Fax : (0522)-2452581
Telephone: (0522)-2450374
Telegram : 'RAILMANAK', KO
Email:dsetpl@gmail.com

भारत सरकार – रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ – 226011
Govt. of India - Ministry of Railways
Research, Designs & Standards Organization,
LUCKNOW - 226011

No. EL/11.5.5/6 Dated: As signed

Principal Chief Electrical Engineers;

- Central Railway, HQs Office, 2nd floor, Parcel Office Bldg., Mumbai – 400 001
- East Central Railway, Hajipur (Bihar) – 844 101
- Eastern Railway, Fairlie Place, Kolkata – 700 001
- East Coast Railway, Railway Complex, Bhuvneshwar – 751 023
- Northern Railway, Baroda House, New Delhi – 110 001
- North Central Railway, Allahabad – 211 001
- North Eastern Railway, Gorakhpur –273 001
- Southern Railway, Park Town, Chennai – 600 003
- South Central Railway, HQs Office, Rail Nilayam, Secunderabad – 500 071
- South Eastern Railway, Garden Reach, Kolkata – 700 043
- South East Central Railway, Bilaspur – 495 004
- South Western Railway, Hubli – 580020
- West Central Railway, HQs Office, Opp. Indira Market, Jabalpur – 482 001
- Western Railway, Churchgate, Mumbai – 400 020
- Banaras Locomotive Works, Varanasi – 221004
- Chittaranjan Locomotive Works, Chittaranjan – 713331 (WB)
- Patiala Locomotive Works, Patiala – 147 003

Sub: Modification Sheet No. RDSO/2022/EL/MS/0486 (Rev. '0') dtd. 21.02.2022 for the modification to ensure continuity of HOG Converters' feed to the train from working loco through dead loco in WAP5/WAP7 class of 3-phase HOG compliant electric locomotives.

Please find enclosed herewith a copy of Modification Sheet No. RDSO/2022/EL/MS/0486 (Rev. '0') dtd. 21.02.2022 for modification in existing hotel load scheme to ensure continuity of HOG Converters' feed to the train from working loco through dead loco in WAP5/WAP7 class of 3-phase HOG compliant electric locomotives. This is for information and necessary action.

-sd-
Encl: As above. For Director General (Elect.)

Copy to:

1. **Secretary (Electrical), Railway Board, Rail Bhawan, New Delhi-110 001.** For kind information. (Kind Attn.: Shri Kishore Vaibhav, DEE/RS)
2. **Sr. Divisional Electrical Engineer (TRS), Electric Loco Shed,**
   - Central Railway, Ajni (Nagpur)-440008.
   - Central Railway, Kalyan-421304 (Maharashtra)

- East Central Railway, Gomoh – 828 401
- East Central Railway, Barauni – 851112
- Eastern Railway, Howrah-711 106
- Eastern Railway, Sialdah-711 106
- East Coast Railway, Vishakhapatanam – 530 001.
- Northern Railway, Ghaziabad (UP) - 201 001.
- Northern Railway, Tughlakabad (D) – 110 020
- North Central Railway, Fazalganj, Kanpur – 208 003
- North Eastern Railway, Gonda (D)
- Southern Railway, Royapuram, Chennai-600 013.
- Southern Railway, Erode.
- South Central Railway, Lallaguda, Secunderabad – 500 017.
- South Central Railway, Vijayawada
- South Eastern Railway, Tatanagar-831 002.
- South Eastern Railway, Bondamunda
- South Eastern Railway, Santragachi
- South East Central Railway, BMY Complex, Bhilai, Durg-490 025.
- South Western Railway, Krishnarajapuram
- West Central Railway, Tughlakabad, New Delhi-110 044.
- West Central Railway, Itarsi ,
- Western Railway, Vadodara-390 002.

For information & necessary action please.

Digitally Signed by Amit Kumar Saraf
Date: 22-03-2022 17:07:20
Reason: Approved

Encl: as above.

For Director General (Elect.)

Fax : (0522)-2452581
Telephone: (0522)-2465737
Email : dsetplgroup@gmail.com

भारत सरकार – रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ – 226011
Government of India - Ministry of Railways
Research, Designs & Standards Organization,
LUCKNOW - 226011

No. EL/11.5.5/6 Dated: As signed

Principal Chief Electrical Engineers;

- Central Railway, HQs Office, 2nd floor, Parcel Office Bldg., Mumbai – 400 001
- East Central Railway, Hajipur (Bihar) – 844 101
- Eastern Railway, Fairlie Place, Kolkata – 700 001
- East Coast Railway, Railway Complex, Bhuvneshwar – 751 023
- Northern Railway, Baroda House, New Delhi – 110 001
- North Central Railway, Allahabad – 211 001
- North Eastern Railway, Gorakhpur –273 001
- South East Central Railway, Bilaspur – 495 004
- South Central Railway, HQs Office, Rail Nilayam, Secunderabad – 500 071
- South Eastern Railway, Garden Reach, Kolkata – 700 043
- Southern Railway, Park Town, Chennai – 600 003
- West Central Railway, HQs Office, Opp. Indira Market, Jabalpur – 482 001
- Western Railway, Churchgate, Mumbai – 400 020
- Banaras Locomotive Works, Varanasi – 221004
- Chittaranjan Locomotive Works, Chittaranjan – 713331 (WB)
- Patiala Locomotive Works, Patiala – 147 003

