITEMS INCLUDING PAINT SHALL BE FIRE RETARDENT.
2. FRAMED MOUNTING DIMENSIONS ARE TO BE STRICTLY ADHERED TO BY JIG PUNCHING.

NOTE:- 1. ALL DIMENSIONS IN MM.

WELD LENGTH NIL M	ITEM	DESCRIPTION & DIMENSIONS	OPASSLY DETAIL DRG / MATL. & SPEC. / REMARKS
WEIGHT NIL KG	GROUP	ELECTRICAL	SUPERSEDES: lp73200 ALT c
S.AREA NIL M²	FILE	D:\home\jwal\lp73200a.prt	
LENGTH/DIA NIL M		FLASHING UNIT SYSTEM AND VHF CHARGING SOCKET	SCALE / SSE/ED / CHD / DRN
WIDTH/THICK. NIL M		RAIL COACH FACTORY, KAPURTHALA	REF.DRG.No. NIL
HEIGHT NIL M		INDIAN RAILWAYS STANDARD	PL NO. NIL
		SEE/D&D / DY.CEE/D&D	DRG.NO. LP73200 ALT. d SHEET 1/1

ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.

DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE.

FOR UNTOLERANCED DIMENSIONS REFER MDG0006

DATE OF FIRST ISSUE 10/12/2003

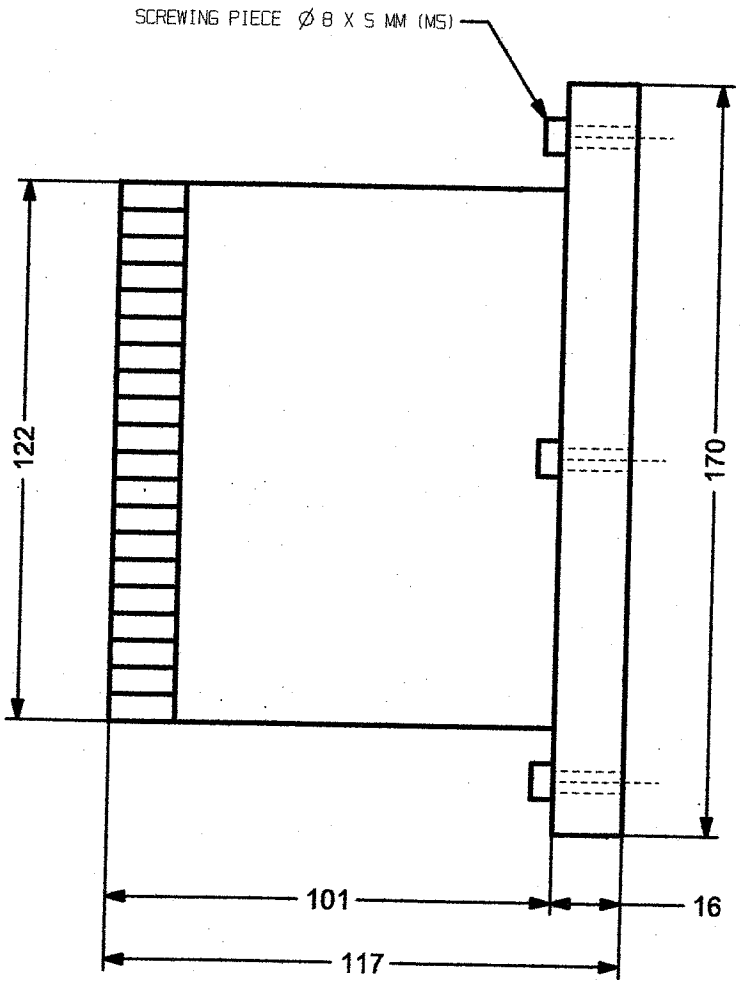
Annexure-A is issued to specification no. EDTS215, Am-1&2 for LED type Flashing Tail lamp

