

SPECIFICATION FOR WHEEL SET EARTHING EQUIPMENT**1.0 SCOPE:**

This specification covers the requirements of design manufacture and supply of complete wheel set earthing equipment for the wheel set to prevent return current flow through the axle bearings and likely damage. Thus the earthing contact system acts as a current bridge that creates a connection by means of wiper contact (brush) from the stationary bogie frame to the rotating wheel set. This equipment is required for earthing of bogie of LHB type coaches with wheel diameter up to 920mm and operational speed up to 160 Km/Hr.

2.0 SCOPE OF SUPPLY:

A	Wheel Set Earthing Equipment complete with stainless steel braided earthing cable.	Drawing No. LW71231 alt. 'a'	1 set
B	Earthing resistor assembly 0.1Ω Mounting bracket Grounding cable	Drg. No. LW71246 Drg. No. LW71247 Drg. No. LW71248	3 set
C	Stainless Steel braided earthing cable of 95 mm ² X 750mm in length with crimping sockets at both ends.	Drg. No. LW71249	1 nos. to be supplied loose

The cables shall be electron beam copper cables conforming to RCF specification no. EDTS132 (latest revision).

3.0 SERVICE CONDITIONS:

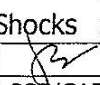

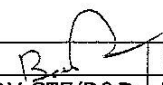
The equipment shall be sturdy and suitable for the following service conditions normally to be met in service:

3.1 Environmental Conditions :

- Ambient : 5°C to 55°C
- Humidity : upto 95% during rainy season
- Altitude : Max.1000 m above sea level

3.2 Working Conditions:

- Train Speed : 160Kmph max.
- Vibration & Shocks :

EDTS101	C	10.12.09				1 of 9
SPEC.NO.	REV	DATE	SSE/CAD	SEE/DESIGN	DY.CEE/D&D	PAGE

- Vibrations :

- a) Maximum vertical acceleration : 1.0 g
- b) Maximum lateral acceleration : 0.5 g
- c) Maximum longitudinal acceleration : 3.0 g
- d) Frequency and amplitude :

Sinusoidal form of vibrations, the frequency 'f' lies between 1 Hz and 100 Hz and their amplitude 'a', expressed in mm, is given as a function 'f' by the equations:

$a = 25/f$ for values of f between 1 Hz and 10 Hz

$a = 250/f^2$ for values of 'f' between 10Hz and 100Hz

- Shocks : 3g in all direction as per IEC-571.

4.0 GOVERNING SPECIFICATIONS :

4.1 Reference shall be made to the following standard specifications:-

1	UIC- 552 VE	Electrical power supply for train taken from train cable
2	UIC-533	Protection by Earthing of metallic parts of vehicles
3	IEC-77	Rules for Electric Traction Equipment.
4	IS: 617	Aluminium and aluminium alloy ingots and castings for general engineering purpose
5	IS:4454	Steel wires for cold formed springs
6	IS: 13466	Brushes for electrical machines

The supplier shall furnish the details of all International standards viz. IEC/DIN/ VDE/EN to which the equipment shall conform to.

5.0 TECHNICAL DATA :

A) Earthing brush assembly:

Allowable current	400A
Maximum current	600A for 5 minutes
Short circuit capacity	10 KA for 10 ms
Contact resistance	5-20mΩ as per UIC 533 VDE123
Milivolt drop	<500 mV

EDTS101	C	10.12.09				2 of 9
SPEC.NO.	REV	DATE	SSE/CAD	SEE/DESIGN	DY.CEE/D&D	PAGE

Short circuit resistance	10 KA (approx.) for 10 mS
Nominal voltage	500 V
No. of brushes	2
Effective contact surface/ contact pressure	16cm ² /3.5 Kg per sq.cm

Cable cross section	95 mm ²
Assembly unit	Axle shaft
Weight	8.0 Kg (Max.)
Cable end termination along with accessories	Suitable for M10 screw

B) Earthing Resistor:

Resistance	0.1 Ω \pm 10%
Weight	1.4 Kg
Continuous current	15.0 A
Max. Current	2000 A for approx 0.1 seconds

Type, make and technical details shall be got approved from CEE/RCF before bulk production.

6.0 FUNCTIONAL REQUIREMENTS:

- 6.1 The system is required to provide alternative path for the return current of train supply in the electrified tracks, thus preventing flow of the return current through axle bearings by means of the earthing contact and thus preventing the damage to the bearings due to electromechanical reactions in the presence of current in the bearing elements.
- 6.2 Resistances are provided to restrict the return current from certain bogie parts and providing return current path through pre-determined low resistance path.
- 6.3 The electrical wiring diagram of the earthing contact and resistance shall be as per LHB drawing no (3) 11.078-101-00.
- 6.4 The overall general arrangement of the earthing contact shall be as per modified design as per RCF drawing no. LW71231 alt. 'a'

EDTS101	C	10.12.09				3 of 9
SPEC.NO.	REV	DATE	SSE/CAD	SEE/DESIGN	DY.CEE/D&D	PAGE

- 6.5 The general arrangement and dimensional details of the earthing Resistors shall be as per drawing no. LW71246.
- 6.6 The system shall ensure sufficient allowance for wear of the Brushes corresponding to the performance requirements and design conditions.
- 6.7 The system shall ensure smooth running of brushes in the support System without possibility of bearing getting jammed or blocked.
- 6.8 Earthing equipment shall sustain all the shocks and vibrations over A wide range of frequencies as the system has no damping or suspension arrangement.
- 6.9 The equipment shall be designed to ensure simple inspection Possibilities with clearly measurable criterion for replacement For expendable parts and for checking of functionality. The Inspection results shall not exceed the following criterion:
- First inspection after being put up into service³ after a running Distance of 3,00,000 Kms.
 - Maximum two functional inspections at a running distance of at Least 10,00,000 Kms.
- 6.10 The earthing brush system must be designed so that its function Can be guaranteed under valid applicable conditions for at least one million Km or a service life of 5.0 years without maintenance.

7.0 CONSTRUCTIONAL REQUIREMENTS:

- 7.1 The earthing contact system shall be of axial construction. It shall have Simple and fast assembly and dismantling earthing parts with installation conditions according to externally supported wheel sets. The compensation of any possible bogie clearance in the axial direction must be ensured by an adjusting mechanism.
- 7.2 Load bearing parts shall be suitable for a working life of 15 years.
- 7.3 The material pairing of the wearing parts is to be aligned to the performance requirements. Attention must be paid to an adequate protection taking into consideration the operational conditions.

EDTS101	C	10.12.09	<i>XZ</i>	<i>SE</i>	<i>Base</i>	4 of 9
SPEC.NO.	REV	DATE	SSE/CAD	SEE/DESIGN	DY.CEE/D&D	PAGE

- 7.4 The equipment shall be designed to withstand ferric oxide dust (abrasion of the wheels/track) oil and grease, urine, faeces, kitchen waste (from restaurant cars), stoning from flying ballast on track.
- 7.5 The cleaning/ washing of the equipment shall be with high pressure water (upto 40 bar i.e 40.77 Kg/cm²)

7.6 HOUSING COMPLETE TO DRAWING NO. LW71232 alt 'a'

- 7.6.1 The housing and cover arrangement shall be casted in aluminium alloy Casting material to IS:617 grade 4450M with overall dimensions as shown in drawing no. LW71232 alt. 'a' The detail dimensions of housing and cover are shown in drawing no. LW71233 alt. 'a' and LW71234 alt. 'a' respectively.
- 7.6.2 The housing shall be mounted with the axle box of the bogie and shall House the complete brush holder assembly.
- 7.6.3 Two nos. cable entry holes shall be provided as shown in the drawing for Taking out the earthing cable in either direction. One of the holes shall be used for bringing out the earthing cable by providing suitable gland of reputed make for complete protection against dust and water. The other hole shall be covered with the help of blanking plug of stainless steel material as per drawing no. LW71236.
- 7.6.4 V-grooves of size 2mmX3mm shall be provided in the housing as per Drawing no. LW71233 alt. 'a' for sealing purpose with the axle box of the bogie.
- 7.6.5 Cover/Lid shall be provided with an O-ring of size Ø2 X Ø140, neoprene Rubber (60% neoprene, 40% rubber) for proper sealing and prevent water/moisture ingress. The cover shall be fixed with the help of Ellen screws such that the screw heads are embedded in the cover in fully engaged condition.
- 7.6.6 Data related to operation and maintenance shall be screen printed on an Aluminium plate and riveted on the outside of the housing to ensure clear visibility to the operator. The size of the instruction plate shall be maintained within 150mm X75mm.
- 7.6.7 The cover shall be spring loaded and hinged at one end as per drawing no. LW71234 alt. 'a' to keep it closed position in case of failure of cover screws to prevent dust entry into the housing. Stainless steel inserts/grub screws shall be embedded in the housing for cover screws as shown in drawing no. LW71233 alt. 'a'.

EDTS101	C	10.12.09	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	5 of 9
SPEC.NO.	REV	DATE	SSE/CAD	SEE/DESIGN	DY.CEE/D&D	PAGE

- 7.6.8 A transparent, unbreakable, fire retardant polycarbonate inspection cover shall be provided on the front cover for visual inspection after every trip. The fixing arrangement of inspection cover shall be IP-67 protected against water ingress.

7.7 BRUSH HOLDER ASSEMBLY TO DRAWING NO. LW71237 :

- 7.7.1 The brush holder shall be as per drawing no. LW71238 and shall be CuZn 37Pb material. Destructive chemical test for conformation of material by inspecting agency shall be done as type and acceptance test.
- 7.7.2 The brush holder shall be secured with the housing of the earthing Equipment with the help of 3 nos., M8 X 35mm studs and Hex. Head Nyloc nuts as shown in drawing no. LW71231 alt. 'a' All hardware used shall be of stainless steel material.
- 7.7.3 The brush holder shall be so designed to accommodate 2 nos. spring-Loaded sliding type carbon brushes. The sliding grooves shall have adequately finished internal surfaces to ensure smooth motion of the carbon brushes.
- 7.7.4 A clip spring arrangement to drawing no. LW71240 shall be provided for Adequate and uniformly distributed pressure on the carbon brushes to ensure its functional requirements. Proper looking system of spring arrangement shall be available in the brush holder body to prevent dislodging/malfunctioning during train movement.

7.8 CARBON BRUSH ASSEMBLY TO DRAWING NO. LW71239 :

- 7.8.1 Carbon brush assembly Shall comprise of metal graphite (SKM9) carbon Blocks of grade BE14-Z1 of M/s Elca- Carbon Lorraine or BM- 51 of M/s Assam Carbon or any other RDSO approved make. Proof of purchase of material from approved source shall be submitted to the inspecting agency during type/acceptance test.
- 7.8.2 Carbon brushes shall be legibly marked by engraving on the carbon block For maximum worn out limit at 8.0 mm from wiper contact surface indicating replacement of carbon brushes.
- 7.8.3 Copper braided cables (20mm²X2 nos.) with overall dia. 5.0 mm X 100mm Shall be embedded firmly in the carbon blocks and provided with tongue type crimping sockets of approved make on the other ends. The braiding of the cables shall be silver plated to a minimum thickness of 5.0 microns in assembled condition and suitable for current carrying capacity of carbon brushes as mentioned in clause 5.0.