MODIFICATION SHEET NO. RDSO/2022/EL/MS/486 (Rev. '0') dated 21/03/2022

1.0 Title:

Modification to ensure continuity of HOG Converters' feed to the train from working loco through dead loco in WAP5/WAP7 class of 3-phase HOG compliant electric locomotives.

2.0 Brief History:

2.1 There are two Hotel Load Converters (HLCs) of rating of 500 kVA each which have been provided in WAP7 locomotives and similarly two composite converters (Traction & HLCs in same cubicle) have been provided in WAP5 locomotives. Feed of these HLCs is connected through two IV couplers to the train feeders to supply train hotel load. Operation control of hotel load converter is interfaced with HLC Control Unit provided in power car. For this, control signals of HLCs have been interfaced with HLC Control Unit through 13 pins UIC coupler. A detailed scheme along with cable index for HLC Control Unit has already been

elaborated in RDSO/2018/EL/MS/0468, Rev. '0' dtd. 06.02.2018. Sockets of IV couplers and UIC coupler have been provided in either side of the loco as shown in Figure-1.

2.2 When WAP5/WAP7 Locomotive fails on line during train operation, assistant locomotive is connected to the front of failed (dead) loco to haul the train. In this situation, HOG power from HLCs of leading loco can't be transmitted to Power Car through Dead Engine (trailing loco) even after connecting HOG enabled loco (leading loco) as required HOG control and power connections are not made between the two locomotives.

