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भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226011
Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226011



No. EL/3.2.29

Dated 29.10.2004

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, Hubli.
- Western Railway, Churchgate, Mumbai-400 020
- West Central Railway, Jabalpur-482001
- South East Central Railway, Bilaspur-495004
- East Central Railway, Hazipur-844101 (Bihar)
- North Western Railway, Jaipur-302006.
- Chittaranjan Locomotive Works, Chittaranjan- 713 331

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MODIFICATION SHEET No. ELRS/MS/0271-2004, REV. '1'

44863

(This Modification supersedes Modification Sheet No. ELRS/MS/0271-2000 (Rev. '0')

1.0 Title :

Standardisation of High Capacity Vertical DBR Units with 30 KW AC MVRF in Freight Electric Locomotives.

2.0 Object :

- i) The present scheme of vertical DBR on Electric Locomotive comprised of DC motor driven blower fan. Due to inherent problems of maintenance and design associated with DC machine, the reliability of DC motor has not been up to desired level.
- ii) Efforts were made in the past to use AC MVRF for driving the blower fan of DBR. However, due to limitation of power capacity of 120 KVA Arno Converter, it can not supply additional load of AC MVRF. A scheme was, therefore, devised to switch 'OFF' MVRH while using DBR in circuit to save over loading of Arno Converter.

The scheme was advised to Railways vide Modification Sheet No. ELRS/MS/0271-2000 (Rev. '0'). The scheme was put up on trial by using AC MVRF of KEC make of 34 KW capacity at Electric Loco Shed/VSKP.

- iii) The scheme with minor variations, as followed by ELS/VSKP, has been reported to be working satisfactorily with no adverse effect on transformer noticed. The circuit has been re-examined by RDSO in light of experience gained by ELS/VSKP.
- iv) RDSO issued unified Specification No. ELRS/SPEC/DBR/0028, Rev. '0' of Sept. ~ 2003 with option to choose AC MVRF or DC MVRF interchangeably . The Specification contains a new standardized design of DC MVRF (with 36 KW rating), a specification for AC MVRF (with 30 KW rating) and specification for 760 mm diameter fan with specified air quantity of 11 m³/sec at 180 mm W.G., enclosure protection level enhanced to IP 56 & standardized grid and unit dimensions.
- v) Railway Board vide their letter No. 2004/Elec. (TRS)/441/5 dated 20.05.2004 have advised adoption of AC MVRFs for vertical DBR units on Electric Freight Locomotives. The main object of this Modification is to standardize the scheme of vertical DBR units with AC MVRF on Electric Freight Locomotives.

3.1 Works to be Carried out :

(For both new locomotives as well as retrofitable locomotives which are being provided with AC MVRF)

The modified circuit diagram SKEL- 4685 for operation of AC MVRF by switching 'OFF' MVRH. This modified circuit diagram is common for locomotives equipped with static inverter as well as Arno Converter.

3.2 Maintenance Schedule :

- a) Maintenance schedule for AC MVRF shall be same as that followed for other auxiliary motors.
- b) Maintenance schedule for complete DBR unit shall be followed as per the existing practice.

4.0 Application to class of Locomotives :

WAG-5 and WAG-7 class of Electric Locomotives.

5.0 Materials required :

- a) 30 KW AC MVRF as per RDSO Specification No. E-10/3/08 (Revised) Sept. – 1995 with Amendment No. 2 dated 10.04.2001.
- b) 3-phase Electro magnetic contactor similar to C105, This is named as C 108.
- c) Programme switch Siemens make similar to HVMT. This is named as HVRF
- d) Cables :
 - i) Control Cable - 750 V, 3 mm² conventional or 1.8 KV 2.5 mm² thin walled as per requirement.
 - ii) Auxiliary Cable - 750 V, 25 mm² conventional or 1.8 KV 25 mm² thin walled cable for AC MVRF connection as per requirements.
- e) Lug :

Insulated lugs of 3 mm² / 2.5 mm² / 2.5 mm² as per requirements.

44884

6.0 Material Rendered Surplus :

Existing DC MVRF to be declared condemned on condition basis.