EDTS101	C	10.12.09	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	6 of 9
SPEC.NO.	REV	DATE	SSE/CAD	SEE/DESIGN	DY.CEE/D&D	PAGE

7.9 RING OILER ASSEMBLY TO DRAWING NO. LW71241 alt 'a' :

7.9.1 Ring oilier assembly shall comprise of ring oilier to drawing no LW71242 alt. 'a' and slip assembly to drawing No. LW71243.

7.9.2 The ring oilier shall be made with GGG 40 material composition.

7.9.3 Slip assembly to drawing no. LW71243 shall be made of Tin Bronze (Cu Sn6) material conforming to ISO:427 and secured with ring oilier with the help of a securing lock of spring steel material as shown in drawing no. LW71241 alt. 'a' Destructive chemical test for conformation of material by inspecting agency shall be done as type and acceptance tests.

8.0 TESTS :**8.1 Type tests :**

All the type tests shall be carried out on a prototype unit. The firm Manufacturing for first time shall get prototype approval from CEE/RCF.

8.2 Acceptance Test :

Acceptance test shall 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.

8.3 Routine tests:




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

The supplier shall furnish complete details of all valid international standards viz. VDE/EN/DIN/UIC applicable for the testing of complete equipment. Firm shall also submit type test programme and results from reputed national/ international Laboratories in this regard clearly describing all the type tests conducted on the unit.

9.0 GENERAL SPECIAL CONDITIONS :

9.1 The tendered shall offer clause wise comments on the specification eight conforming the acceptance of the clause or indicate deviation there from specifically.

9.2 Normally no post tender deviation shall be accepted. Deviation if any may be advised at tender stage only.

EDTS101	C	10.12.09				7 of 9
SPEC.NO.	REV	DATE	SSE/CAD	SEE/DESIGN	DY.CEE/D&D	PAGE



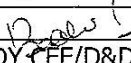
- 9.3 The firm should have adequate experience of design, development and manufacturing of similar equipment for rolling stock applications for the last few years.
- 9.4 Manufacturing and the testing facilities for carrying out the quality work shall be specially submitted with the tender.
- 9.5 The firm shall maintain date-wise in house quality control records etc. for process inspection and testing, the same shall be made available to the inspection official during type testing.
- 9.6 The manufacturer shall prepare a test procedure programme, which shall Define the tests proposed for the individual production phases and get it approved from CEE/RCF. The supplier shall provide the purchaser with conformation of adherence to the technical requirements defined in both this generic specification and the relevant individual specification by means of certificates giving the results of the tests performed.
- 9.7 For Inspection of 70 sq .mm & 95 sq. mm stainless steel cables Assemblies to drawing nos. LW71245 alt. 'a' LW71248 & LW71249 braiding of done side of cable shall be kept uncrimped for inspection. Only after lot inspection by inspecting authority, the crimping shall be done on both sides.
- 9.8 The permissible torque values shall be as specified in table given below :

Sr. No.	Hardware	Size & type	Recommended torque
1	Hardware used to fasten the brush holder with the housing.	Verbus ripp screw M8	40Nm (max)
2	Hardware used to fasten the earthing cable with the brush holder.	Hex. Hd. Bolt M10	30Nm (max)
3	Hardware used to fasten the cover with the housing.	Allen screw M8	25Nm (max)
4	Hardware used to fasten the oilier ring with the axle end.	Hex. Hd. Bolt M8	40Nm (max)

10.0 APPROVALS :

- 10.1 The following documents for the development and design of the Equipment shall be prepared and got approved from CEE/RCF by the Supplier before taking up prototype manufacture.

- A set of drawings relating to schematics and construction with complete Bill of material and parts lists.
- Type and endurance tests to be conducted on prototype to achieve the

EDTS101	C	10.12.09				8 of 9
SPEC.NO.	REV	DATE	SSE/CAD	SEE/DESIGN	DY.CEE/D&D	PAGE

Performance and life of the equipment.

- Instructions regarding mounting of equipment.
- Maintenance and repair instructions with information about trouble shooting.

The supplier may also be required to attend joint reviews regarding the development of prototype unit.

11.0 ENCLOSURES :

- i) LHB drawing No. (3) 11.0788-101-00
- ii) Drawing No.LW71231 alt. 'a'
- iii) Drawing No.LW71232 alt. 'a'
- iv) Drawing No.LW71233 alt. 'a'
- v) Drawing No.LW71234 alt. 'a'
- vi) Drawing No.LW71235 alt. 'a'
- vii) Drawing No. LW71236 alt. 'nil'
- viii) Drawing No. LW71237 alt. 'nil'
- ix) Drawing No. LW71238 alt. 'nil'
- x) Drawing No. LW71239 alt. 'nil'
- xi) Drawing No. LW71240 alt. 'nil'
- xii) Drawing No.LW71241 alt. 'a'
- xiii) Drawing No.LW71242 alt. 'a'
- xiv) Drawing No. LW71243 alt. 'nil'
- xv) Drawing No. LW71244 alt. 'nil'
- xvi) Drawing No. LW71245 alt. 'a'
- xvii) Drawing No. LW71246 alt. 'nil'
- xviii) Drawing No. LW71247 alt. 'nil'
- xix) Drawing No. LW71248 alt. 'nil'
- xx) Drawing No. LW71249 alt. 'nil'
- xxi) Drawing No. LW71250 alt. 'nil'
- xxii) Drawing No. LW71253 alt. 'nil'
- xxiii) Drawing No. LW71254 alt. 'nil'

EDTS101	C	10.12.09	<i>82</i>	<i>[Signature]</i>	<i>[Signature]</i>	9 of 9
SPEC.NO.	REV	DATE	SSE/CAD	SEE/DESIGN	DY.CEE/D&D	PAGE

AMENDMENT NO. 1
TO
SPECIFICATION FOR WHEEL SET EARTHING EQUIPMENT
EDTS-101(REV.-C)

The amendment is being issued in view of failure of Wheel set earthing equipment w.r.t. failure of flange bolt. The drawing No. LW-71231 has been modified w.r.t. item 12, the material and specification has been revised.

S.No.	Cl. of the Spec	Existing	Revised
1.	2 A	Drawing No. LW-71231 alt. 'a'	Drawing No. LW-71231 alt. 'e'
2.	11 (ii)	Drawing No. LW-71231 alt. 'a'	Drawing No. LW-71231 alt. 'e'

For approved sources, RDSO identified reputed vendors for supply of axle end high tensile cap screws should be used from the following sources:-

1. M/s. D.N. Sircar S.K. Dass Pvt. Ltd., 36/3, W.Road, Howrah.
2. M/s. Deepak Fasteners Ltd., E-535 to 538, Focal Point, Phase VI, Ludhiana.
3. M/s. Lakshami Precision Screws Ltd., Hisar Road, Rohtak, Haryana.
4. M/s. Pioneer Nuts & Bolts (P) Ltd, 13-b, Friends Industrial Estate, Focal point, Ludhiana.
5. M/s. Pooja Forge Ltd., 14/4, Mathura Road, Faridabad.

EDTS-101	'C'	05-10-2012				01 of 01
Spec. No.	Rev.	Date	SSE/CAD	SEE/D	Dy.CEE/D&D	Page

Corrigendum-1 to Spec. No. EDTS-101 Rev.'c' Amd.-1

This corrigendum is issued to specification for Wheel Set Earthing Device i.e. EDTS101, Rev. C, Am-1 to incorporate test requirements and modifications in housing for Earthing brush assembly and isolating bush as mentioned below:

Clause 5.0 (B) Technical Data:-

Earthing Resistor:

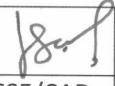

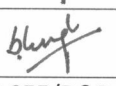
Weight may be read as 1.3 Kg approx. in place of 1.4 Kg.

Resistance of the earthing resistor unit shall be fixed with isolated studs on both sides. Body of the resistor unit shall be fabricated from minimum 2mm CRCA sheet to IS: 513-94 grade 'DD' and filled with sand encompassing the resistance wire.

Clause 8.4 and 8.5 added:

8.4 Test Description:

Sr. No	Test Description	Clause no. of spec.	Type test	Accep. Test	Routine Test
1.	Dimensional & Visual Inspection	Cl.8.5.1	√	√	√
2.	Chemical composition	Cl.8.5.1 & 8.5.1.1	√	√	X
3.	Contact Resistance Test for Earthing Brush Assembly	Cl. 5.0 (A) (Should be between 5-20 miliOhms)	√	√	√
4.	Mili volt drop tests of earthing brush assembly	Cl.8.5.2	√	√	√
5.	Earthing resistor				
	a) Measurement of Resistance of Earthing Resistor	Cl. 5.0 (B)	√	√	√
	b) Test for continuous current (Rated 15 A)	Cl. 5.0 (B) To be conducted for 30 minutes	X	√	√
	c) Test for continuous current (Rated 15 A)	Cl. 5.0 (B) To be conducted till saturation. Max. Temp. rise to be recorded	√	X	X
	d) Test for 2000 A for approx 0.1 second	Cl. 5.0 (B)	√	X	X

EDTS101 REV.C, AM-1	1	11-Sep-14				1 of 3
SPEC. NO.	CORR.	DATE	SSE/CAD	AEE/D	DY.CEE/D&D	PAGE

6.	Insulation Resistance (IR) test	Cl.8.5.3	√	√	√
7.	High Voltage (HV) test	Cl.8.5.4	√	√	√
8.	Degree of protection test	Cl.8.5.5	√	√ (\$)	X
9.	Test for spring steel for earthing brush assembly	Observed load should be between 10 to 15 N at 40 mm deflection before and after usage of carbon brush (i.e.: crossing worn out limit of carbon brush)	√	X	X

8.5 Method of Tests:

8.5.1 Dimensional and Visual inspection checks & Chemical Composition:



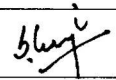
The earthing unit assembly and its components shall be inspected visually and the dimensions shall be measured and recorded as per the relevant drawings mentioned in Clause from 7.0 to 7.9 and others drawings mentioned in Annexure. The castings shall be free from cracks, blow holes and shall have smooth finish. Firm shall also submit the detailed chemical report of the chemical analysis of the material conforming to the specification from reputed govt. /NABL accredited lab.

8.5.1.1 Chemical composition of the components of Wheel Set Earthing Equipment shall be tested as per standard sampling plan of the inspecting agency however sampling plan for testing of Aluminium housing shall be as mentioned below:

Qty. Offered	No. of Samples to be tested
0 to 100	1 no.
101 to 200	2 nos.
201 to 300	3 nos.
..... and like wise	

8.5.2 Milivolt drop test:

The Milivolt drop shall be measured across the brush contact by passing the rated current when the steady state condition is achieved. The steady state condition is reached when last 3 consecutive readings are approximately constant. The Milivolt drop between two contacts should not be more than 500 Milivolt.

EDTS101 REV.C , AM-1	1	11-Sep-14				2 of 3
SPEC. NO.	CORR.	DATE	SSE/CAD	AEE/D	DY.CEE/D&D	PAGE

8.5.3 Insulation Resistance (IR) test:

The insulation resistance shall be measured by 500 V, DC megger. The insulation resistance shall be measured between housing and brush holder assembly and shall not be less than 100 MΩ before HV and after HV test

8.5.4 High Voltage (HV) test:

High voltage test shall be conducted by applying test voltage between housing and brush holder assembly by applying 2.5 KV for one minute.