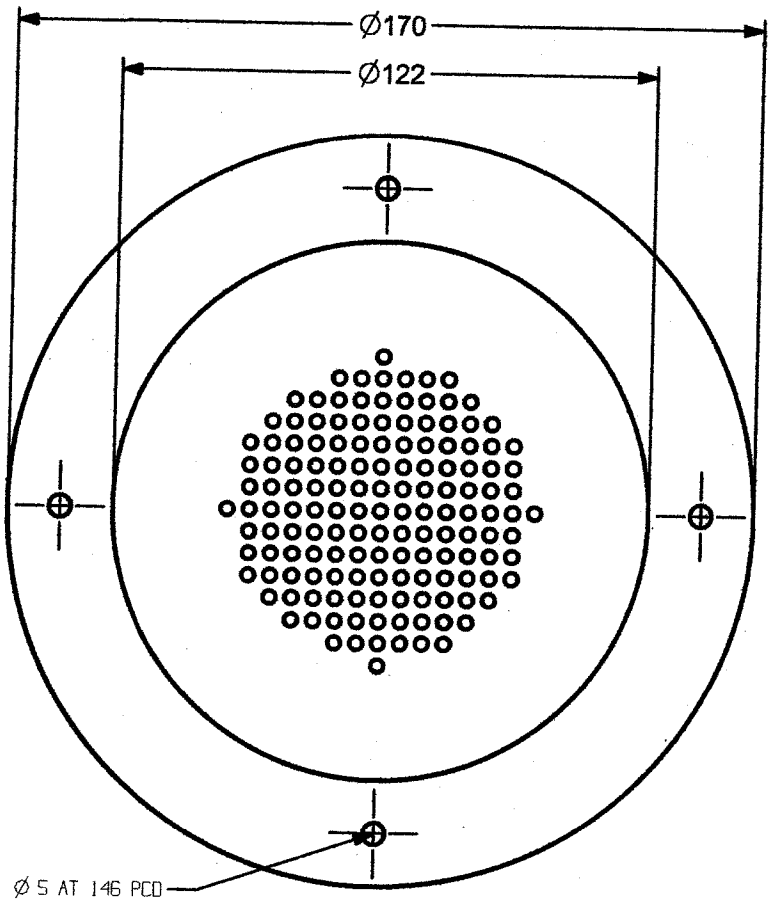
This Annexure-A is issued to specification no. EDTS215, Am-1&2 for LED Type Flashing Tail Lamp to be provided in Narrow gauge SLR EOG LHB type coaches for Kalka Shimla railway. The following changes shall be incorporated:-

1. The OGA dimensions shall be maintained as per SKED no.797, however other technical specifications shall remain as per drg. No. LP75001 alt 'Nil'.
2. Flashing unit/ Charging socket shall be as per drg.no.LP73200 alt'd' however compact size shall be preferred.
3. Firm to get the drawings approved before bulk supply.

Enclosures: OGA for LED Tail Light for Narrow gauge SLR Coaches – SKED797

/.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY
NIL	NIL	NIL	NIL	NIL





NOTE :- ALL DIMENSION IN MM.

DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE.
THIS IS A COMPUTER GENERATED DRAWING. ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER IT INVALID.
FOR UNTOLERANCED DIMENSIONS REFER MDG0008 | DATE OF FIRST ISSUE | 03/07/2021

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	QPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL M		NIL	NIL	NIL	NIL	NIL
WEIGHT	GROUP	ELECTRICAL	SUPERSEDES:	NIL		
NIL KG	FILE	\\10.12.17.2\retrv\Dy CEE\VAR\Tail Light.prt				
S.AREA						
NIL M2						
LENGTH /-DIA						
NIL M						
WIDTH /-DIA						
NIL M						
HEIGHT						
NIL M						

OGA FOR LED TAIL LIGHT FOR NARROW GAUGE SLR COACHES

RAIL COACH FACTORY, KAPURTHALA

रेल कोच फैक्टरी कपूरथला | IRS

SCALE | SSE/ED | CHD | DRN | REF.DRG.NO. NIL

PL NO. NIL

DRG.NO. SKED-797

ALT. NIL | SIZE A3 | SHEET 1/1

SEE/D&D | DY.CEE/D&D

AMENDMENT NO .3 TO SPECIFICATION NO EDTS215,AM-2

This Amendment is issued to RCF spec.no.EDTS215, Rev-'Nil', Am-2 for LED Type Flashing Tail Lamp for LHB Type Power-car. Following Clauses of the specification are amended.

S.NO	CL. OF SPEC.	EXISTING CLAUSE	REVISED CLAUSE
1	5.2.2	Flasher lamp unit shall be cluster of 120 high intensity **amber** LEDs used in equally distributed cluster in rounded profile. LED 's giving **7°** view angle, arranged in series and parallel circuit to ensure average forward current and peak forward current through LEDs limited to 20mA and 30mA respectively. The manufacturer will submit design details to provide that current through LEDs does not exceed the limits. The current regulation shall be better than 5% for full working voltage range as per clause 5.2.1 checked at lamp terminal unit. It should work at nominal control voltage 110V.DC	Flasher lamp unit shall be cluster of 120 high intensity **RED** LEDs used in equally distributed cluster in rounded profile. LEDs shall be with **6° to 15°** view angle, arranged in series and parallel circuit to ensure average forward current and peak forward current through LEDs limited to 20mA and 30mA respectively. The manufacturer will submit design details to provide that current through LEDs does not exceed the limits. The current regulation shall be better than 5% for full working voltage range as per clause 5.2.1 checked at lamp terminal unit. It should work at nominal control voltage 110V.DC
2	5.2.3	The LED used in lamp unit shall be of type **HLMP-ELXX-XXXX** of Agilent Technologies or equivalent approved make with the following parameters at an ambient temperature of 25°	The LED used in lamp unit shall be of type **HLMP-EGXX-XXXX** of Agilent Technologies/Broadcom or equivalent approved make with the following parameters at an ambient temperature of 25°