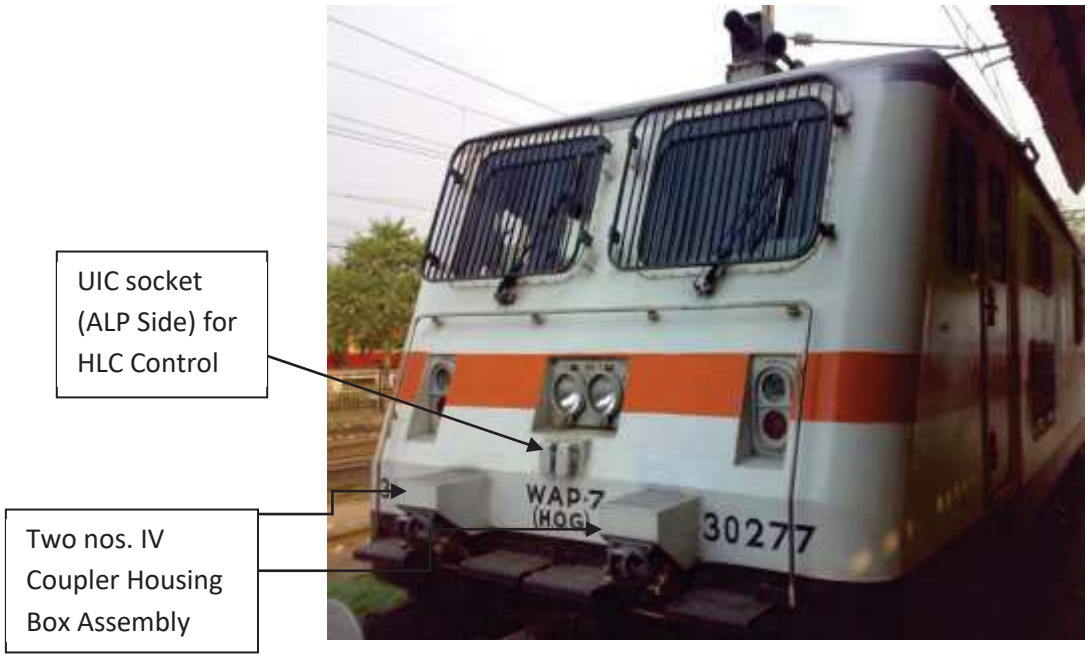


Figure – 1

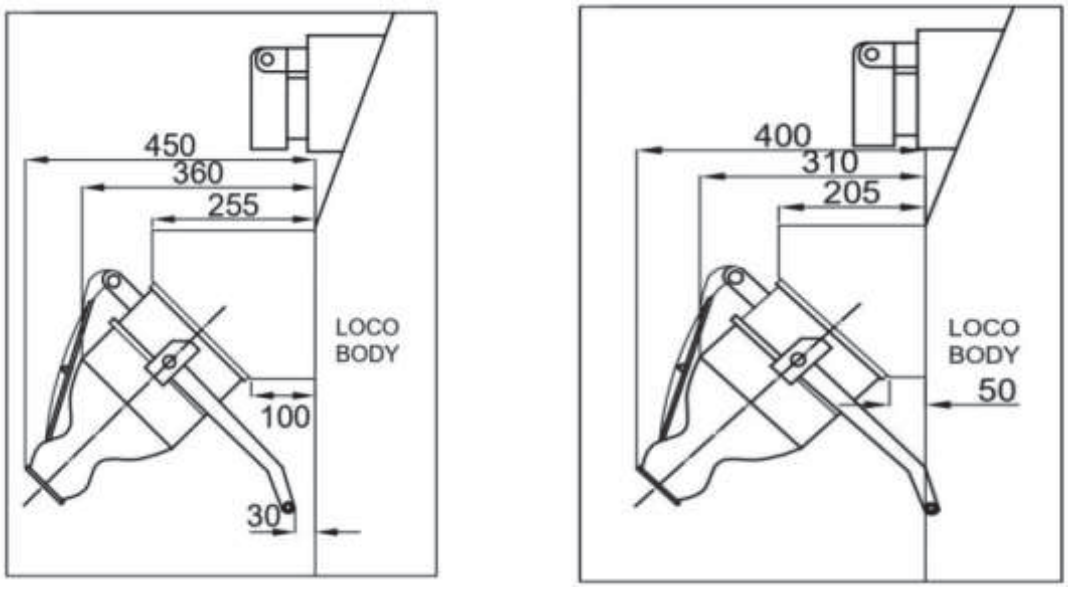
3.0 Objective

The objective of this modification sheet to suggest a scheme to ensure availability of HLCs feed of Working HOG locomotive (Leading Loco) to the train power car through Dead Locomotive (Trailing Loco) connected in between the two.

4.0 Limitation in existing system

4.1 It is to be mentioned that there is a very less gap between the two existing IV coupler Housing Box assembly when two WAP5/WAP7 locomotives fitted with Hotel Load Converters/Composite Converters are connected in MU. Due to fewer gap, hinged cover of any IV coupler housing box assembly is not possible to open completely which may be seen in Figure–2. CLW has recently reviewed the drawing of IV coupler housing and reduced the critical dimensions vide CLW drawing No. CDD-HL-P73-085, Alt. 2 dtd. 06.02.2021 (Annexure-1). It has been observed that there is no clearance between Ratchet grip handle and loco body with the CLW modified drawing and due to infringement with loco body, proper connection cannot be established. This infringement may be seen in Figure – 3.

Figure – 2: Fewer gaps between IV couplers



Existing **After Modification**

Figure – 3: Infringement of loco body to the Ratchet Grip

5.0 Modified HOG scheme

As described in Para – 4.0 above, fitment of two IV coupler plug jumpers (both ends of the each fitted with Jumper Plug Assembly) are not feasible. In view of this, following modifications are proposed in the WAP5/WAP7 Locomotives.

5.1 **Modification in Locomotive**

ALP side IV Coupler Socket Housing Box shall be shifted upward as indicated in the CLW drawing No. SKETCH-28/01/22 enclosed as Annexure-2. LP side IV Coupler Socket Housing Box shall be retained at its original position. When two locos are connected back-to-back, ALP side IVC socket housing box of one loco will face LP side IVC socket housing box of the second loco. Since the ALP side IVC socket housing box is shifted upward, the two facing IVC housing box (ALP & LP side) will not be at the same level. Hence the limitation in the existing system as mentioned in Para-4.0 above will be eliminated and ratchet grip handle with hinged cover can be opened completely without infringement. This scheme will be able to feed HLC power from leading loco to train. Sketches of the two coupled locomotives with modified ALP side IV Coupler Housing Box have been shown in the Figure – 4 below.