The IR value recorded after the test shall not be less than 100MΩ.

8.5.5 Degree of protection test:

Degree of protection for the complete unit shall be got tested by the firm from any NABL recognized laboratory as per IEC 60529 conforming to IP-65. The test results shall be submitted at the time of prototype testing. Suitable arrangement shall be made by the firm to cover the base of the housing for conducting this test.

(S) For acceptance test the sampling plan shall be as under.



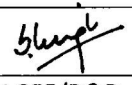
Qty. Offered	No. of Samples to be tested
0 to 100	1 no.
101 to 200	2 nos.
201 to 300	3 nos.
..... and like wise	

Clause 11.0:

Enclosures: The drawings at S.No.is given below are amended as follows:

S.No	Existing drg. no.	Revised drg. no.
III	Drawing no. LW71232 alt.'c'	Drawing no. LW71232 alt.'d'
IV	Drawing no. LW71233 alt.'a'	Drawing no. LW71233 alt.'b'
XV	Drawing no. LW71244 alt.'nil'	Drawing no. LW71244 alt.'a'
XVII	Drawing no. LW71246 alt. 'nil'	Drawing no. LW71246 alt. 'a'

Note: Isolating bush to drawing no. LW71244 alt.'nil' altered as LW71244 alt. 'a' , however any other design for isolation of brush holder assembly and housing may be provided. (Prior approval shall be taken before bulk manufacture from RCF).

EDTS101 REV.C , AM-1	1	11-Sep-14				3 of 3
SPEC. NO.	CORR.	DATE	SSE/CAD	AEE/D	DY.CEE/D&D	PAGE




Corrigendum - 2 to Spec. No. EDTS101, Rev.-'C', Amd.-1, Corr.-1

This corrigendum is issued to specification for Wheel Set Earthing Device i.e. EDTS101, Rev.-'C'. Am-1, Corr.-1 to change the material of earthing cables from copper to aluminium. The following drawings are modified:

Clause - 11.0:

Enclosures : The drawings are at S. No. is given below are amended as follows:

S. No.	Existing Drg. No.	Revised Drg. No.
XVI	LW71245, Alt.-'a'.	LW71245, Alt.-'b'.
XIX	LW71248, Alt.-'Nil'.	LW71248, Alt.-'a'.
XX	LW71249, Alt.-'Nil'.	LW71249, Alt.-'a'.

EDTS-101 Rev.-'C', Am-1, Corr.-1	'2'	September 26, 2014				1 of 1
Spec. No.	Corr.	Date	SSE/CAD	AEE/D	DY.CEE/D&D	PAGE

Corrigendum-3 to Specification no.EDTS101, Rev. C,Am-1, Corr-1 & 2

This corrigendum is issued to specification for Wheel Set Earthing Device i.e. EDTS101, Rev. C, Am-1, Corr-1 & 2 to incorporate the RDSO drg. of Hex. head screw for earthing device.

The following modification/changes have mentioned below:-

1. Approved sources for Item-12 of the drg.no.LW71231, Alt-'e' given in AM-1 may be treated as deleted.
2. Corrigendum -2 withdrawn.
3. Drg.no. CG-15070, Alt-'nil' is applicable for Item-12 of the drg.no.LW71231, Alt-'e'

EDTS-101 REV.-'c' AM-1,Corr-1&2	3	26-08-2015	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	1 of 1
SPEC. NO.	CORR.	DATE	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

Corrigendum no.-4 to Spec.no.EDTS101, Rev-'c', Am-1, Corr-1, 2 & 3

This corrigendum is issued to specification no. EDTS101, Rev-'c', Am-1, Corr-1, 2 & 3 of Wheel set earthing equipment.

The following modification/changes has mentioned below:-

1. Drg.no.LW71232,Alt-'d' is altered to Drg.no.LW71232,Alt-'e'

EDTS-101,Rev-'c', Am-1,Corr-1,2 & 3, Spec.no.	4 Corr.	19/05/2017 Date	 SSE/CAD	 SEE/D	 DY.CEE/D&D	1 of 1 Sheet
--	-------------------	---------------------------	---	--	--	------------------------




5

Corrigendum-5

This corrigendum is issued to specification no. EDTS101, Rev. C, Am-1, Corr-1, 2, 3 & 4 of Wheel Set Earthing equipment and the following changes have been incorporated in the drg.no.LW71232, Alt-'e'.

1. The following drawing numbers of Item.no.10 & 12 to drg.no.LW71232,Alt-'e' may be read as :-

Item.no	Description	Existing drg. no.	Revised drg. no.
10	Steel spring	LW71250, Alt.'Nil'	LW71250, Alt.'a'
12	Cover Pin	LW71254, Alt.'a'	LW71254, Alt.'Nil'




EDTS101,Rev.-'C', AM-1,Corr-1,2,3 & 4	5	24/04/18				1 of 1
SPEC. NO.	CORR.	DATE	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

Corrigendum-6

This corrigendum is issued to specification no. EDTS101, Rev. C, Am-1, Corr-1, 2, 3, 4 & 5 of Wheel Set Earthing equipment regarding governing specifications for testing of material composition of the items to drg.no.LW71238, Alt-'nil' & LW71242, Alt-'a'.

1. The following governing specification may be used for testing:-

Item.no	Drawing no.	Grade	Governing Spec.
Brush holder Assembly	LW71238, Alt.'Nil'	CuZn37pb	DIN-17656 (for Chemical composition)
Ring Oiler	LW71242, Alt.'a'	GGG40	IS:1608 (for mechanical properties)

EDTS101,Rev.-'C', AM-1,Corr-1,2,3,4 & 5	6	04/06/18				1 of 1
SPEC. NO.	CORR.	DATE	SSE/CAD	SEE/D	DY.CEE/D&D	PAGE

Annexure-1 to RCF Specification no. EDTS-101, Rev-C, Am-1, Corr-6

This annexure is issued to specification no. EDTS-101, Rev-C, Am-1, Corr-6 in order to incorporate IRIS conditions in the specifications. The Following clauses are added:-

A. First Article/Prototype Inspection:-

1. First Article inspection (FAI) will be done in case of first time manufacture and approved by CEDE/RCF before bulk supplies.
2. External Provider shall carryout FAI at their premises as per ISO/TS 22163:2017 requirements and submits the report along with the documents to RCF, Kapurthala prior to FAI by the purchaser. The following documents shall be submitted:-
 - i) FAI report
 - ii) QAP (Quality Assurance Plan)
 - iii) Details of special processes and their compliance.
3. Special Processes are as under:-
 - i) Casting and Surface treatment
 - ii) Powder Coating
 - iii) Crimping
4. On completion of First Article Inspection in-house by the firm and submission of documents to RCF, the representative of the purchaser shall be nominated to carry out FAI along with the validation of the above special processes at firm's premises.
5. Validation of outsourced special processes shall also be carried out as per requirement of the ISO/TS 22163:2017.
6. Audit inspection shall be done during regular production in the firm for certify quality of Wheel Set Earthing equipment.
7. Firm has to fulfil all the requirements as mentioned in the IRIS standard ISO/TS 22163:2017.

B. RAMS (Reliability, Availability, Maintainability and Safety):-**1. Reliability targets:-**




The achieved level of reliability shall ensure MDBF of 2,00,000 kms or more after initial reliability growth period of one years. The following fleet average levels of MDBF shall be achieved after the mentioned period of time:

- MDBF > 80,000 kms after 06 months.
- MDBF > 2,00,000 kms after 12 months.

For this purpose, any equipment shall be counted as available for calculations only after a stabilization period of 6 months after putting the train into revenue service.

2. Availability Requirements:-

The availability of the coach calculated on quarterly basis and considering unscheduled repairs for the equipment should not be less than 96%.




EDTS-101, Rev-C, Am-1, Corr-6	1	04.02.2020				1 of 2
Specification No.	Annexure	Date	SSE/CAD	SEE/D	Dy.CEE/D&D	Page No.

3. Maintainability:

The maintenance program prepared by EPPPS shall have the following objectives:-

- a) Enhancement of Rolling stock availability
- b) Minimisation of maintenance costs
- c) Minimisation of coach downtime/MTTR (meantime to restore serviceability)

EPPPS shall submit the basic maintenance schedules for the equipment. The minimum interval between overhauls at workshop be as per the maintenance manual/Schedule for LHB coaches issued by CAMTECH.

EDTS-101, Rev-C, Am-1, Corr-6	1	04.02.2020				2 of 2
Specification No.	Annexure	Date	SSE/CAD	SEE/D	Dy.CEE/D&D	Page No.

Amendment-2 to Spec. no. EDTS-101, Rev.-C, Am-1, Corr-6 with Annexure-1

This amendment is issued to:

- Change the requirement of manufacturer's insignia in Ring Oiler.
- Material of spring steel for Coiled spring of Clip Assembly.
- Requirement of Heli-Coil thread inserts in Housing for Earthing Brush Assembly.
- Change the specification for Earthing Cables.
- Weight of Earthing Resistor i.e. 1.3Kg is specified as maximum.
- To introduce the Endurance test and Shock/Vibration test.

Following drawings has been modified accordingly.

Clause 11.0 ENCLOSURES:


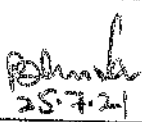
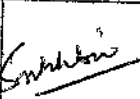
- iv) LW71233 alt. 'c'
- xi) LW71240 alt. 'a'
- xlii) LW71242 alt. 'b'
- xvi) LW71245 alt. 'c'
- xvii) LW71246 alt. 'b'
- xix) LW71248 alt. 'b'
- xx) LW71249 alt. 'b'

Tests added in clause 8.4 i.e. Test description:

Sr. No.	Test Description	Clause no. of spec.	Type test	Acceptance Test	Routine test
10.	Endurance test	8.5.6	√	X	X
11.	Shock & Vibration test	8.5.7	√	X	X

Clause 8.5.6 & 8.5.7 added in clause 8.5 i.e. Method of Tests:**Clause 8.5.6 Endurance test:**

Endurance test of the complete unit shall be got tested by the firm either in-house or from Govt./NABL accredited laboratory. The Complete assembly shall be mounted on the setup similar to the actual operating condition. The slip assembly shall be rotated at a speed of 900-1000 rpm for 48 hours continuously. After the completion of test, unit shall be checked visually for any sign of wear and tear. There shall be no defect in any part of the unit.

EDTS-101, Rev-C, Amnd-1, Corr-6, With Annexure-1	2	19.07.2021		 25.7.21		1 of 2
Spec. No.	Amnd.	Date	SSE/CAD	SEE/D&D	Dy. CEE/D&D	Page

Clause 8.5.7 Shock & Vibration test:

Test for withstanding shock & vibration of the complete unit shall be conducted by the firm from Govt./NABL accredited laboratory as per Category-3 of IEC 61373 for simulate long-life testing at increased random vibration levels (Cl.-9 of IEC 61373) and shock testing (Cl.-10 of IEC 61373).


