

Telegram :RAILMANAK',
Lucknow
Fax : 0522 - 2452581
Telephone : 0522 - 2465714
e-mail:dse2rdso@yahoo.co.in



सत्यमेव जयते

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/3.2.29

Dated 22.09.2006

Chief Electrical Engineer,

- Central Railway, Mumbai CST- 400 001.
- Eastern Railway, Fairlie Place, Kolkata- 700 001
- East Cost Railway, Chandrashekharapur, Bhubaneswar- 751 016.
- Northern Railway, Baroda House, New Delhi-110 001
- North Central Railway, Hasting Road, Allahabad-211 001.
- Southern Railway, Park Town, Chennai-600 003
- South Central Railway, Rail Nilayam, Secunderabad -500 071
- South Eastern Railway, Garden Reach, Kolkata -700 043
- South Western Railway, 4th Floor, Laxmi Balakrishna Square Complex, Railway Station Road, Hubli- 580 020 (Karnataka).
- Western Railway, Churchgate, Mumbai-400 020
- West Central Railway, Jabalpur-482001
- South East Central Railway, Bilaspur-495004
- East Central Railway, Hazipur-844101 (Bihar)
- Chittaranjan Locomotive Works, Chittaranjan- 713 331

MODIFICATION SHEET NO. RDSO/2006/EL/MS/0348, REV. '0' Dated 22.09.2006

1. TITLE :

Retro-fitment of AC MVRF in place of existing DC MVRF provided in vertical DBR.

2. OBJECT:

To eliminate multiplicity of designs and to improve the reliability of Dynamic Braking in Electric Locomotives.

3 EXISTING ARRANGMENT;

In the existing arrangement, the vertical DBR of different makes are having different designs and dimensions of blower DC motor, blower fan, ducts and resistance grid box. Due to multiplicity of design and active standardization of the vertical DBR, RDSO have issued a technical Specification for vertical DBR No. ELRS/SPEC/DBR/0028, Rev. '0' -Sept. 2003 with amendment No.1 dated 02.06.2006 and amendment No.2

dated 14.07.2006 with 760 mm diameter blower fan and 11 m³/sec specified air quantity at 180 mm WG.

4 **MODIFIED ARRANGEMENT**

In line with directive issued by Railway Board vide letter No. 2004/Elec. (TRS)/441/5 dated 20.05.2004 for retro-fitment of AC MVRF on existing vertical DBR units having DC MVRF, a detailed study has been carried out to overcome the problems of multiplicity of existing DBR designs of various makes and of interchangeability due to varying dimensions of resistance boxes and blower casing of different makes. Retro-fitment scheme has been finalized to fit AC MVRF with 760 mm dia. blower fan in place of DC MVRF of different sizes of blower fans. .

The modification is should be carried out as per the following scheme on different makes of DBR: -

S. N.	Make of Existing DBR	Modification to be carried out for retro-fitment with AC MVRF	Items rendered surplus	Remarks
1.	DRI	<p>a) <u>Blower Casing</u> – 700 mm casing to be replaced with 760 mm.</p> <p>b) <u>Motor</u> – DC MVRF to be replaced with AC MVRF.</p> <p>c) <u>Blower Fan</u> – To be replaced with 760 mm dia fan.</p> <p>d) <u>Adopter</u> – To be replaced with adopter suitable for 760 mm dia blower casing.</p> <p>e) <u>Resistance Box</u> – Same box may be used. In case the connections between resistance to terminals are of cables, same shall be replaced with Bus Bars as per amendment No.2 dated 14.07.06 of the Specification No ELRS/SPEC/DBR/0028, Rev. '0' Sept. 2003.</p> <p>f) <u>QVRF</u> – It may be used.</p>	<p>a) <u>Casing</u> – 700 mm dia. casing.</p> <p>b) <u>Motor</u> – DC MVRF</p> <p>c) <u>Blower Fan</u> – 700 mm dia.</p> <p>d) <u>Adopter</u> – 700 mm dia.</p>	Existing unit of DC MVRF blower set and adopter to be replaced by complete unit of new MVRF blower set along with adopter as per RDSO's Specification.