7.0 References:

- i) Railway Board's letter No. 2004/Elec(TRS)/441/5 dated 20.05.2004
- ii) RDSO's letter No. EL/2.29 dated 3.9.2004 on Standardization of Vertical DBR units with AC MVRF for Electric Freight Locomotives

8.0 Modification Drawing :

RDSO's Drg. No. SKEL- 4685, Alt. '0'.

9.0 Agency for Implementation :

- i) CLW/Chittaranjan – all new procurement of DBR with AC MVRF only.
- ii) POH Shops –Carrying out mid-term rehabilitation of locomotives.

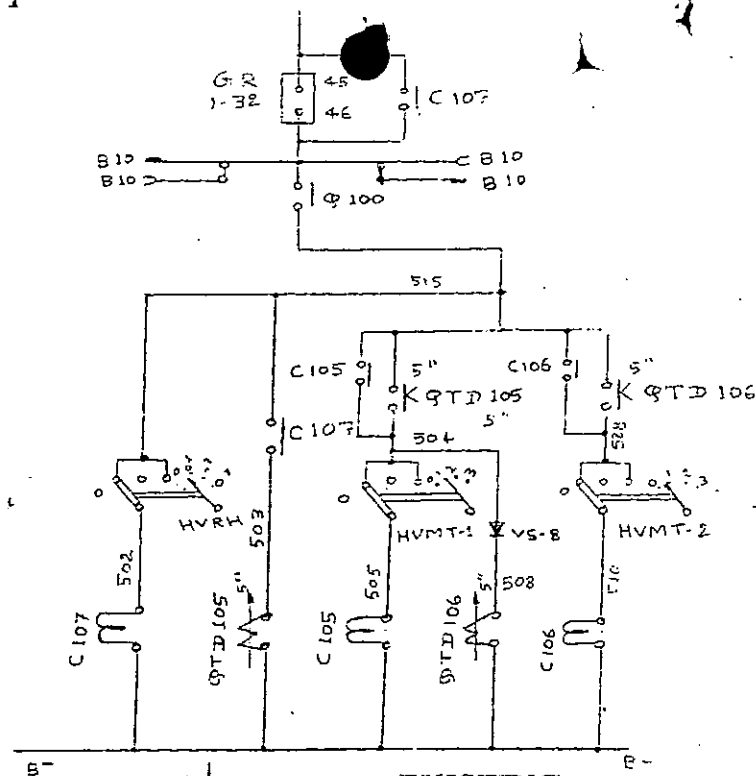
Encl: Drg. No. SKEL-4685 Alt. '0'

(S.K.Sinha)
for Director General/Elect.