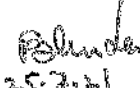
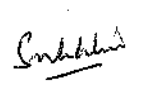
The test is passed if

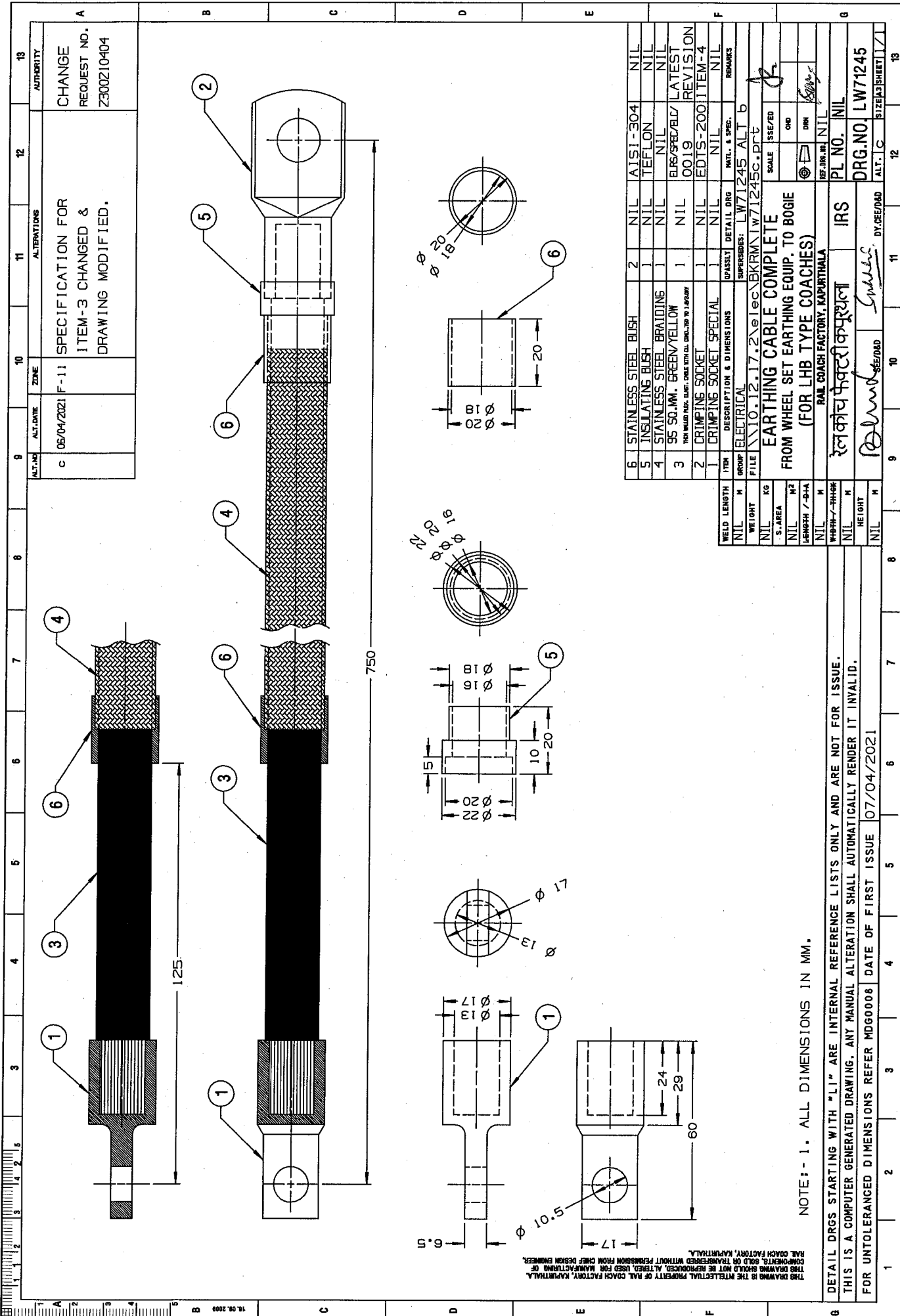
- a) There is no breakage or other deteriorations.
- b) Individual components should not be displaced from their original position after the test.

After Shock & Vibration test following tests shall be conducted on the complete unit.

- Insulation resistance test (as per clause-8.5.3).
- High voltage test (as per clause-8.5.4).
- Degree of protection test (as per clause-8.5.5).

The test reports shall be submitted at the time of First Article Inspection (FAI).

EDTS-101, Rev-C, Amnd-1, Corr-6, With Annexure-1	2	19.07.2021		 25.7.21		2 of 2
Spec. No.	Amnd.	Date	SSE/CAD	SEE/D&D	Dy. CEE/D&D	Page

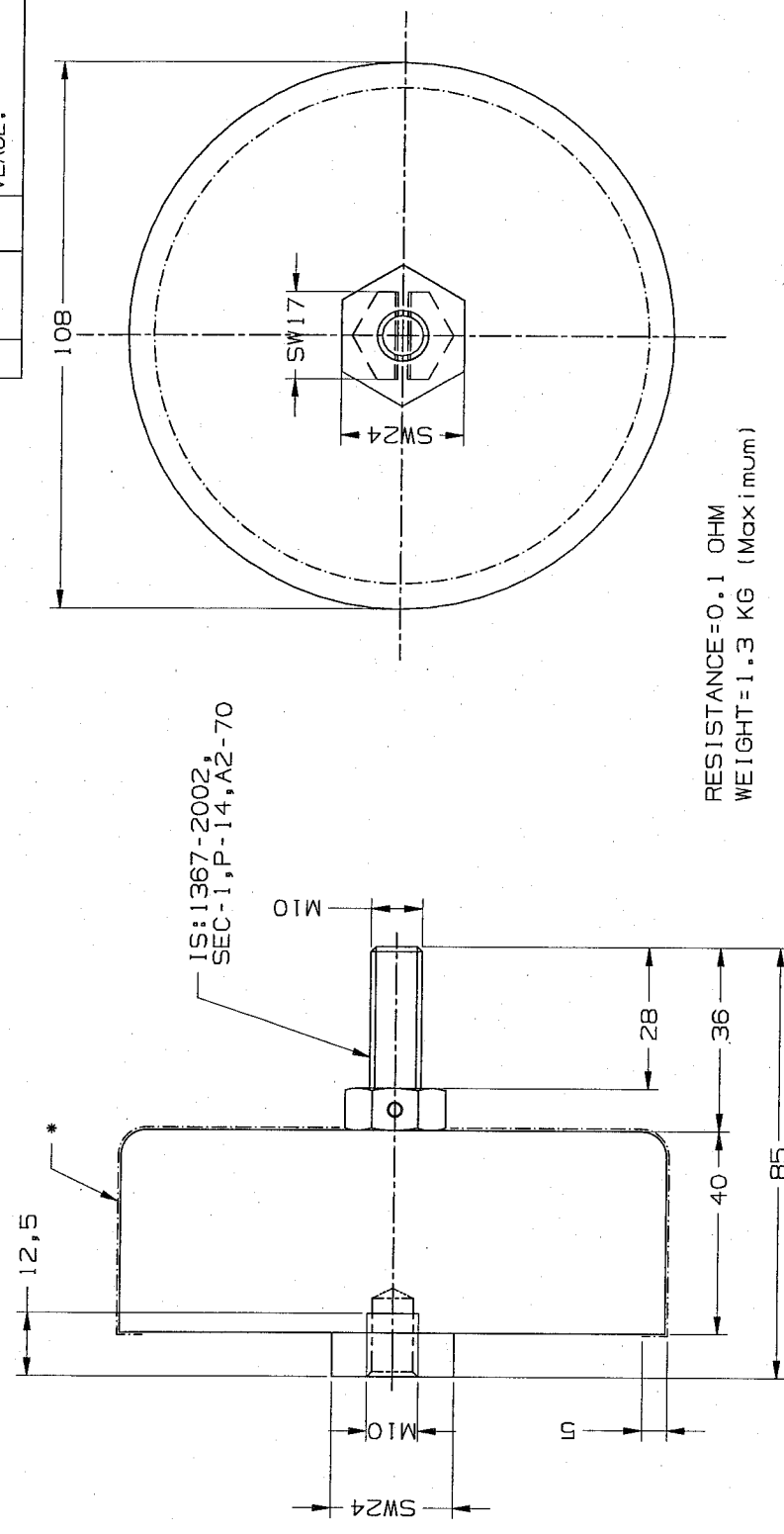


NOTE:- 1. ALL DIMENSIONS IN MM.

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 07/04/2021

WELD LENGTH	ITEM	GROUP	DESCRIPTION & DIMENSIONS	QTY	UNIT	REMARKS
NIL	1	CRIMPING SOCKET	SPECIAL	1	NIL	NIL
WEIGHT	2	CRIMPING SOCKET	SPECIAL	1	NIL	NIL
NIL	3	CRIMPING SOCKET	SPECIAL	1	NIL	NIL
S. AREA	4	CRIMPING SOCKET	SPECIAL	1	NIL	NIL
NIL	5	CRIMPING SOCKET	SPECIAL	1	NIL	NIL
LENGTH / DIA	6	CRIMPING SOCKET	SPECIAL	1	NIL	NIL
NIL	7	CRIMPING SOCKET	SPECIAL	1	NIL	NIL
WORTH / THICK	8	CRIMPING SOCKET	SPECIAL	1	NIL	NIL
NIL	9	CRIMPING SOCKET	SPECIAL	1	NIL	NIL
HEIGHT	10	CRIMPING SOCKET	SPECIAL	1	NIL	NIL
NIL	11	CRIMPING SOCKET	SPECIAL	1	NIL	NIL

FILE	10.12.17.2017	10.12.17.2017	10.12.17.2017	10.12.17.2017	10.12.17.2017	10.12.17.2017
SCALE	1:1	1:1	1:1	1:1	1:1	1:1
DATE	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17
BY	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17
CHECKED	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17
APPROVED	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17
PL NO.	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17
DRG. NO.	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17
ALT. C	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17
SIZE	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17
SHEET	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17	10.12.17



RESISTANCE=0.1 OHM
WEIGHT=1.3 KG (Maximum)

NIL										NIL										NIL										NIL																																																																																																			
WELD LENGTH										ITEM										DESCRIPTION & DIMENSIONS										UPASSTY										DETAIL DRG										INTL. & SPEC.										REMARKS																																																																					
NIL										H										ELECTRICAL										GROUP										SUPERSEDES:										LW71246 ALT-a																																																																															
NIL										KG										WEIGHT										FILE										X10.12.17.2										elect										BKRMA										W712466.prt (2D)																																																											
NIL										M2										S.AREA																																																																																																													
LENGTH / DIA																																																																																																																																	
NIL										H										RAIL COACH FACTORY, KAPURTHALA																																																																																																													
NIL										H										राम कपूर फ़ैक्टरी कपूरथला										IRS																																																																																																			
NIL										HEIGHT										SEE/DRAW										SEE/DRAW										DW										DW										DW										DW										DW																																																	
NIL										H										Bamide										SEE/DRAW										SEE/DRAW										DW										DW										DW										DW										DW																																							
1										2										3										4										5										6										7										8										9										10										11										12										13									

3.MANUFACTURER'S INSIGNIA/SERIAL NO.SHALL BE PUNCHED/CASTED IN THE ASSEMBLY.

* 2.THE COLOUR OF THE OUTER BODY SHALL BE MATT BITTER CHOCOLATE OF M/S BERGER PAINT.

1.ALL DIMENSIONS IN MM.