Parameter	Test condition	Min.	Typ.	Max.	Unit
Forward voltage	I_F = 20 mA	1.7	-	2.4	V
Reverse Voltage	I_R= 100 µ A	-	5	-	V
Peak pulsed forward Current	V_R = 5 V	-	-	100	m A
Dominant Wavelength	I_F = 20 mA	620	-	635	Nm
Junction temp.	-	-	130	-	°C
Luminous Efficiency	I_F = 20 mA	-	12	-	lm/W
Forward current	-	-	20	50	mA

3	5.2.4	Red colour LED's with dominant wavelength of 630 to 635 nano meters shall be used. Radiating area (where the LED's are mounted) shall be as indicated in the Drg.no.LP75001.The Lux measured in axial direction shall not be less than 500Lux at 1meter and 55 Lux at 3 meters.	Red colour LED's with dominant wavelength of 620 to 635 nano meters shall be used. Radiating area (where the LED's are mounted) shall be as indicated in the Drg.no.LP75001.The Lux measured in axial direction shall not be less than 500Lux at 1.5meter and 55 Lux at 3 meters.
4	7.9.2.2 (Performance Test)	c) Measurement of Dominant Wave length:- The dominant wave length of LED's shall confirm to Para 5.2.4.The dominant wave length shall lie between 630 to 635 nm	c) Measurement of Dominant Wave length:- The dominant wave length of LED's shall confirm to Para 5.2.4.The dominant wave length shall lie between 620 to 635 nm

EDTS215,Rev-Nil,Am-2	3	02.12.22				1 of 1
SPEC NO.	Am	Date	SSE/CAD	SEE/D&D	DY.CEE/D&D	PAGE

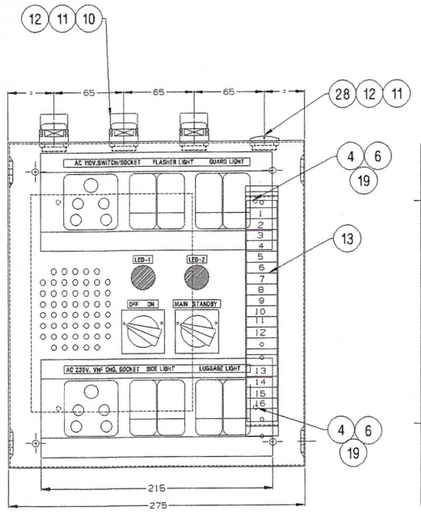
	रेल कोच फैक्टरी, कपूरथला RAIL COACH FACTORY, KAPUTHALA	दस्तावेज़ सं. *संशोधन- 4* Doc. No.: *Amendment-4*

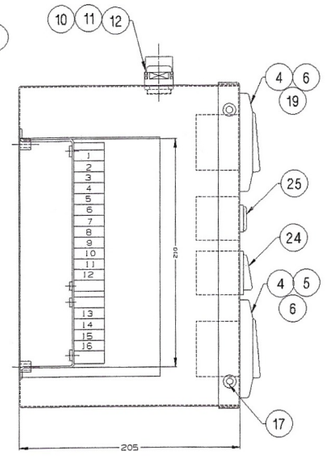
Amendment-4 to EDTS-215, Am-1, 2 & 3

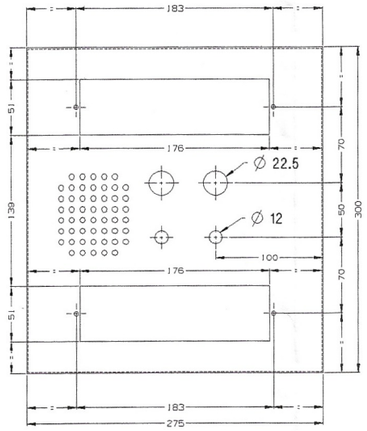
This amendment is issued to modify the drawing for VHF Box to add the holes for +VE & -VE segregation of 110V DC supply.

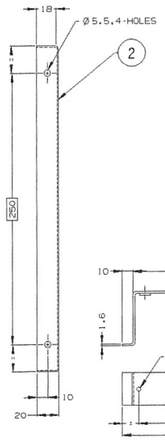
1. Clause 5.3.8 shall be read as:
   Complete flasher unit cum VHF charging socket unit shall be as per drawing LP73200, alt. 'e'.