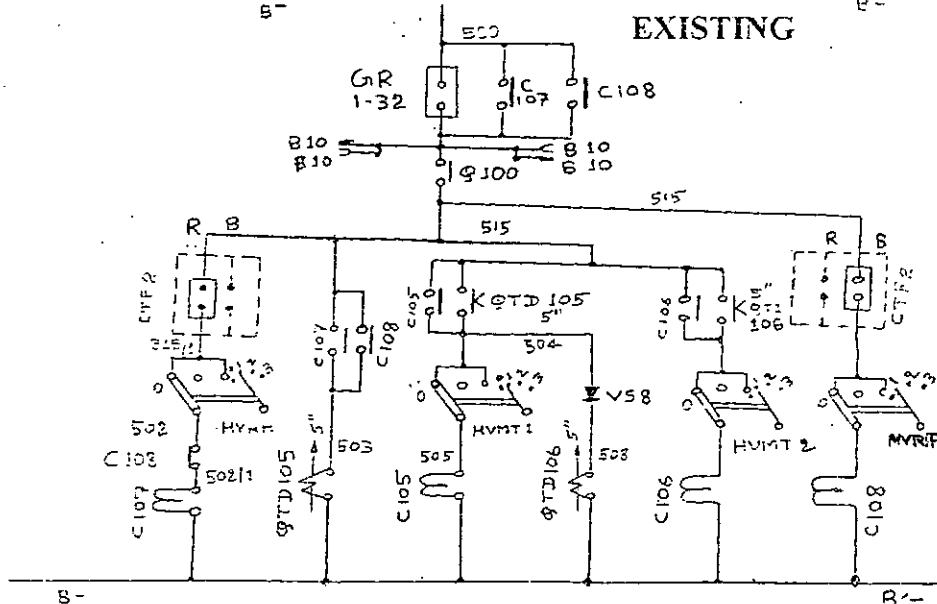
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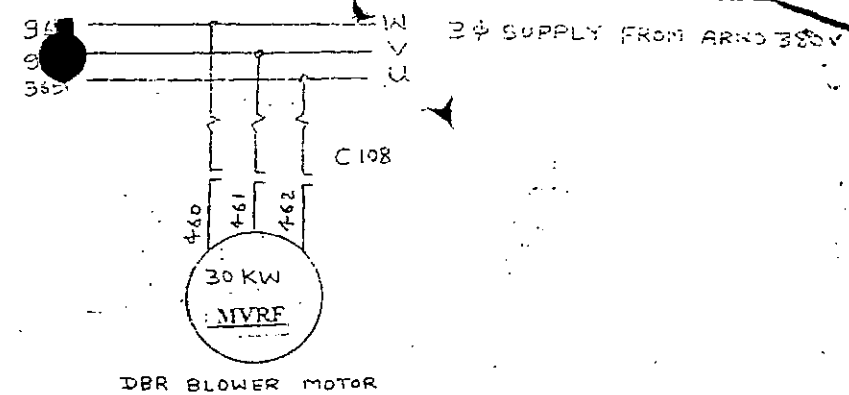
(S.K.Sinha)
for Director General/Elect.



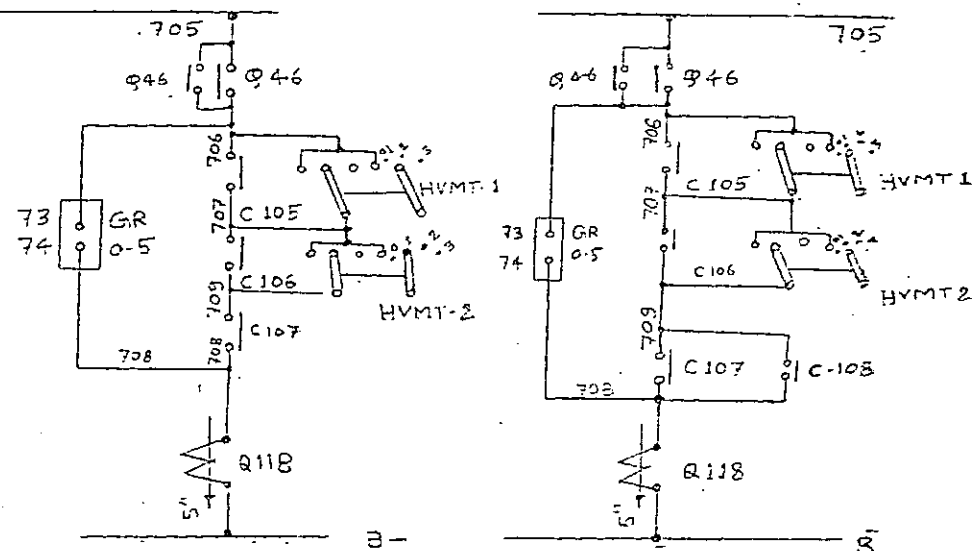
EXISTING



MODIFIED



DBR BLOWER MOTOR



EXISTING

MODIFIED

REF.	PART NO.	DESCRIPTION	DETAIL DRG. NO.	MATL.	SPEC. NO.
REF.		SCALE	APPD. BY	(For DG)	
AUX. CONTROL CKT. OF AC MVRF(30 KW) FOR ARNO / STATIC INVERTOR LOCO				FIRST ISSUED, OCT. 2004	
RDSO ELECT. DTE.				SUPERSEDES	
SKEL-4685 ALT. '0'				SUPERSEDED BY:	

STATUS.	ALT.	REF. No.	DESCRIPTION	APPD. BY	DATE

D. 4.10.07
 D. K.P.N. 100m
 C. M.C. Mohant
 T. S. Singh

44865