NOTE:-

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 HDG0008 DATE OF FIRST ISSUE 30/08/2005

3. MANUFACTURER'S INSIGNIA/SERIAL NO. SHALL BE PUNCHED/CASTED IN THE ASSEMBLY.
* 2. THE COLOUR OF THE OUTER BODY SHALL BE MATT BITTER CHOCOLATE OF M/S BERGER PAINT.
1. ALL DIMENSIONS IN MM.
NOTE:-

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 30/08/2005

(10)
✓

Corrigendum-7

This corrigendum is issued to specification for Wheel Set Earthing Device i.e. EDTS101, Rev. C, Am-2, Corr-6 with Annexure-1 to modifications in the drawings of Arrangement of Wheel Set Earthing Equipment, Earthing Resistor and Earthing cable complete as mentioned below:

- Drg.no.CG-15070,Alt-'1' is applicable for Item-12 of the drg.no.LW71231,Alt-'f'

Clause 5.0 Technical Data:-

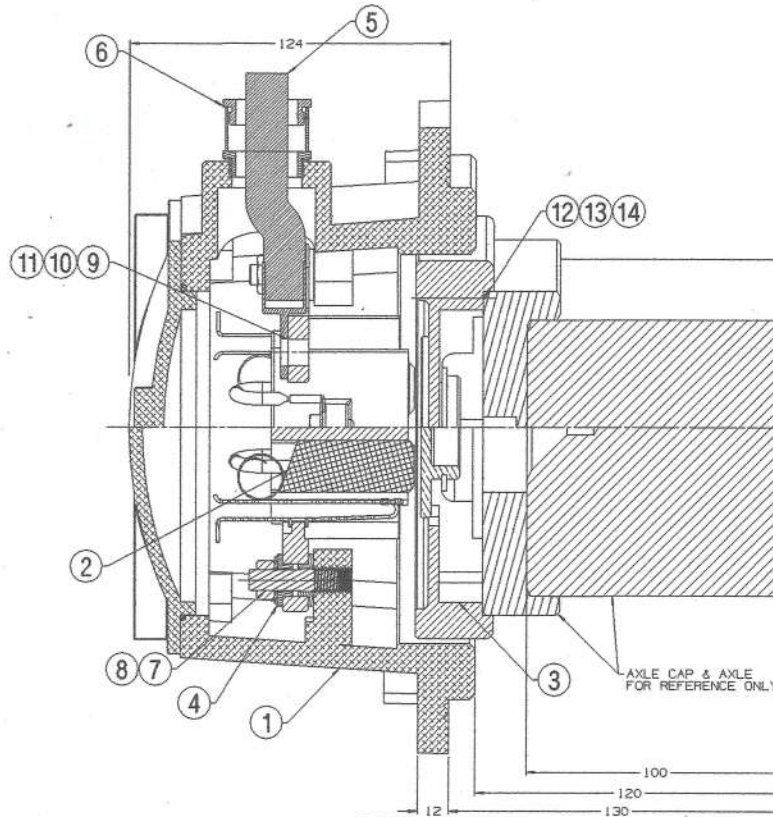
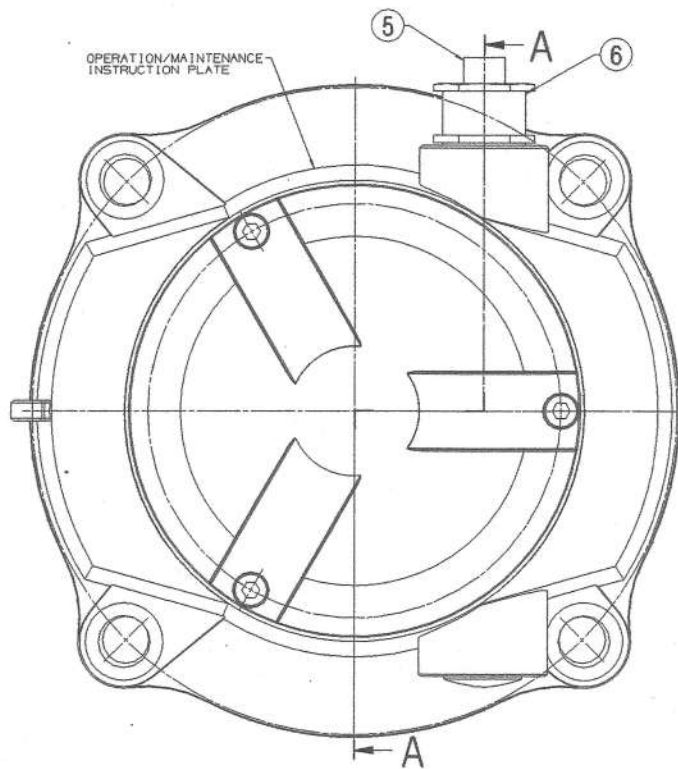
Body of the resistor unit shall be fabricated from minimum 1.6mm stainless steel sheet to Grade SS-304.

Clause 11.0:

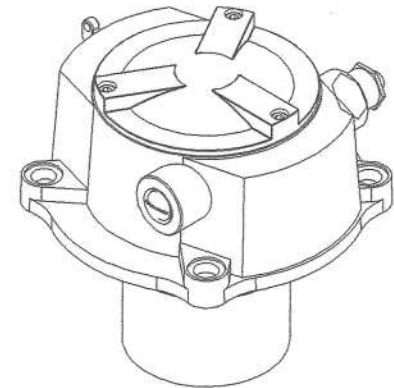
Enclosures: The drawings at S.No.is given below are amended as follows:

S.No	Existing drg. no.	Revised drg. no.
ii	Drawing no. LW71231 alt.'e'	Drawing no. LW71231 alt.'f'
xvi	Drawing no. LW71245 alt.'c'	Drawing no. LW71245 alt.'d'
xvii	Drawing no. LW71246 alt.'b'	Drawing no. LW71246 alt.'c'
xix	Drawing no. LW71248 alt.'b'	Drawing no. LW71248 alt.'c'
xx	Drawing no. LW71249 alt.'b'	Drawing no. LW71249 alt.'c'

EDTS-101,Rev.-C , AM-1,Corr-6 with Annexure-1	7	03.10.2022	<i>je</i>	<i>Blunt</i>	<i>Suresh</i>	1 of 1
SPEC. NO.	CORR.	DATE	SSE/CAD	SEE/D&D	DY.CEE/D&D	PAGE



SECTION A-A
SCALE 1:1



ISO - VIEW

ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY
1	21/09/2022	ALL	1. LENGTH OF ITEM-12 REVISED. 2. NOTE-7 ADDED.	CHANGE REQUEST NO. 2300220726

14	PLAIN WASHER Ø 9	3	IS: 1205-62	IS: 1367 STAINLESS STEEL	NIL
13	SPRING WASHER M8	3	NIL	IS: 3063-1994	TO BE SUPPLIED LOOSE
12	HEX.HD.SCREW ISO 4017 - M8X30	3	NIL	IS: 1364(Pt.2) 2002/10.9 CL	TO BE SUPPLIED LOOSE
11	SPRING WASHER M10	1	IS: 3063-92 TY-8	IS: 1367 STAINLESS STEEL	NIL
10	PLAIN WASHER Ø 11	1	IS: 1205-62	IS: 1367 STAINLESS STEEL	NIL
9	HEX.HD.SCREW M10X20	1	IS: 1364-94 P-1.4.8	IS: 1367 STAINLESS STEEL	#
8	PLAIN WASHER Ø 9	3	IS: 1205-62	IS: 1367 STAINLESS STEEL	NIL
7	HEX.HEAD NYLOC NUT M8	3	IS: 1364-94 P-3.4.8	IS: 1367 STAINLESS STEEL	#
6	CABLE GLAND (IP-68)	1	NIL	BRASS	+
5	STAINLESS STEEL BRAIDED EARTHING CABLE	1	LW71245	NIL	NIL
4	ISOLATING BUSH	6	LW71244	NIL	NIL
3	RING OILER ASSEMBLY	1	LW71241	NIL	ALT. - "A"
2	BRUSH HOLDER ASSEMBLY	1	LW71237	NIL	NIL
1	HOUSING COMPLETE	1	LW71232	NIL	ALT. - "C"

WELD LENGTH	WELD	DESCRIPTION & DIMENSIONS	SPACELY	DETAIL	DRG	MATL. & SPEC.	REMARKS
NIL	H	GROUP	ELECTRICAL	SUPPLIERS:	NIL		
WEIGHT	KG	FILE	D:\Home\kajal\lw71231.prt				
AREA	M2						
LENGTH	M						
WIDTH	M						
HEIGHT	M						
WEIGHT	KG						
NIL	H						

ARRANGEMENT OF
WHEEL SET EARTHING EQUIPMENT
(FOR LHB TYPE COACHES)

RAIL COACH FACTORY, KAPURTHALA

रेल कोच फैक्ट्री कपूरथला

IRS

PL NO. NIL

DRG.NO. LW71231

7. ITEM-12 SHALL BE AS PER DRG.NO. CG-15070, ALT-11.
6. ITEM-7 TO 13 TO BE PROCURED FROM ROZO APPROVED SOURCES.
- # 5. TO BE SEALED WITH THREAD LOCKING LOCKTITE AFTER ASSEMBLY.
- * 4. TYPE MRS-21 OF M/S LAPP OR EQUIVALENT OF M/S PMA.
3. THE ASSEMBLY SHALL BE POWDER COATED TO RAL7021 GREY (MUNSELL GREY OF M/S BERGER) 40 MICRONS AFTER REQUISITE SURFACE TREATMENT.
2. MANUFACTURER'S INSGNIA/SERIAL NO. SHALL BE PUNCHED/CASTED IN THE ASSEMBLY.

NOTE:- 1. ALL DIMENSIONS IN MM.

ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.