S. N.	Make of Existing DBR	Modification to be carried out for retrofitment with AC MVRF	Items rendered surplus	Remarks
2.	Stesalit	<p>a) <u>Blower Casing</u> - 700 mm casing to be replaced with 760 mm.</p> <p>b) <u>Motor</u> - DC MVRF to be replaced with AC MVRF.</p> <p>c) <u>Blower Fan</u> - To be replaced with 760 mm dia fan.</p> <p>d) <u>Adopter</u> - To be replaced with adopter suitable for 760 mm dia blower casing.</p> <p>e) <u>Resistance Box</u> - Same box may be used. In case the connections between resistance to terminals are of cables, same shall be replaced with Bus Bars as per amendment No.2 dated 14.07.06 of the Specification No ELRS/SPEC/DBR/0028, Rev.'0' Sept. 2003.</p> <p>f) <u>QVRF</u> - It may be used.</p>	<p>a) <u>Casing</u> - 700 mm dia. casing.</p> <p>b) <u>Motor</u> - DC MVRF</p> <p>c) <u>Blower Fan</u> 700 mm dia.</p> <p>d) <u>Adopter</u> - 700 mm dia.</p>	Existing unit of DC MVRF blower set and adopter to be replaced by complete unit of new MVRF blower set along with adopter as per RDSO's Specification

S. N.	Make of Existing DBR	Modification to be carried out for retrofitment with AC MVRF	Items rendered surplus	Remarks
3.	CGL	<p>a) <u>Blower Casing</u> –</p> <p>700 mm casing to be replaced with 760 mm.</p> <p>b) <u>Motor</u> – DC MVRF to be replaced with AC MVRF.</p> <p>c) <u>Blower Fan</u> –</p> <p>To be replaced with 760 mm dia fan.</p> <p>d) <u>Adopter</u> –</p> <p>To be replaced with adopter suitable for 760 mm dia blower casing.</p> <p>e) <u>Resistance Box</u> –</p> <p>Same box may be used. In case the connections between resistance to terminals are of cables, same shall be replaced with Bus Bars as per amendment No.2 dated 14.07.06 of the Specification No ELRS/SPEC/DBR/00 28, Rev.'0' Sept. 2003.</p> <p>f) <u>QVRF</u> –</p> <p>It may be used.</p>	<p>a) <u>Casing</u> –</p> <p>700 mm dia. casing.</p> <p>b) <u>Motor</u>–</p> <p>DC MVRF</p> <p>c) <u>Blower Fan</u></p> <p>700 mm dia.</p> <p>d) <u>Adopter</u> –</p> <p>700 mm dia.</p>	Existing unit of DC MVRF blower set and adopter to be replaced by complete unit of new MVRF blower set along with adopter as per RDSO's Specification

S. N.	Make of Existing DBR	Modification to be carried out for retro-fitment with AC MVRF	Items rendered surplus	Remarks
4.	KEC	<p>a) <u>Blower Casing</u> -</p> <p>It may be repaired.</p> <p>b) <u>Motor</u> -</p> <p>DC MVRF to be replaced with AC MVRF.</p> <p>c) <u>Blower Fan</u> -</p> <p>To be replaced by high efficiency blower fan of 760 mm dia.</p> <p>d) <u>Adopter</u> -</p> <p>It may be used</p> <p>e) <u>Resistance Box</u> -</p> <p>Same box may be used. In case the connections between resistance to terminals are of cables, same shall be replaced with Bus Bars as per amendment No.2 dated 14.07.06 of the Specification No ELRS/SPEC/DBR/0028, Rev.'0' Sept. 2003.</p> <p>f) <u>QVRF</u> -</p> <p>It may be used.</p>	<p>a) <u>Motor</u></p> <p>DC MVRF</p> <p>b) <u>Blower Fan</u></p> <p>760 mm dia old design fan.</p>	AC MVRF with 760 mm dia blower fan as per RDSO Specification to be provided.