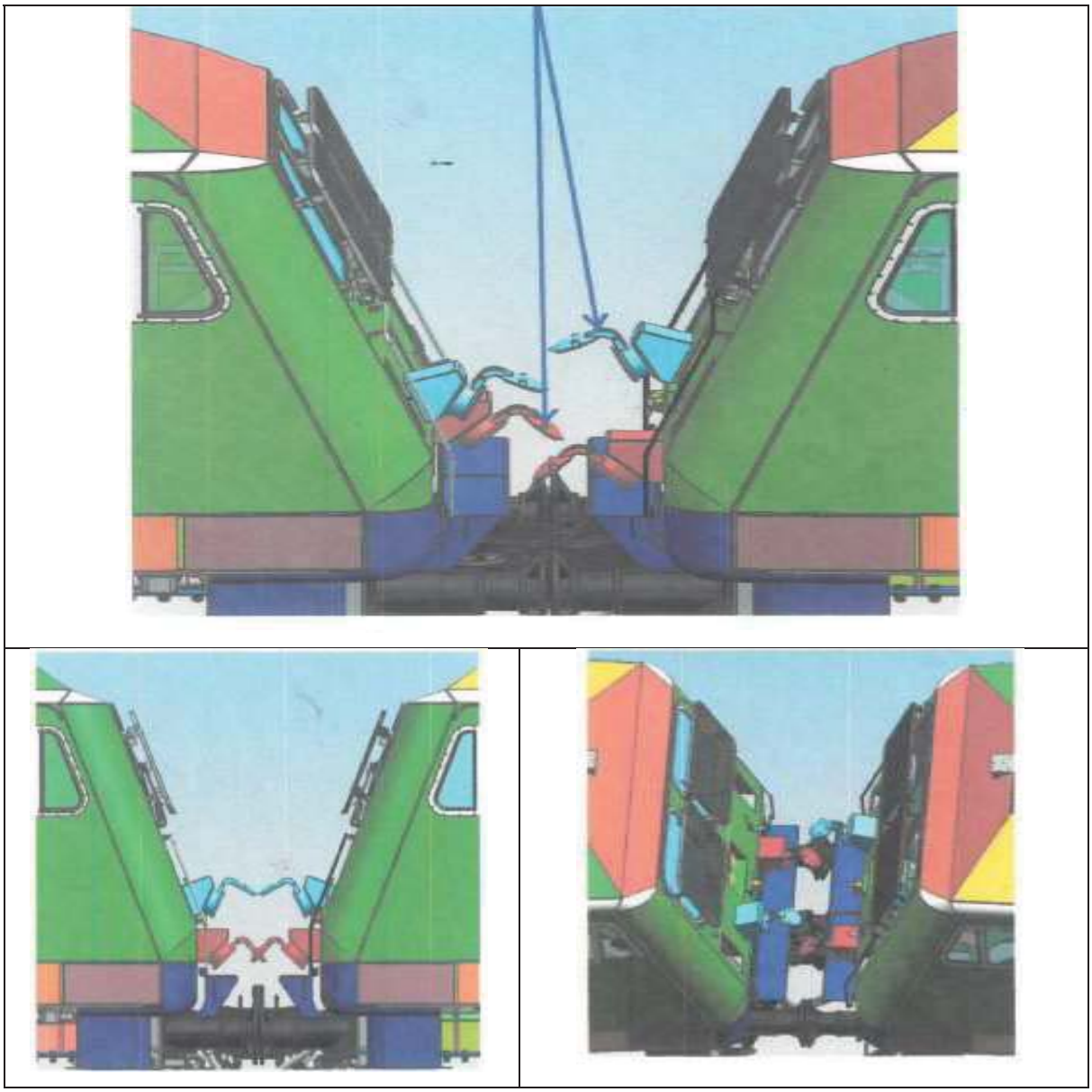
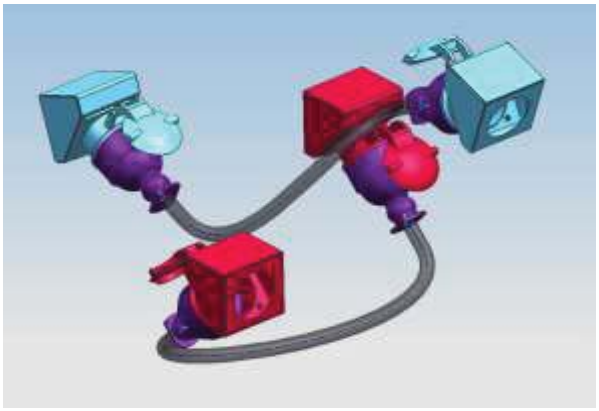


Figure – 4: Sketch of the IV Coupler Housing Box after modification

5.2 Cable layout of IVC Jumper Plugs Assembly (Drg. No. LW71301 of RDSO Spec. RDSO/PE/SPEC/AC/0177, Rev.1 as given Annexure-3) shall be as given below.



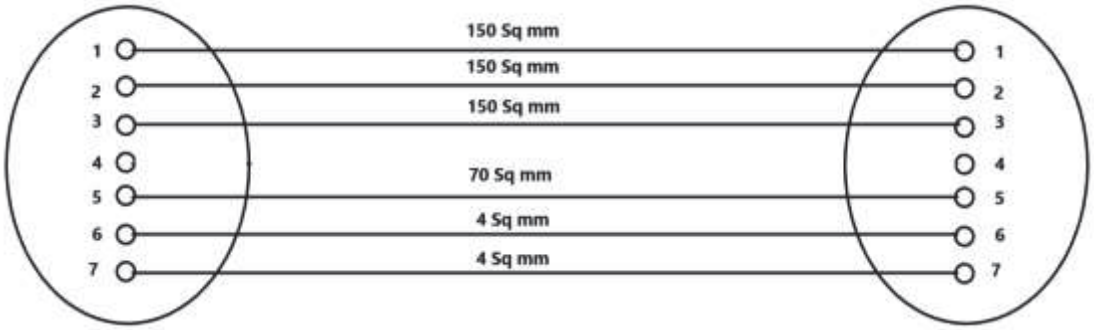


Figure – 5: IVC Jumper Plug Cable layout

5.3 **Method to feed HLC supply from Working loco to Dead loco**

(i) Connect one IVC Jumper Plug (having plug assembly at both ends) between active loco (leading) LP side IVC housing socket assembly to dead loco (trailing) LP side IVC housing socket assembly.