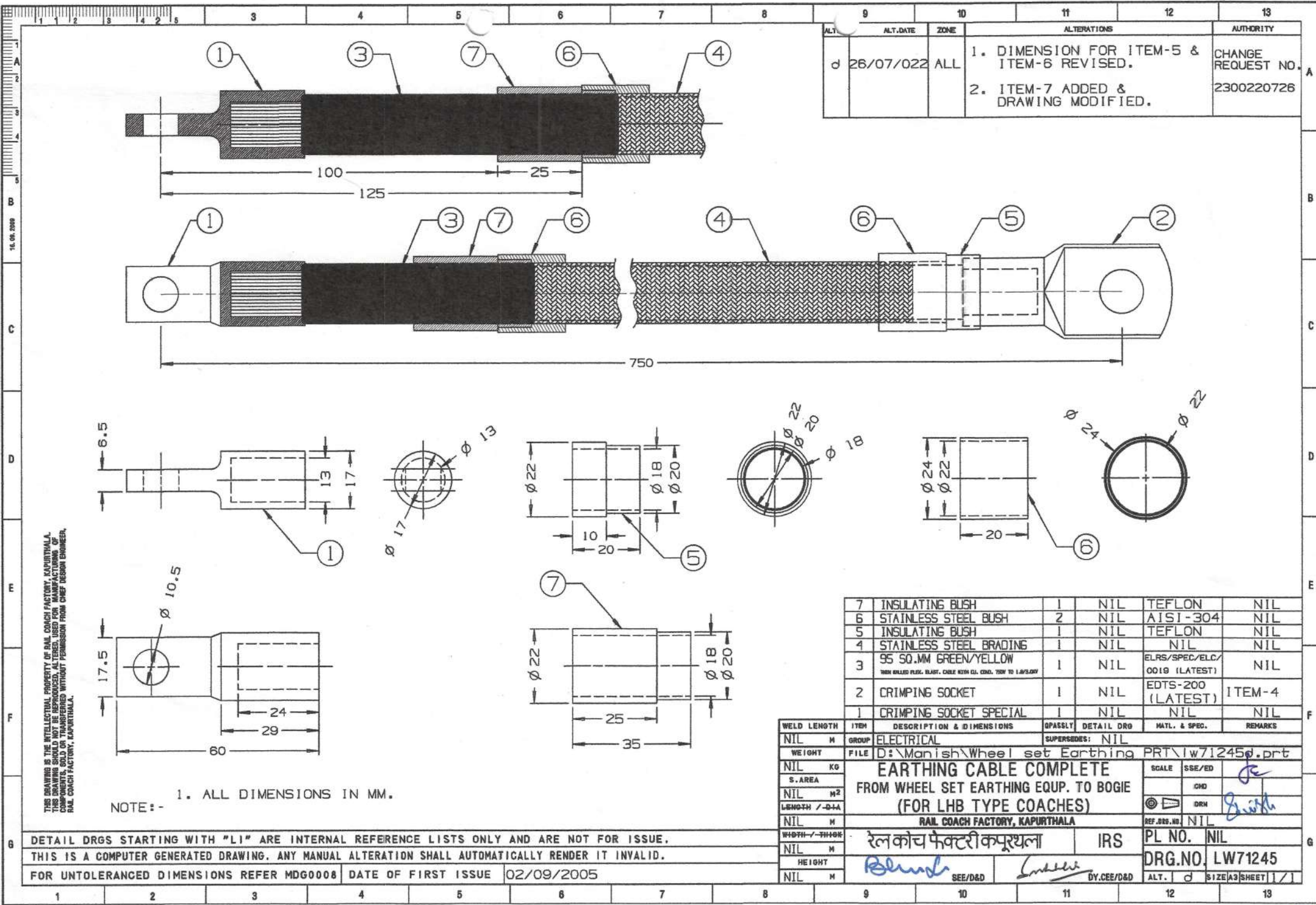
DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE.

FOR UNTOLERANCED DIMENSIONS REFER MDG0008

DATE OF FIRST ISSUE

27/08/2005

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19



THIS DRAWING IS THE INTELLECTUAL PROPERTY OF RAIL COACH FACTORY, KAPURTHALA. THIS DRAWING SHOULD NOT BE REPRODUCED, ALTERED, USED FOR MANUFACTURING OF COMPONENTS, SOLD OR TRANSFERRED WITHOUT PERMISSION FROM CHIEF DESIGN ENGINEER, RAIL COACH FACTORY, KAPURTHALA.

NOTE:- 1. ALL DIMENSIONS IN MM.

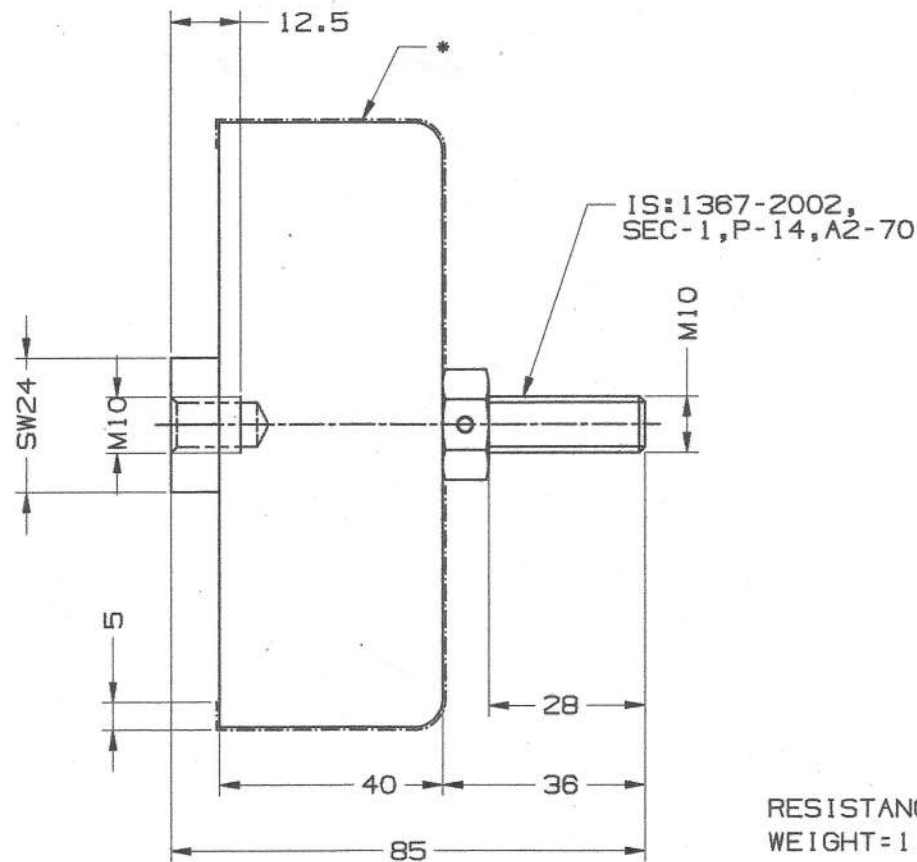
DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE.
THIS IS A COMPUTER GENERATED DRAWING. ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER IT INVALID.
FOR UNTOLERANCED DIMENSIONS REFER MDG0008 DATE OF FIRST ISSUE 02/09/2005

ALT.	ALT. DATE	ZONE	ALTERATIONS	AUTHORITY
d	26/07/022	ALL	1. DIMENSION FOR ITEM-5 & ITEM-6 REVISED. 2. ITEM-7 ADDED & DRAWING MODIFIED.	CHANGE REQUEST NO. 2300220726

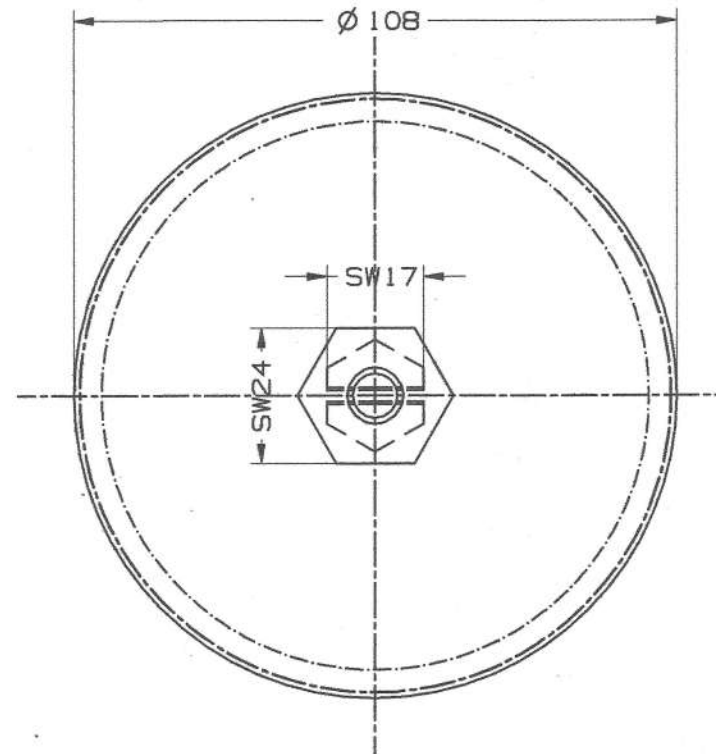
7	INSULATING BUSH	1	NIL	TEFLON	NIL
6	STAINLESS STEEL BUSH	2	NIL	AISI-304	NIL
5	INSULATING BUSH	1	NIL	TEFLON	NIL
4	STAINLESS STEEL BRADING	1	NIL	NIL	NIL
3	95 SQ.MM GREEN/YELLOW 7000 GRADED PULV. BLAST, CABLE WITH OIL COAT, 100N TO 1.0/5.0/10	1	NIL	ELRS/SPEC/ELC/0019 (LATEST)	NIL
2	CRIMPING SOCKET	1	NIL	EDTS-200 (LATEST)	ITEM-4
1	CRIMPING SOCKET SPECIAL	1	NIL	NIL	NIL

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	QPASSLY	DETAIL DRG	MATL. & SPED.	REMARKS
NIL	H	GROUP	ELECTRICAL	SUPERSEDES:	NIL	
WEIGHT	FILE	D:\Manish\Wheel set Earthing	PRT\lw71245d.prt			
S. AREA		EARTHING CABLE COMPLETE FROM WHEEL SET EARTHING EQUIP. TO BOGIE (FOR LHB TYPE COACHES)				
LENGTH / DIA		RAIL COACH FACTORY, KAPURTHALA				
NIL	H	REL कोच फैक्टरी कपूरथला	IRS	PL NO.	NIL	
WIDTH / THICK	NIL			DRG.NO.	LW71245	
HEIGHT	NIL			ALT.	d	SIZE A3 SHEET 1/1

ALT. NO.	ALT. DATE	ZONE	ALTERATIONS	AUTHORITY
c	03/10/2022	ALL	1. NOTE-2 CHANGED.	CHANGE REQUEST NO. 2300220726



RESISTANCE=0.1 OHM
WEIGHT=1.3 KG (Maximum)



3. MANUFACTURER'S INSIGNIA/SERIAL NO. SHALL BE PUNCHED/CASTED IN THE ASSEMBLY.
*2. THE MATERIAL SHALL BE OF STAINLESS STEEL GRADE SS304 & THE THICKNESS OF THE SHEET SHALL BE 1.6 MM.
1. ALL DIMENSIONS IN MM.
NOTE:-

DETAIL DRGS STARTING WITH "L" 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 30/08/2005

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	GROUP	FILE	DATE	SCALE	SSE/ED	DRN	REMARKS
NIL	M	ELECTRICAL		\\10.12.17.2\elec\BKRML\lw71246b.prt (2D)					
WEIGHT	FILE								
NIL	KG								
S. AREA									
NIL	M ²								
LENGTH /-DIA									
NIL	M								
WIDTH /-THICK									
NIL	M								
WEIGHT									
NIL	M								