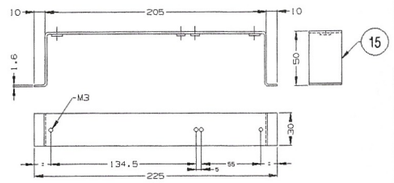
2. Clause 8.0 shall be read as:
   ENCLOSURE:
   - LP73200 alt. 'e'
   - LP75001 alt. nil

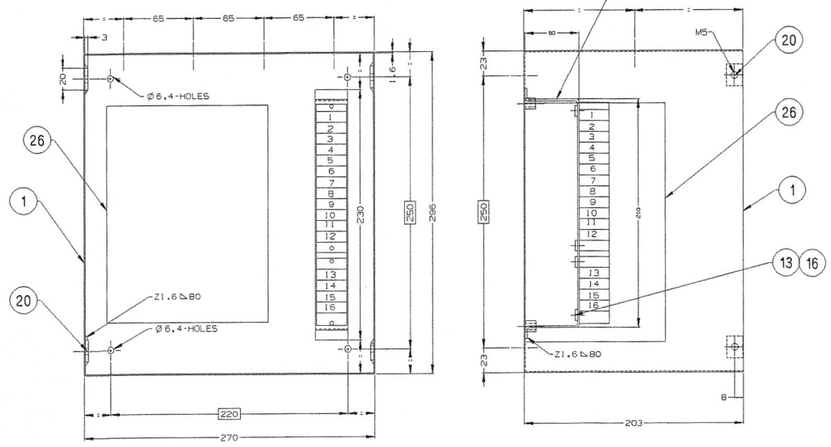


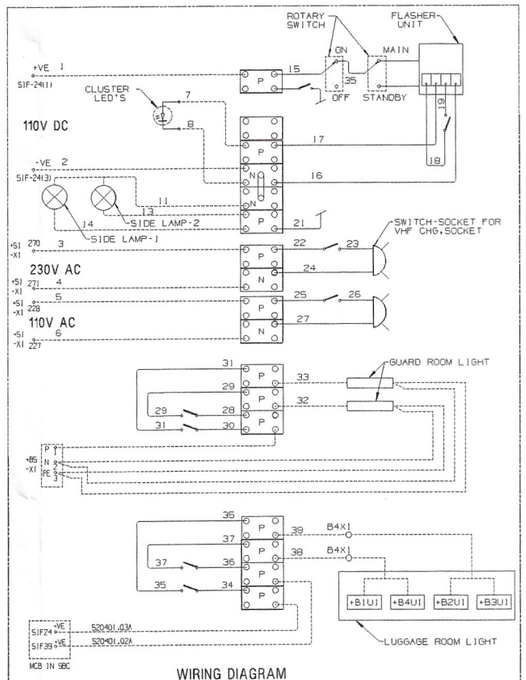












WIRING DIAGRAM

7. FLASHER UNIT (ITEM-26) SIZE SHALL BE 200(H)X150(W)X130(D) AND TECHNICAL DETAILS SHALL BE AS PER SPEC.NO.EDTS215.
6. HOUSING (ITEM-1) AND TOP COVER(ITEM-2) SHALL BE FABRICATTED FROM CRCA SHEET TO SPEC.NO. IS:513-94.
5. WIRING TO BE DONE WITH 1.5 SQ.MM TEFLON INSULATED CABLES TO PART NO.0085 105 'OLFLON FEP'OF M/S LAPP KABEL OR EQUIVALENT OF M/S RR KABEL.
4. ALL STEEL ITEMS EXCLUDING HARDWARW SHALL BE GIVEN SURFACE TREATMENT FOR ANTI-RUST & ANTI-CORROSION BEFORE FINISH WITH POWDER COATING.THICKNESS OF POWDER COATING SHALL BE NOT LESS THAN 50 MICRONS TO WHITE COLOUR(SHADE NO.023"SNOW WHITE" OF M/S BERGER OR EQUIVALENT SHADE OF REPUTED MAKE PAINT)WITH GLOSSY FINISH FROM INSIDE & OUTSIDE.
3. ALL ITEMS INCLUDING PAINT SHALL BE FIRE RETARDENT.
2. FRAMED MOUNTING DIMENSIONS ARE TO BE STRICTLY ADHERED TO BY JIG PUNCHING.

NOTE:- 1. ALL DIMENSIONS IN MM.

ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY
a	30/04/2004	ALL ALL ALL ALL ALL	1-GUARD LIGHTS SWITCH PROVIDED. 2-ITEM-3 DELETED & OPC OF ITEM-4,5&6 CHANGED FORM 1 TO 2. 3;FOR ITEM 13 CAT.NO. CHANGED 261-210 TO 261-212. 4-ITEM-15 MODIFIED. 5-ITEM-10,11&12 MODIFIED AND CAT.NO.REVISED ACCORDINGLY.	DIC.NO. ED040001
b	13/08/2004	ALL ALL ALL	1-DESCRIPTION FOR ITEM-1 & 2 MODIFIED. 2-ITEM-7,8,9 & 14 DELETED. ITEM-18,19,20,21,22 & 23 ADDED.	DIC.NO ED040006
c	25/02/2006	ALL ALL ALL	1-ITEM-18,21,22 & 23 DELETED. 2-ITEM-24,25 & 26 ADDED. 3. NOTE-7 ADDED.	DIC.NO. ED060004
d	12/10/2020	ALL	1.PROVISION OF LUGGAGE LIGHT SWITCH AND TERMINAL CONNECTOR. 2.LENGTH OF ITEM-13 HAS BEEN INCREASES FROM 145MM TO 210MM 3.ITEM NO-5 DELETED 4.ITEM NO-4,16 & 19 OPC REVISED 5.ITEM NO-27 ADDED	
e	08/12/2025	ALL	1.ITEM NO-10,11 & 12 MODIFIED & OPC REVISED. 2.ITEM-28 ADDED.	C.R.No. 2300250015

28	PLUG SCREW PG21, ANNX.-A, TAB-A-18, S.NO.-5	01	NIL	RDSO/PE/SPEC /AC/0138-	2009,REV-1
27	TERMINAL CONNECTOR CAGE CLAMP TYPE	01	261-204	NIL	OF M/S WAGO OR OTHER APPRD.MAKE
26	FLASHER UNIT	01	NIL	NIL	SEE NOTE-7
25	LED TYPE INDICATION (TWO DUAL COLOR RED/GREEN) LIGHT,110V.DC	02	NIL	NIL	OF M/S
24	ROTARY SWITCH 1-POLE WITH OFF DOUBLE THROW CHANGE OVER SWITCH (60)	02	CAT.NO. D16-61025	NIL	OF M/S SALZER OR OTHER APPRD.MAKE
~~23~~	~~SPRING WASHER M6~~	~~04~~	IS: 3063-88 T-1,TY-A	~~NIL~~	~~NIL~~
~~22~~	~~CH.HD.SCREW M6X10~~	~~04~~	IS: 1366-88 4.6,TAB 1&3	~~NIL~~	~~NIL~~
~~21~~	~~SCREWING PIECE Ø 10X10~~	~~04~~	~~IS:2062~~	~~NIL~~	~~NIL~~
20	SCREWING PIECE 20X20X3.15	04	IS:2062	NIL	NIL
19	COVER FRAME 3 GANG WITH POWDER COATED STEEL PLATE	02	CAT.NO. EL265	NIL	OF M/S SSK
~~18~~	~~FLASHER UNIT~~	~~01~~	ICF/SK-7-2 -401	~~NIL~~	~~COL-11~~
17	CHK.HD.SCREW M5X6	04	IS: 1365-78	NIL	NIL
16	CHK.HD.SCREW M3X5	04	IS: 1365-78	NIL	NIL
15	CLAMP FOR TERMINAL CONNECTOR	01	IS:513-94 GRADE-OD	NIL	NIL
~~14~~	~~DIN RAIL 35MM (LENGTH 50MM)~~	~~01~~	~~210-113~~	~~NIL~~	OF M/S WAGO OR OTHER APPRD.MAKE
13	TERMINAL CONNECTOR CAGE CLAMP TYPE	01	CAT.NO. 261-212	NIL	OF M/S WAGO OR OTHER APPRD.MAKE
12	FLAT GASKET	04	NIL	RDSO/PE/SPEC /AC/0138-	2009,REV-1
11	HEX. LOCK NUT PG21, ANNX.-A, TAB-A-10, S.NO.-5	04	NIL	RDSO/PE/SPEC /AC/0138-	2009,REV-1
10	END FITTING NW-23, ANNX.-A, TAB-A-2, S.NO.-5	03	NIL	RDSO/PE/SPEC /AC/0138-	2009,REV-1
~~9~~	~~ROTARY SWITCH 1-POLE WITH OFF DOUBLE THROW CHANGE OVER SWITCH (60)~~	~~01~~	CAT.NO. D16-61025	~~NIL~~	OF M/S SALZER OR OTHER APPRD.MAKE
8	LED TYPE INDICATION LIGHT,110V.DC	01	PL22 DU2	NIL	OF M/S
~~7~~	~~TIMER (CYCLIC ON/OFF)~~	~~01~~	MICON SERIE 225-20MDTO	~~NIL~~	OF M/S L&T OR OTHER APPRD.MAKE
6	6 AMP/250V AC 5 PIN SOCKET WITHOUT POWDER COATED STEEL PLATE & COVER FRAME	02	CAT.NO. EL220	NIL	OF M/S SSK OR OTHER APPRD.MAKE
~~5~~	~~COVER FRAME 2 GANG WITH POWDER COATED STEEL PLATE~~	~~01~~	CAT.NO. EL263	~~NIL~~	OF M/S SSK OR OTHER APPRD.MAKE
4	TWIN SWITCH 6AMP/250VAC.)-WAY	04	CAT.NO. EL201	NIL	OF M/S SSK OR OTHER APPRD.MAKE
~~3~~	~~SWITCH SOCKET COMBINE 5-PIN (6AMP/250VAC) FITTED WITH POWDER COATED STEEL PLATE & COVER FRAME~~	~~01~~	CAT.NO. EL243	~~NIL~~	~~NIL~~
2	TOP COVER 1.6MM	01	IS:513-94 GRADE-OD	NIL	NIL
1	HOUSING 1.6MM	01	IS:513-94 GRADE-OD	NIL	NIL

