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Coach Alteration Instruction No. RCF/ED/CAI/024

Coach Alteration Instruction for provision of 4.5 KW Under-slung Constant Voltage, Regulated Cum Emergency Battery charger in LHB Non-AC variants manufactured prior to year 2018

This coach alteration instruction is being issued for replacement of Constant Voltage Regulated Battery Charger (RDSO Spec. No. RDSO/PE/SPEC/AC/0129-2009, Rev. '1') equipped in LHB Non-AC coaches, manufactured prior to year 2018, with 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger (without On-board Display Panel) as per RDSO specification. No. RDSO/PE/SPEC/AC/0183-2018 (Rev. '1').

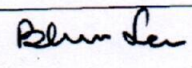
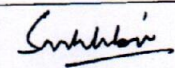
It has been reported that Railways are facing difficulties during periodic overhauling and breakdown maintenance of Regulated Battery Charger/ Emergency Battery Charger provided in LHB Non-AC coaches.

LHB EOG Non-AC Coaches manufactured after year 2012 are equipped with the followings items.

Sr. Nos.	Description of item	Drawing / Specification No.
1	Set of Panels for LHB EOG Non-AC coaches	EDTS-355, Rev. '00 (issued on 23.01.2012). EDTS-355, Rev. '01, AM-1 to Am-6 (issued on 11.02.2012).
2	Constant Voltage Regulated Battery Charger (placed in Under slung Box as per drawing no. LS71104, alt. 'a').	RDSO/PE/SPEC/AC/0129-2009 (Rev. '0') (issued on January 2010) RDSO/PE/SPEC/AC/0129-2009 (Rev. '1') (issued on January 2013)

Presently, LHB EOG Non-AC Coaches manufactured after year 2018 are equipped with the followings items.

Sr. Nos.	Description of item	Drawing / Specification No.
1	Set of Panels for LHB EOG Non-AC coaches	EDTS-355, Rev. '01, AM-1 to Am-6 (issued on 11.02.2012).
2	4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger	RDSO/PE/SPEC/AC/0183-2018 (Rev. '0') (issued on 15.02.2016) with On-board Display panel. RDSO/PE/SPEC/AC/0183-2018 (Rev. '1') (issued on 04.06.2018) without On-board Display panel.

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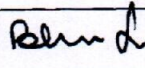
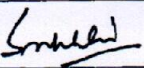
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Coach Alteration Instruction for provision of 4.5 KW Under-slung Constant Voltage, Regulated Cum Emergency Battery charger in LHB Non-AC variants manufactured prior to year 2018

Following modifications shall be carried out in LHB EOG Non-AC coaches.

1. Both Constant Voltage Regulated Battery Charger (RDSO Spec. No. RDSO/PE/SPEC/AC/0129-2009, Rev. '1') and it's under slung Box as per drawing no. LS71104, alt. 'a' shall be removed.
2. **4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger (without On-board Display Panel) as per RDSO specification. No. RDSO/PE/SPEC/AC/0183-2018 (Rev. '1')** shall be provided on coach Under-frame, at the same location of "Under slung Box as per drawing no. LS71104, alt. 'a'. Mounting dimensions of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger are same as "Under slung Box to drawing no. LS71104, alt. 'a'.
3. Modifications in cable harness for 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger in various LHB Non-AC variants is as per details in following annexures.

Annexure-A	Harness for wiring of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger for LHB EOG GS coaches.
Annexure-B	Harness for wiring of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger for LHB EOG SCN coaches.
Annexure-C	Harness for wiring of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger for LHB EOG Non-AC Chair Car (LSCZ) coaches.

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Annexure-A to Coach Alteration Instruction No. RCF/ED/CAI/024

Harness for wiring of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger for LHB EOG GS Coaches