EARTHING RESISTOR

RAIL COACH FACTORY, KAPURTHALA

रेलकोच फैक्टरी कपूरथला

IRS

PL NO. NIL

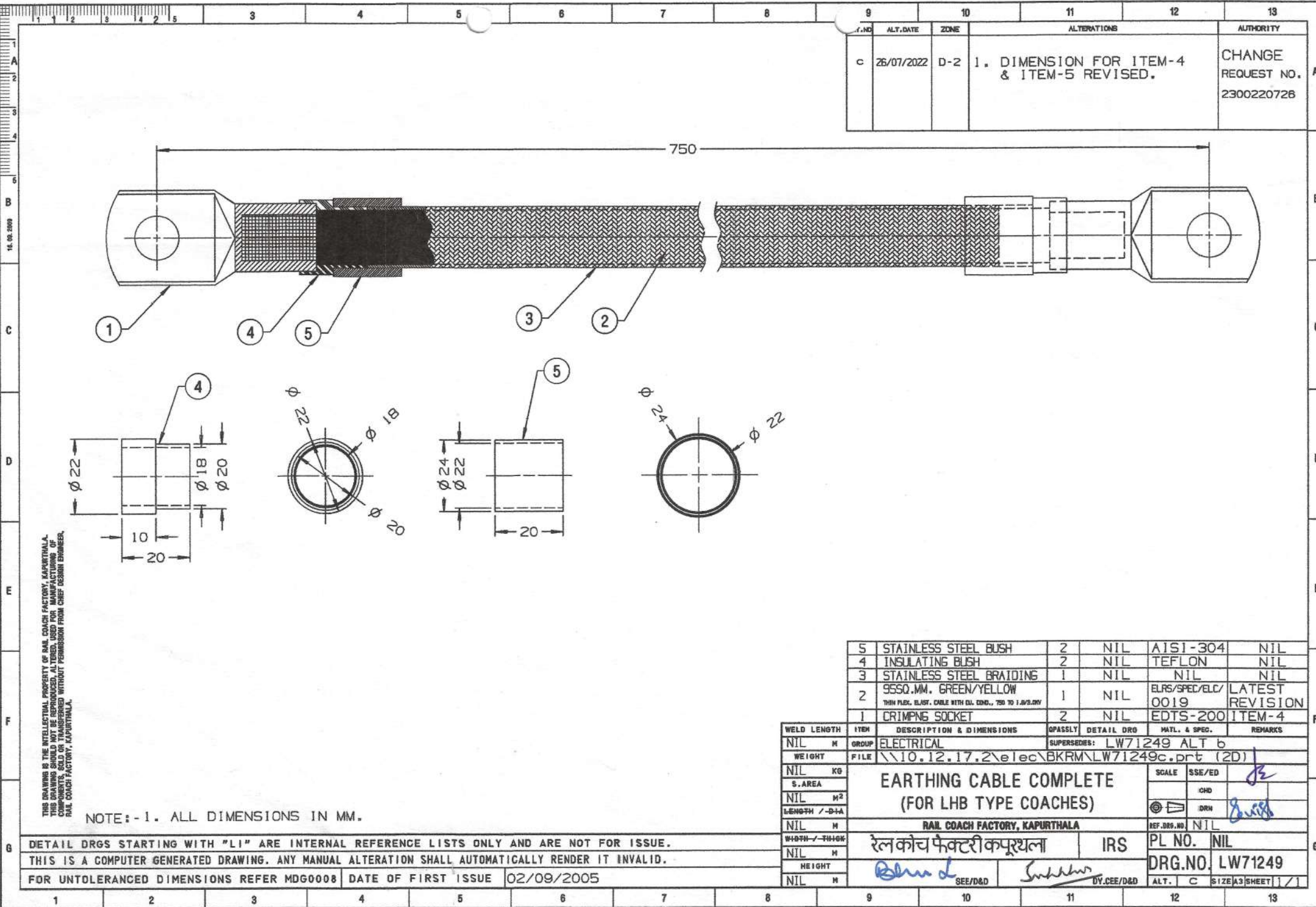
DRG. NO. LW71246

SEC/D&D

BY.CEE/D&D

ALT. C

SIZE A3 SHEET



THIS DRAWING IS THE INTELLECTUAL PROPERTY OF RAIL COACH FACTORY, KAPURTHALA. THIS DRAWING SHOULD NOT BE REPRODUCED, ALTERED, USED FOR MANUFACTURING OF COMPONENTS, SOLD OR TRANSFERRED WITHOUT PERMISSION FROM CHIEF DESIGN ENGINEER, RAIL COACH FACTORY, KAPURTHALA.

NOTE:-1. ALL DIMENSIONS 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 02/09/2005

5	STAINLESS STEEL BUSH	2	NIL	AISI-304	NIL
4	INSULATING BUSH	2	NIL	TEFLON	NIL
3	STAINLESS STEEL BRAIDING	1	NIL	NIL	NIL
2	9550.MM. GREEN/YELLOW THIN FLEX. SLIST. CABLE WITH OIL COO., 750 TO 1.8/3.DRY	1	NIL	ELRS/SPEC/ELC/ 0019	LATEST REVISION
1	CRIMPING SOCKET	2	NIL	EDTS-200	ITEM-4

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS			QPASSLY	DETAIL DRG	MTRL. & SPEC.		REMARKS
NIL	M	GROUP	ELECTRICAL			SUPERSEDES: LW71249 ALT b			
WEIGHT	FILE	\\10.12.17.2\elec\BKRMLW71249c.prt (2D)							13
NIL	KG	EARTHING CABLE COMPLETE (FOR LHB TYPE COACHES)							
S.AREA									
NIL	M ²								
LENGTH /-D+A									
NIL	M	RAIL COACH FACTORY, KAPURTHALA					SCALE	SSE/ED	8000
WIDTH /-THICK		रेलकोच फैक्टरी कपूरथला			IRS	REF.DRG.NO.	NIL		
NIL	M					PL NO.	NIL		
HEIGHT						DRG.NO.	LW71249		
NIL	M					ALT.	C	SIZE	


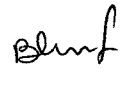

Corrigendum-8

This corrigendum is issued to specification for Wheel Set Earthing Device i.e. EDTS101, Rev. C, Am-2, Corr-7 with Annexure-1 to modifications in the drawings of Ring Oiler for Wheel Set Earthing Equipment.

Clause 11.0:

Enclosures: The drawings at S.No.is given below are amended as follows:

S.No	Existing drg. no.	Revised drg. no.
xiii	Drawing no. LW71242 alt.-'b'	Drawing no. LW71242 alt.-'c'

EDTS-101 ,Rev.-C , AM-1,Corr-7 with Annexure-1	8	11.08.2023				1 of 1
SPEC. NO.	CORR.	DATE	SSE/CAD	SEE/D&D	DY.CEE/D&D	PAGE



रेल कोच फैक्ट्री, कपूरथला
RAIL COACH FACTORY, KAPURTHALA

दस्तावेज स.: संशोधन-3
Document No.: Amendment-3

This amendment has been issued for modification to be carried out in Wheel Set Earthing Equipment (WSEE) to spec. EDTS101 Rev-C, AMD.-2, Corr-8 for LHB EOG Coaches on the basis of feedback from User Railways. It covers modifications in front cover and brush holder assembly mounting arrangement by provision of SS inserts.

Accordingly to incorporate the above modifications the reference drawings as per undergiven details have been modified reefer in **Clause 11.0 ENCLOSURES** :

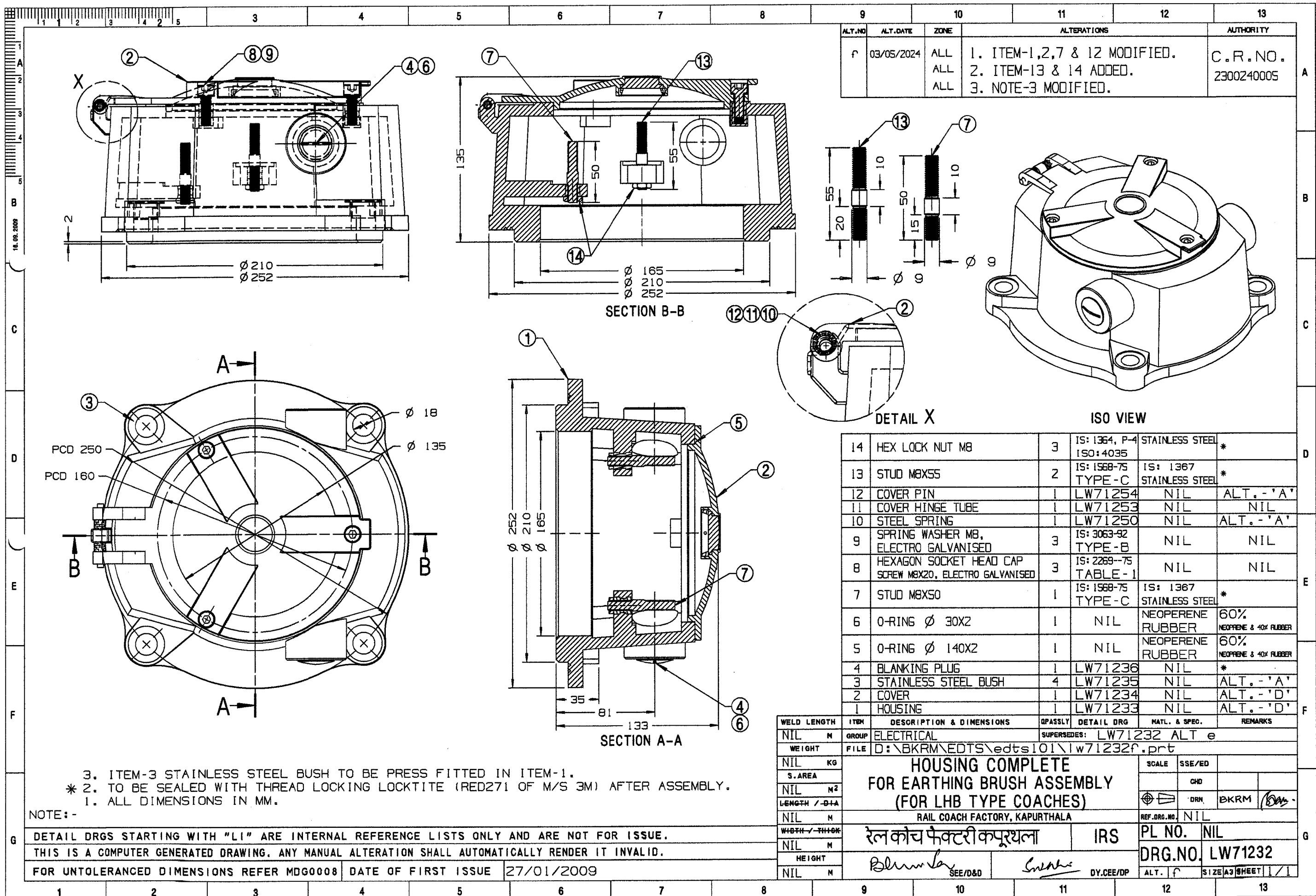
Clause 11.0 ENCLOSURES :

S.No.	Existing Drawing No.	Revised Drg. No.	Drg. Description
1	LW71232 alt. 'e'	LW71232 alt. 'f'	Housing Complete for Earthing Brush Assly.
2	LW71233 alt. 'c'	LW71233 alt. 'd'	Housing (for Earthing Brush Assly.)
3	LW71234 alt. 'c'	LW71234 alt. 'd'	Cover (for Wheel Set Earthing Equipment)
4	LW71254 alt. 'Nil'	LW71254 alt. 'a'	Cover Pin for Wheel Set Earthing Equipment (for LHB Type Coaches)

Following drawings has been altered.

- iii) Drawing no. LW71232 alt. 'f'
- iv) Drawing no. LW71233 alt. 'd'
- v) Drawing no. LW71234 alt. 'd'
- xxiii) Drawing no. LW71254 alt. 'a'

EDTS-101, Rev-C, Amnd.-2, Corr.-8 with Annexure-1	3	03.05.2024	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	1 of 1
दस्तावेज	संशोधन	दिनांक	वरिष्ठ अनुभाग अभियंता	वरिष्ठ विद्युत इंजीनियर/ अभिकल्प एवं विकास	उप मुख्य विद्युत इंजीनियर/ अभिकल्प एवं परियोजना	पृष्ठ स.
Document No.	Amnd.	Date	SSE/CAD	SEE/D&D	Dy.CEE/DP	Page



3. ITEM-3 STAINLESS STEEL BUSH TO BE PRESS FITTED IN ITEM-1.
* 2. TO BE SEALED WITH THREAD LOCKING LOCKTITE (RED271 OF M/S 3M) AFTER ASSEMBLY.
1. ALL DIMENSIONS IN MM.