(ii) Connect another IVC Jumper Plug (having plug assembly at both ends) between active loco (leading) ALP-side IVC housing socket assembly to dead loco (trailing) ALP-side IVC housing socket assembly.

(iii) Connect 13-Pin UIC Coupler Jumper (Male - Male) between active loco (leading) ALP-side UIC socket to dead loco (trailing) ALP-side UIC.

(iv) Trip HOTEL load MCB 129.2 in SB-2 of dead locomotive.

(v) Trip MCBs (if available) on both HLC Cubicles of dead locomotive.

(vi) Keep IV Couplers and UIC Couplers connected between dead locomotive and Power car as it is.

5.4 Connection of IVC Jumper Plug and UIC couplers between active loco and dead loco and further to Power Car will be look like the sketch shown in Figure – 6.

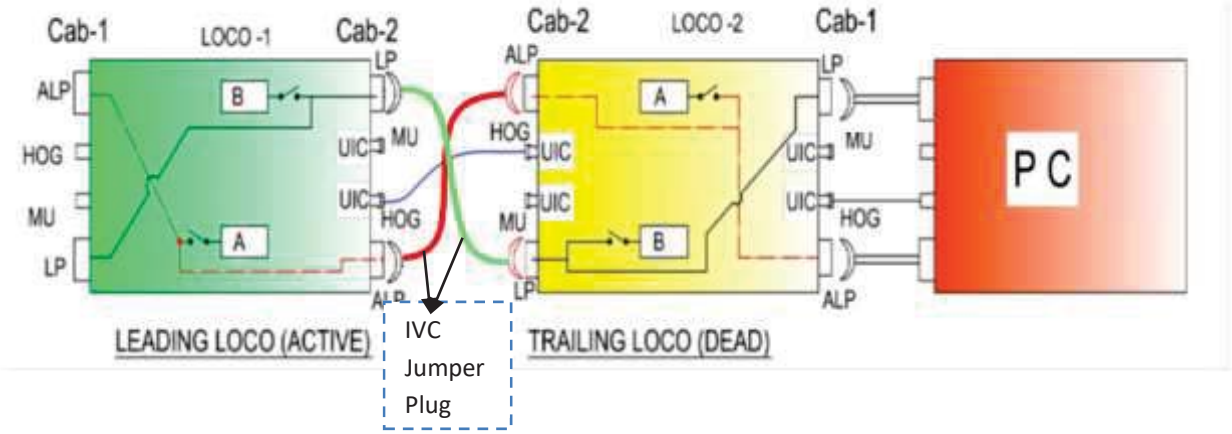


Figure – 6

6.0 Material required for :

(i) Two numbers IV Coupler Jumper Plugs having length of around 1450 mm (approx.) as shown in Figure – 5.

(ii) One number 13 Pin UIC-Coupler Plug (MALE-MALE) as being used in existing Power Car to Loco connection.

7.0 Application to the Class of Locomotives:

WAP5 and WAP7 locomotives fitted with 2x500 kVA IGBT based Composite Converters and standalone Hotel Load Converters.

8.0 Agency of Implementation:

All PUs, POH Shops, Electric Loco Sheds Holding WAP5/WAP7 class of 3-Phase Electric Locomotives.

9.0 Periodicity of Implementation:

Commissioning, POH, IOH and TOH Overhauling Schedules.

-sd-

Encl: As above

For Director General (Elect.)

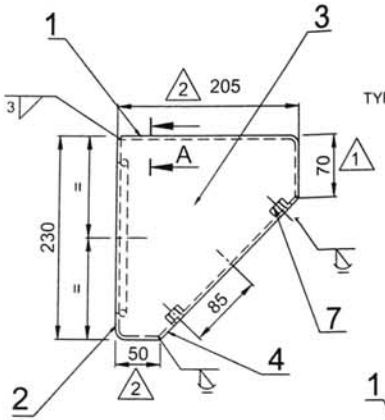
Copy to:

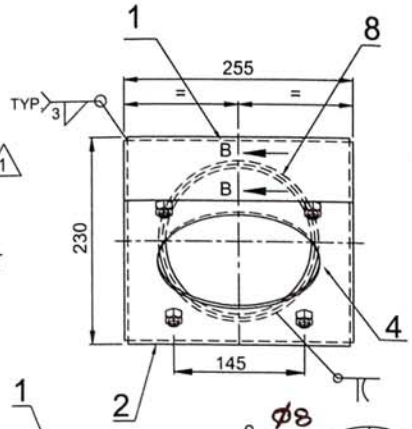
Secretary (Electrical), Railway Board, Rail Bhawan, New Delhi – 110 001

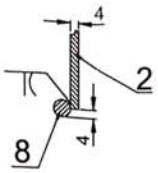
Encl: As above

Digitally Signed by Amit Kumar Saraf
Date: 22-03-2022 14:07:38
Reason: Approved
For Director General (Elect.)