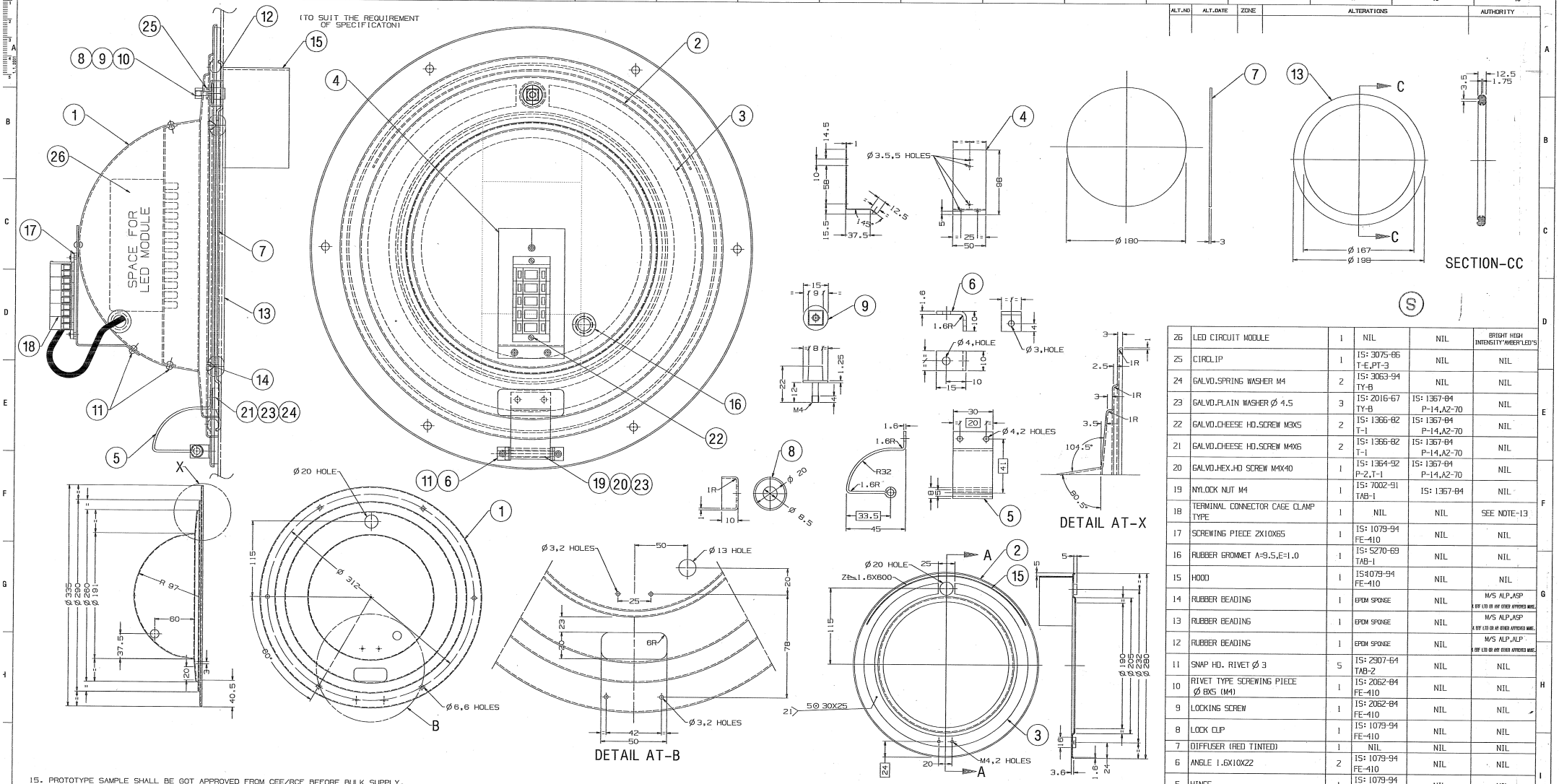
WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	QPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL M	GROUP	ELECTRICAL	SUPERSEDES:	lp73200 ALT d		
WEIGHT	FILE	D:\BKRM\LP\lp73200e.prt				
NIL KG		FLASHING UNIT SYSTEM AND VHF CHARGING SOCKET			SCALE	SSE/ED
S.AREA					CHD	
NIL M2					DRN	
~~LENGTH/DIA~~					REF.DRG.No.	NIL
NIL M		RAIL COACH FACTORY, KAPURTHALA				
~~WIDTH/THICK.~~						
NIL M		INDIAN RAILWAYS STANDARD			PL NO.	NIL
HEIGHT					DRG.NO.	LP73200
NIL M		SEE/VD		DY.CEE/D	ALT. e	SIZE A1 SHEET 1/1

ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.

DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE.

FOR UNTOLERANCED DIMENSIONS REFER MDG0008

DATE OF FIRST ISSUE 10/12/2003



ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY

26	LED CIRCUIT MODULE	1	NIL	NIL	BRIGHT HIGH INTENSITY"AMBER"LED'S
25	CIRCLIP	1	IS: 3075-86 T-E,PT-3	NIL	NIL
24	GALVD.SPRING WASHER M4	2	IS: 3063-94 TY-B	NIL	NIL
23	GALVD.PLAIN WASHER Ø 4.5	3	IS: 2016-67 TY-B	IS: 1367-84 P-14,A2-70	NIL
22	GALVD.CHEESE HD.SCREW M3X5	2	IS: 1366-82 T-1	IS: 1367-84 P-14,A2-70	NIL
21	GALVD.CHEESE HD.SCREW M4X6	2	IS: 1366-82 T-1	IS: 1367-84 P-14,A2-70	NIL
20	GALVD.HEX.HD SCREW M4X40	1	IS: 1364-92 P-2,T-1	IS: 1367-84 P-14,A2-70	NIL
19	NYLOCK NUT M4	1	IS: 7002-91 TAB-1	IS: 1367-84	NIL
18	TERMINAL CONNECTOR CAGE CLAMP TYPE	1	NIL	NIL	SEE NOTE-13
17	SCREWING PIECE 2X10X65	1	IS: 1079-94 FE-410	NIL	NIL
16	RUBBER GROMMET A=9.5,E=1.0	1	IS: 5270-69 TAB-1	NIL	NIL
15	HOOD	1	IS4079-94 FE-410	NIL	NIL
14	RUBBER BEADING	1	EPDM SPONSE	NIL	M/S ALP,ASP & ITS EQUIVALENT OR ANY OTHER APPROVED MAKE.
13	RUBBER BEADING	1	EPDM SPONSE	NIL	M/S ALP,ASP & ITS EQUIVALENT OR ANY OTHER APPROVED MAKE.
12	RUBBER BEADING	1	EPDM SPONSE	NIL	M/S ALP,ALP & ITS EQUIVALENT OR ANY OTHER APPROVED MAKE.
11	SNAP HD. RIVET Ø 3	5	IS: 2907-64 TAB-2	NIL	NIL
10	RIVET TYPE SCREWING PIECE Ø 8X5 (M4)	1	IS: 2062-84 FE-410	NIL	NIL
9	LOCKING SCREW	1	IS: 2062-84 FE-410	NIL	NIL
8	LOCK CUP	1	IS: 1079-94 FE-410	NIL	NIL
7	DIFFUSER (RED TINTED)	1	NIL	NIL	NIL
6	ANGLE 1.6X10X22	2	IS: 1079-94 FE-410	NIL	NIL
5	HINGE	1	IS: 1079-94 FE-410	NIL	NIL
4	BRACKET 1X50X140	1	IS: 1079-94 FE-410	NIL	NIL
3	RING	1	IS: 2062-84 FE-410	NIL	NIL
2	FRONT COVER	1	IS: 1079-94 FE-410	NIL	NIL
1	DOME	1	IS: 737-86	NIL	*
ITEM	DESCRIPTION & DIMENSIONS	QPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS

15. PROTOTYPE SAMPLE SHALL BE GOT APPROVED FROM CEE/RCF BEFORE BULK SUPPLY.
14. WIRING TO BE DONE WITH 1.5 SQ.MM TEFLON INSULATED CABLES TO PART NO.0085 105 'OLFLON FEP'OF M/S LAPP KABEL OR EQUIVALENT OF M/S RR KABEL.
13. TERMINAL CONNECTOR SHALL BE CAGE CLAMP TYPE OF WAGO MAKE OR ANY OTHER APPROVED MAKE AS INDICATED IN TABLE-1.
12. FRONT COVER OF THE FITTING IN CLOSED POSITION SHALL BE WATER PROOF TO PROTECTION DEGREE IP-65 TO IS:12063-87.
11. FINISH OF THE FITTING SHALL BE EXCELLENT WITHOUT ANY UNDULATION/WAVERING IN THE COMPONENTS.
10. ALL BEADINGS SHALL BE MADE OF EPDM SPONGE.FIRM SHALL TAKE PRIOR APPROVAL FROM CEE/RCF.
*9. ITEM-1 SHALL BE DEEP DRAWN IN SINGLE PIECE FROM ALUMINIUM OF S-1 GRADE OF M/S HINDALCO OR EQUIVALENT OF M/S BALCO/INDALCO OR DESIGNATION 19000 HZ TO IS:737-86 & BRIGHT ANODIZED FROM INSIDE & OUTSIDE TO IS:1868-82 Gr.AC 2.5.
8. ONLY TIG/SPOT WELDING SHALL BE DONE AS PER THE REQUIREMENT.
7. SCHEMATIC DIAGRAM,MANUFACTURER'S INSIGNIA SHALL BE SCREEN PRINTED ON AL.PLATE AND P.O. NO. & S.NO.IN THE FORM OF 'YYYYMMNNN' WHERE 'YYYY' STANDS FOR YEAR,'MM' STANDS FOR MONTH AND 'NNN' STANDS FOR RUNNING S.NO.SHALL BE PUNCHED ON IT AND RIVETED AT THE BACK SIDE OF THE FITTING.
6. ALL STEEL ITEMS EXCLUDING HARDWARE SHALL BE GIVEN SURFACE TREATMENT FOR ANTI-RUST & ANTI-CORROSION BEFORE FINISHING WITH POWDER COATING.THICKNESS OF POWDER COATING SHALL NOT BE LESS THAN 50 MICRONS TO GREY COLOUR (SHADE NO.696 'HAVELL'S GREY' OF M/S BERGER OR EQUIVALENT SHADE OF REPUTED MAKE PAINT) WITH GLOSSY FINISH FROM INSIDE AND OUTSIDE.
5. ALL METRIC FASTENERS SHALL BE ZINC ELECTRO PLATED AND PASSIVATED TO IS:1573-1986.
4. PACKING OF THE FITTING SHALL BE AS PER PACKING CONDITION NO.EDG0002(VERSION-2).
3. ALL ITEMS INCLUDING PAINT TO BE FIRE RETARDENT.
2. FRAMED MOUNTING DIMENSIONS ARE TO BE STRICTLY ADHERED TO BY JIG PUNCHING.
1. ALL DIMENSIONS IN MM.

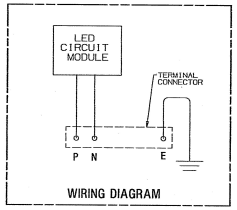
NOTE:-

LEGEND PLATE

MANU. INSIGNIA	DATE:	SCHEMATIC DIAGRAM
	S.NO.	
P.O.NO.		

TABLE-1
DETAILS OF TERMINAL CONNECTOR

DESCRIPTIONS	CAT.NO.	QTY/FITTING
TERMINAL STRIPS WITH FIXING FLANGES	261-205	1



WIRING DIAGRAM

WELD LENGTH	NIL M	GROUP	ELECTRICAL
WEIGHT	NIL KG	FILE	//NAS/ELEC/LASB/LP/LP75001.PRT
S.AREA	NIL M²		
~~LENGTH/DIA~~	NIL M		
WIDTH/THICK.	NIL M		
HEIGHT	NIL M		

SUPERSEDES: NIL

LED TYPE TAIL LIGHT(FOR POWER CAR)
(TO SPEC.NO.EDTS-215)

SCALE | SSE/ED | CHD | DRN

RAIL COACH FACTORY, KAPURTHALA — REF.DRG.No. LW76010

INDIAN RAILWAYS STANDARD — PL NO. NIL

DRG.NO. LP75001

SEE/D&D — DY.CEE/D&D — ALT. NIL — SIZE A1 — SHEET 1/1

ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.

DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE.

FROZEN

FOR UNTOLERANCED DIMENSIONS REFER MDG0008

DATE OF FIRST ISSUE