Har. No.	Nos. & Size of cable		Spec. No.	Working Voltage	Color code		Length in mm	Ferrules marking	Route No.	Flexible conduit size and length	Group Name	Remarks
	Existing	Revised			Exist-ing	Revi-sed						
4	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	Ch	Ch	2500	35	35	Battery Fuse Box (+ve) (S4) to Battery Box (S3) (NW-17, L=1 Mtr)	DC Circuit cables	No Change required.
4A	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	W	W	2500	39	39	Battery Fuse Box (-ve) (S5) to Battery Box (S3) (NW-23, L=1 Mtr)	DC Circuit cables	No Change required.
4B	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	Ch	Ch	18500	36	36	Battery Fuse Box (+ve) (S4) to LV Panel (S1A) (NW-17, L=17 Mtrs)	DC Circuit cables	No Change required.
4C	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	W	W	18500	40	40	Battery Fuse Box (+ve) (S5) to LV Panel (S1A) (NW-17, L=17 Mtrs)	DC Circuit cables	No Change required.
4D	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	Ch	Ch	6500	42	42	Battery Fuse Box (+ve) (S4) to RBC (S1B) (NW-17, L=5 Mtrs)	DC Circuit cables	No Change required.
4E	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	W	W	5500	43	43	Battery Fuse Box (-ve) (S5) to RBC (S1B) (NW-17, L=4.5 Mtrs)	DC Circuit cables	No Change required.

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Annexure-A to Coach Alteration Instruction No. RCF/ED/CAI/024

Har. No.	Nos. & Size of cable		Spec. No.	Working Voltage	Color code		Length in mm	Ferrules marking	Route No.	Flexible conduit size and length	Group Name	Remarks
	Existing	Revised			Exist-ing	Revi-sed						
8	2 Nos. 2.5 mm ²	2 Nos. 2.5 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	Ch, W	Ch, W	5500	52	52	HV Panel (S1) to RBC (S1B) (NW-17, L=3.5 Mtrs)	RBC	No Change required.
9	4 Nos. 6 mm ²	5 Nos. 6 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	R, Y, B, Blk	R, Y, B, Blk, GYNE	4500	53	53	HV Panel (S1) to RBC (S1B) (NW-23, L=3 Mtrs)	RBC	See Note-2.

N.B.:

1. Harness nos., mentioned above, refers to RCF specification No. EDTS-356, Rev. 'C', Corrigendum-1.
2. GNYE cable is an addition, which was not provided in coaches manufactured prior to year 2018.
3. Braided copper cable supplied with RBC for earthing shall be connected to grounding flap, provided in coach under-frame, located adjacent to RBC.

Material required:

Sr. No.	Description	Working Voltage	Cable Size (in mm ²)	Cable Color	Drawing / Spec. No.	QPC	Remarks
1.	Thin walled flexible elastomeric cables with copper conductors	Up to 750 Volts	6	GNYE	ELRS/SPEC/ELC/0019, Rev.4	4.5 Mtrs.	To be laid with Harness No. 9 as mentioned in table above.

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Annexure-B to Coach Alteration Instruction No. RCF/ED/CAI/024

Harness for wiring of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger for LHB EOG SCN Coaches

Har. No.	Nos. & Size of cable		Spec. No.	Working Voltage	Color code		Length in mm	Ferrules marking	Route No.	Flexible conduit size and length	Group Name	Remarks
	Existing	Revised			Exist-ing	Revi-sed						
5	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	Ch	Ch	2500	35	35	Battery Fuse Box (+ve) (S4) to Battery Box (S3) (NW-17, L=1 Mtr)	DC Circuit cables	No Change required.
5A	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	W	W	2500	39	39	Battery Fuse Box (-ve) (S5) to Battery Box (S3) (NW-23, L=1 Mtr)	DC Circuit cables	No Change required.
5B	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	Ch	Ch	20000	36	36	Battery Fuse Box (+ve) (S4) to LV Panel (S1A) (NW-17, L=18 Mtrs)	DC Circuit cables	No Change required.
5C	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	W	W	14500	40	40	Battery Fuse Box (-ve) (S5) to LV Panel (S1A) (NW-17, L=12 Mtrs)	DC Circuit cables	No Change required.
5D	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	Ch	Ch	7000	42	42	Battery Fuse Box (+ve) (S4) to RBC (S1B) (NW-17, L=6 Mtrs)	DC Circuit cables	No Change required.
5E	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	W	W	10000	43	43	Battery Fuse Box (-ve) (S5) to RBC (S1B) (NW-17, L=8 Mtrs)	DC Circuit cables	No Change required.

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Annexure-B to Coach Alteration Instruction No. RCF/ED/CAI/024

Har. No.	Nos. & Size of cable		Spec. No.	Working Voltage	Color code		Length in mm	Ferrules marking	Route No.	Flexible conduit size and length	Group Name	Remarks
	Existing	Revised			Exist-ing	Revi-sed						
9	2 Nos. 2.5 mm ²	2 Nos. 2.5 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	Ch, W	Ch, W	6000	52	52	HV Panel (S1) to RBC (S1B) (NW-17, L=4 Mtrs)	RBC	No Change required.
10	4 Nos. 6 mm ²	5 Nos. 6 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	R, Y, B, Blk	R, Y, B, Blk, GYNE	6000	53	53	HV Panel (S1) to RBC (S1B) (NW-23, L=3.5 Mtrs)	RBC	See Note-2.