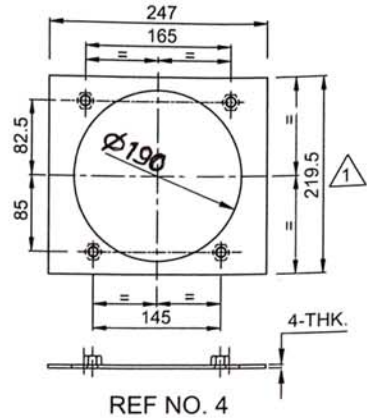
ALL DIMENSION ARE IN MM







SEC. B B



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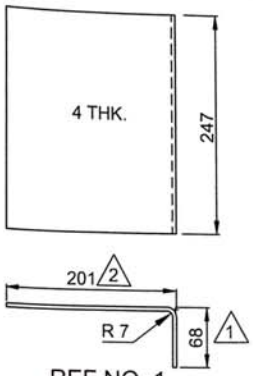

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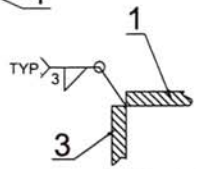
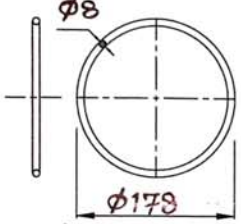


SEC. A A



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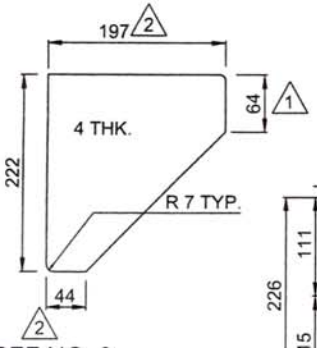

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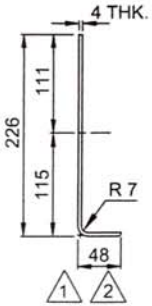
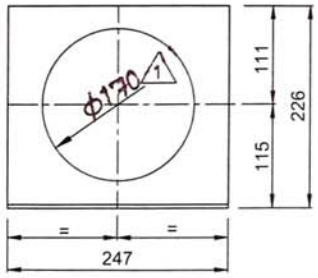




REF NO. 2

	REF. No.	PART. DRG. No.	DESCRIPTION	No./ LOCO	MATL	SPECN	WT.IN KG.
1	8		LOOMING BAR Ø 8 LG-534	4	STEEL	IS:1079:2009 HR 2	
	7		HEX. WELD NUT M10	16	STEEL	IS:1364 Pt-III	
1	~~6~~		~~LOOMING BAR Ø 8 LG-102~~	~~8~~	~~STEEL~~	IS:1079:2009 HR 2	~~0.04~~
1	~~5~~		~~LOOMING BAR Ø 8 LG-160~~	~~8~~	~~STEEL~~	IS:1079:2009 HR 2	~~0.06~~
	4		PLATE-FRONT	4	STEEL	IRS M41 GR. 1 HR	0.88
2	3		PLATE-SIDE	8	STEEL	''	0.99
2	2		ANGLE-REAR (DEV.LG. 270MM)	4	STEEL	''	1.38
2	1		ANGLE- TOP (DEV. LG. 265MM)	4	STEEL	''	2.06
	A		IV COUPLER HOUSING BOX ASSLY	4			

NOTE: -

1) THIS DRAWING IS APPLICABLE ONLY FOR HOTEL LOAD CONVERTER BASED LOCO (WAP-7 & WAP-5).
2) REMOVE ALL BURRS,SHARP EDGES AND CORNERS
3) ~~RRF. NO. 5&6 ARE TO BE WELDED WITH REF. NO. 2 BEFORE WELDING OF REF. NO.1~~
4) REF. NO. 7 TO BE WELDED WITH REF. 4 BEFORE WELDING WITH MAIN ASSLY.

ALT. No.	AUTHY.	DESCRIPTION	DATED INITIAL
2	DY.CEE/ D&D-I	DIMN. 205,50,44,48 AND 201WERE 255,100,94,98 AND 251RESPECTIVELY. DEV. LENGTH OF REF NO 1 AND 2 CHANGED FROM 311MM AND 316 MM TO 265 MM AND 270 MM RESPECTIVELY	
1	DY.CEE/ D&D	DIMN. 100,70,94,64,98,219.5,68, Ø170 WERE 63,95,58,89,62,231,93,Ø155 RESPECTIVELY. REF.NO. 8 ADDED. REF.NO.5 , 6 & NOTE 3 DELETED. NOTE 1 MODIFIED. SEC. B B ADDED	

DRAWN	NVL 06/02/2021
CHECKED	Raj 6 Sawan 08/02/2021
SUPPT	
REVIEWED AEE/D&D	
APPROVED DY.CEE/D&D	08/02/2021
DATE	
SCALE	N.T.S

REF. ASSLY DRG. No.