NOTE:-

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 27/01/2009

ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY
F	03/05/2024	ALL ALL ALL	1. ITEM-1,2,7 & 12 MODIFIED. 2. ITEM-13 & 14 ADDED. 3. NOTE-3 MODIFIED.	C.R.NO. 2300240005

ITEM	DESCRIPTION & DIMENSIONS	QTY	DETAIL DRG	MATL. & SPEC.	REMARKS
14	HEX LOCK NUT M8	3	IS: 1364, P-4 ISO: 4035	STAINLESS STEEL	*
13	STUD M8X55	2	IS: 1568-75 TYPE-C	IS: 1367 STAINLESS STEEL	*
12	COVER PIN	1	LW71254	NIL	ALT.- 'A'
11	COVER HINGE TUBE	1	LW71253	NIL	NIL
10	STEEL SPRING	1	LW71250	NIL	ALT.- 'A'
9	SPRING WASHER M8, ELECTRO GALVANISED	3	IS: 3063-92 TYPE-B	NIL	NIL
8	HEXAGON SOCKET HEAD CAP SCREW M8X20, ELECTRO GALVANISED	3	IS: 2269-75 TABLE-1	NIL	NIL
7	STUD M8X50	1	IS: 1568-75 TYPE-C	IS: 1367 STAINLESS STEEL	*
6	O-RING Ø 30X2	1	NIL	NEOPERENE RUBBER	60% NEOPRENE & 40% RUBBER
5	O-RING Ø 140X2	1	NIL	NEOPERENE RUBBER	60% NEOPRENE & 40% RUBBER
4	BLANKING PLUG	1	LW71236	NIL	*
3	STAINLESS STEEL BUSH	4	LW71235	NIL	ALT.- 'A'
2	COVER	1	LW71234	NIL	ALT.- 'D'
1	HOUSING	1	LW71233	NIL	ALT.- 'D'

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	QTY	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL	M	GROUP ELECTRICAL		SUPERSEDES: LW71232 ALT e		
WEIGHT	FILE	D:\BKRME\EDTS\edts101\lw71232f.prt				
NIL	KG					
S.AREA						
NIL	M ²					
LENGTH / DIA						
NIL	M					
WIDTH / THICK						
NIL	M					
HEIGHT						
NIL	M					

HOUSING COMPLETE
FOR EARTHING BRUSH ASSEMBLY
(FOR LHB TYPE COACHES)

RAIL COACH FACTORY, KAPURTHALA

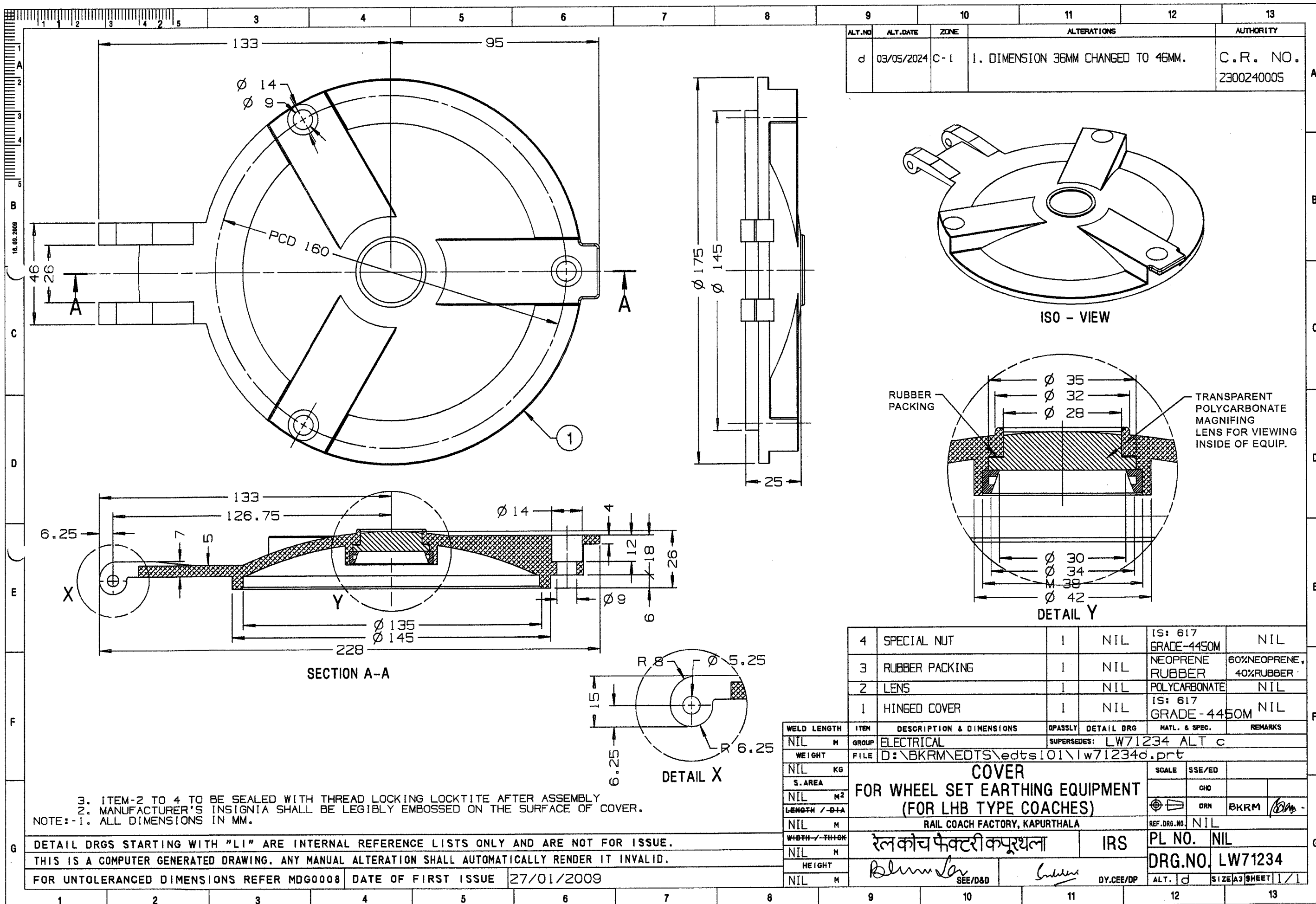
रेल कोच फैक्टरी कपूरथला

IRS

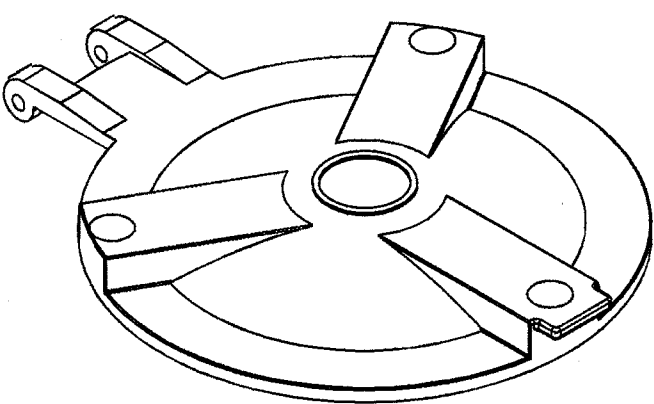
SEE/D&D

DY.CEE/DP

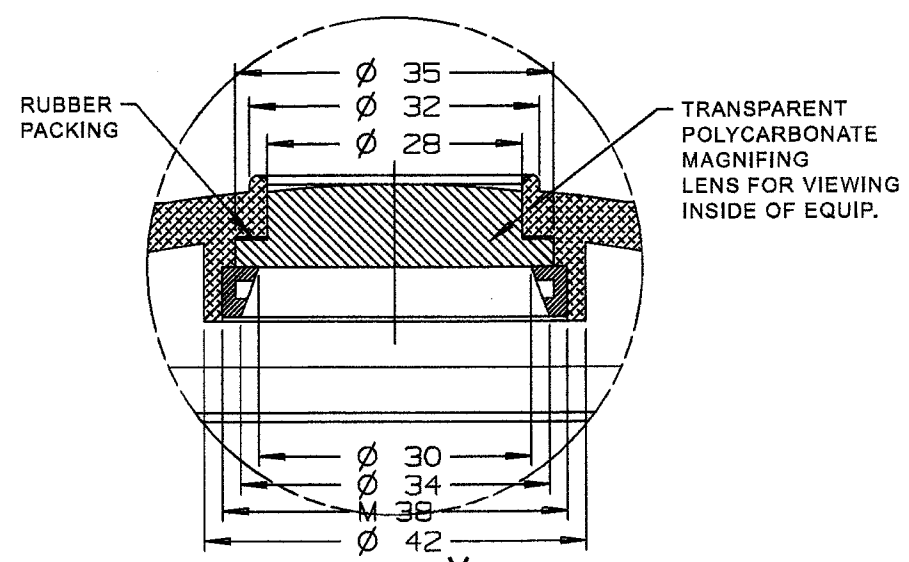
SCALE	SSE/ED	CHD	DRN	BKRM	REF.DRG.NO.	PL NO.	DRG.NO.	ALT.	SIZE	SHEET
					NIL	NIL	LW71232		A3	1/1



ALT.NO	ALT.DATE	ZONE	ALTERATIONS	AUTHORITY
d	03/05/2024	C-1	1. DIMENSION 36MM CHANGED TO 46MM.	C.R. NO. 2300240005



ISO - VIEW



DETAIL Y

4	SPECIAL NUT	1	NIL	IS: 617 GRADE-4450M	NIL
3	RUBBER PACKING	1	NIL	NEOPRENE RUBBER	60%NEOPRENE, 40%RUBBER
2	LENS	1	NIL	POLYCARBONATE	NIL
1	HINGED COVER	1	NIL	IS: 617 GRADE-4450M	NIL

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	QPASSLY	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL	M	GROUP	ELECTRICAL	SUPERSEDES: LW71234 ALT c		
WEIGHT	FILE	D:\BKRME\EDTS\edts\101\lw71234d.prt				
NIL	KG					
S. AREA						
NIL	M ²					
LENGTH / DIA						
NIL	M					
WIDTH / THICK						
NIL	M					
HEIGHT						
NIL	M					

COVER FOR WHEEL SET EARTHING EQUIPMENT (FOR LHB TYPE COACHES)		SCALE	SSE/ED
RAIL COACH FACTORY, KAPURTHALA		CHD	
रेलकोच फैक्टरी कपूरथला		DRN	BKRM
SEE/D&D		REF.DRG.NO.	NIL
DY.CEE/DP		PL NO.	NIL
		DRG.NO.	LW71234
		ALT.	d
		SIZE	A3 SHEET 1/1

3. ITEM-2 TO 4 TO BE SEALED WITH THREAD LOCKING LOCKTITE AFTER ASSEMBLY
2. MANUFACTURER'S INSIGNIA SHALL BE LEGIBLY EMBOSSED ON THE SURFACE OF COVER.
NOTE:-1. ALL DIMENSIONS 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 27/01/2009