S. N.	Make of Existing DBR	Modification to be carried out for retrofitment with AC MVRF	Items rendered surplus	Remarks
5.	BHEL	<p>a) Blower Casing – It may be repaired.</p> <p>b) Motor – DC MVRF to be replaced with AC MVRF.</p> <p>c) Blower Fan – To be replaced by high efficiency blower fan of 760 mm dia.</p> <p>d) Adopter – It may be used</p> <p>e) Resistance Box – Same box may be used. In case the connections between resistance to terminals are of cables, same shall be replaced with Bus Bars as per amendment No.2 dated 14.07.06 of the Specification No ELRS/SPEC/DBR/00 28, Rev.'0' Sept. 2003.</p> <p>f) QVRF – It may be used.</p>	<p>a) Motor – DC MVRF</p> <p>b) Blower Fan – 760 mm dia old design fan.</p>	AC MVRF with 760 mm dia blower fan as per RDSO Specification to be provided.

Note : For fitment of AC MVRF with high efficiency blower fan in the casing of KEC and BHEL make DBR, the supporting brackets are to be modified accordingly for proper fitment. Ensure specified clearance between blower fan and casing as per Specification.

5. APPLICATION TO CLASS OF LOCOMOTIVE :

All 25 KV AC Electric Locomotives having vertical DBR.

6. MATERIAL REQUIRED:

Note: All the items to be procured from RDSO/CLW approved sources only.

a) Impeller

As per RDSO Specification No. ELRS/SPEC/DBR/0028, Rev. '0' of Sept. 2003 with amendment No. 1 Dated 02.06.06.

b) Motor

30 KW AC MVRF as per RDSO Specification No. ELRS/SPEC/DBR/0028, Rev. '0' of Sept.2003 with amendment No.1 Dated 02.06.06.

c) Resistance Box

As per RDSO Specification No. ELRS/SPEC/DBR/0028, Rev. '0' of Sept.2003 with amendment No.2 Dated 14.07.06.

d) Contactor

3-Phase Electro magnetic contactor similar to C105. This is named as C-108, as per CLW's Drg. No. 1TWD.291.033 Alt.'8'

e) Programmed switch

Siemens make Programmed Switch similar to HVMT. This is named as HVRF as per CLW's Specification No. CLW/ES/S-1/W.

f) Cables

i) Control Cable - 750V, 3mm², Conventional or 1.8 KV 2.5 mm², thin walled as per requirement, as per RDSO's Specification No.ELRS/SPEC/ELC/0019, Rev.'0'

ii) Auxiliary Cable - 750V, 25 mm² conventional or 1.8 KV 25 mm² thin walled cable for AC MVRF connection as per requirements. as per RDSO's Specification No. ELRS/SPEC /ELC / 0019, Rev.'0'

g) Lugs :

As per CLW's Specification No. CLW/ES/S-25/G. Insulated lugs of 3mm²/2.5 mm²/25 mm² as per requirements.

i) As per fitment scheme as mentioned in Clause 4 for different makes of vertical DBR.

- ii) Material required for motor connection and control circuit connection as per Modification Sheet No. ELRS/MS/0271-2004, Rev. '1' dated 29.10.2004.
- iii) AC MVRF & fan as per RDSO Specification No. ELRS/SPEC/DBR/0028 Rev. '0' of Sept. 2003 with amendment No. 1 dated 02.06.2006,

7. MATERIAL RENDERED SURPLUS:

As per surplus item as mentioned in Clause 4 for different makes of vertical DBR.

8. REFERENCE :

Railway Board's letter No. 2004/Elec. (TRS)/441/5 dated 20.05.2004.

9. MODIFICATION DRAWING:

RDSO's Drg. No. SKEL-4685 (Aux. control circuit of AC MVRF (30 KW) for Arno/Static Inverter fitted Electric Locomotives)

10. AGENCY FOR IMPLEMENTATION:

All Electric Loco Sheds & POH Shops on condition basis.


(Kishore Kumar)

for Director General/Elect.

Encl: RDSO's Drg. No. SKEL- 4685.

Copy to : As per Standard Mailing List No. EL/M/0019, Ver. '3'


(Kishore Kumar)

Encl: RDSO's Drg. No. SKEL-4685 for Director General/Elect.

OC