C-D&D

CHITTARANJAN LOCOMOTIVE WORKS

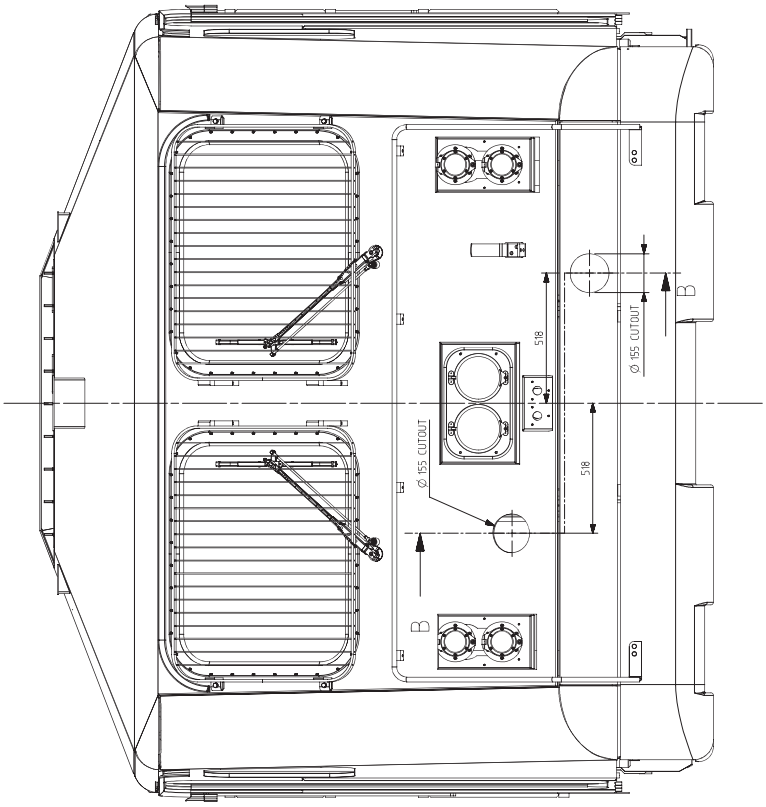
3RD ANGLE PROJECTION

USED FOR LOCO WAP-7 & WAP-5

IV COUPLER HOUSING BOX ASSLY

DRG. No. CDD-HL-P73-085

Annexure-2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Ø 155 CUTOUT
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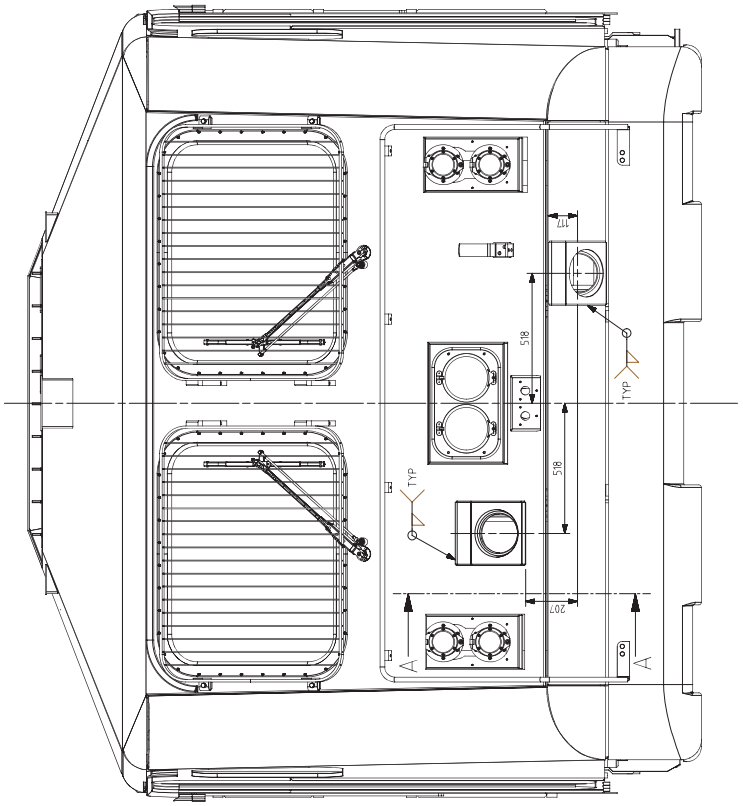
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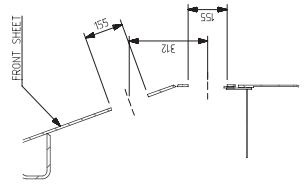