N.B.:

1. Harness nos., mentioned above, refers to RCF specification No. EDTS-357, Rev. 'C', Corrigendum-1.
2. GNYE cable is an addition, which was not provided in coaches manufactured prior to year 2018.
3. Braided copper cable supplied with RBC for earthing shall be connected to grounding flap, provided in coach under-frame, located adjacent to RBC.

Material required:

Sr. No.	Description	Working Voltage	Cable Size (in mm ²)	Cable Color	Drawing / Spec. No.	QPC	Remarks
1.	Thin walled flexible elastomeric cables with copper conductors	Up to 750 Volts	6	GNYE	ELRS/SPEC/ELC/0019, Rev.4	6 Mtrs.	To be laid with Harness No. 10 as mentioned in table above.

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Annexure-C to Coach Alteration Instruction No. RCF/ED/CAI/024

Harness for wiring of 4.5 KW Under-slung Constant Voltage Regulated cum Emergency Battery Charger for LHB EOG Non-AC Chair

Car Coaches

Har. No.	Nos. & Size of cable		Spec. No.	Working Voltage	Color code		Length in mm	Ferrules marking	Route No.	Flexible conduit size and length	Group Name	Remarks
	Existing	Revised			Exist-ing	Revi-sed						
4	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	Ch	Ch	2500	35	35	Battery Fuse Box (+ve) (S4) to Battery Box (S3) (NW-17, L=1 Mtr)	DC Circuit cables	No Change required.
4A	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	W	W	2500	39	39	Battery Fuse Box (-ve) (S5) to Battery Box (S3) (NW-17, L=1 Mtr)	DC Circuit cables	No Change required.
4B	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	Ch	Ch	21000	36	36	Battery Fuse Box (+ve) (S4) to LV Panel (S1A) (NW-17, L=19 Mtrs)	DC Circuit cables	No Change required.
4C	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	W	W	16000	40	40	Battery Fuse Box (-ve) (S5) to LV Panel (S1A) (NW-17, L=14 Mtrs)	DC Circuit cables	No Change required.
4D	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	Ch	Ch	8000	42	42	Battery Fuse Box (+ve) (S4) to RBC (S1B) (NW-17, L=6 Mtrs)	DC Circuit cables	No Change required.
4E	1 No., 10 mm ²	1 No., 10 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	W	W	10000	43	43	Battery Fuse Box (-ve) (S5) to RBC (S1B) (NW-17, L=8 Mtrs)	DC Circuit cables	No Change required.

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Har. No.	Nos. & Size of cable		Spec. No.	Working Voltage	Color code		Length in mm	Ferrules marking	Route No.	Flexible conduit size and length	Group Name	Remarks
	Existing	Revised			Existing	Revised						
9	2 Nos. 2.5 mm ²	2 Nos. 2.5 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	Ch, W	Ch, W	8000	52	52	HV Panel (S1) to RBC (S1B) (NW-17, L=6 Mtrs)	RBC	No Change required.
9	4 Nos. 6 mm ²	5 Nos. 6 mm ²	ELRS/SPEC/ELC/0019, Rev.4	Up to 750 Volts	R, Y, B, Blk	R, Y, B, Blk, GYNE	8000	53	53	HV Panel (S1) to RBC (S1B) (NW-23, L=6 Mtrs)	RBC	See Note-2.

N.B.:

1. Harness nos., mentioned above, refers to RCF specification No. EDTS-413, Rev. 'Nil', Corrigendum-1.
2. GNYE cable is an addition, which was not provided in coaches manufactured prior to year 2018.
3. Braided copper cable supplied with RBC for earthing shall be connected to grounding flap, provided in coach under-frame, located adjacent to RBC.

Material required:

Sr. No.	Description	Working Voltage	Cable Size (in mm ²)	Cable Color	Drawing / Spec. No.	QPC	Remarks
1.	Thin walled flexible elastomeric cables with copper conductors	Up to 750 Volts	6	GNYE	ELRS/SPEC/ELC/0019, Rev.4	8 Mtrs.	To be laid with Harness No. 9 as mentioned in table above.

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