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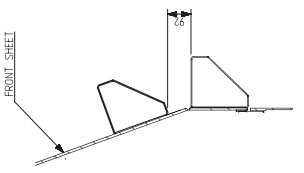
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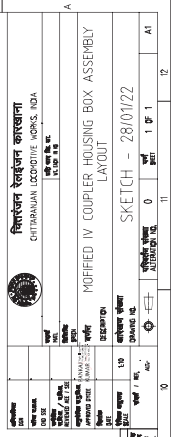
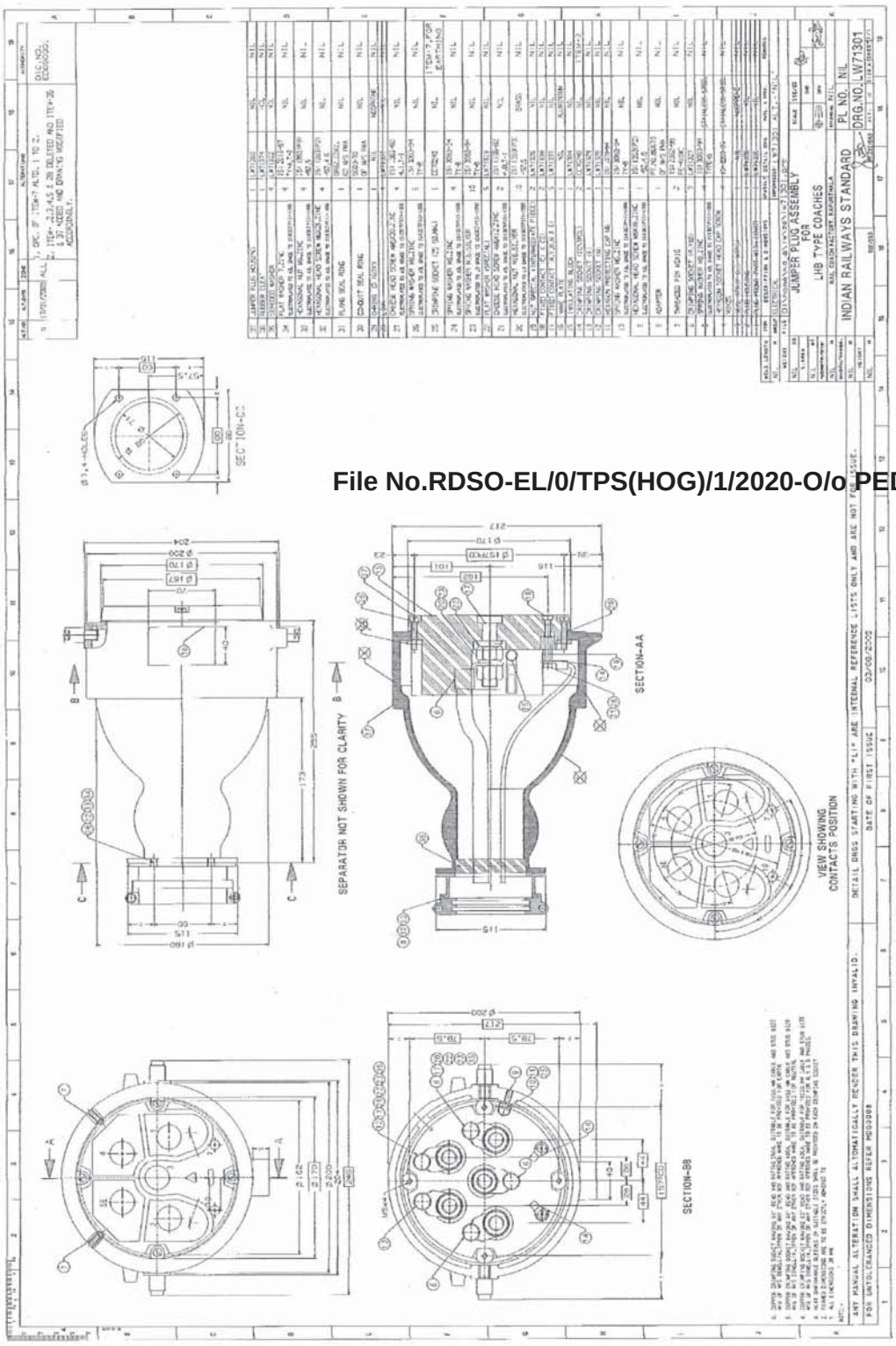

चित्तरंजन लोकोमोटिव कार्यशाला
CHITTARANJAN LOCOMOTIVE WORKS, INDIA
MODIFIED IV COUPLER HOUSING BOX ASSEMBLY
LAYOUT
SKETCH - 28/01/22

Annexure-3



File No.RDSO-EL/0/TPS(HOG)/1/2020-O/o PED/SE/RDSO