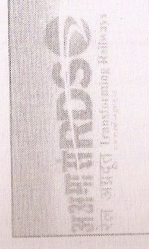


भारत सरकार - रेल मंत्रालय
अनुसंधान, अभिकल्प और मानक संगठन
एडवाइजरी - 226 011
EPBX (0522) 2451200
Fax : 0522 - 2452581

Government of India-Ministry of Railways
Research Designs & Standards Organisation

Lucknow - 226 011
DID (0522) 2450115
DID (0522) 2465310



No. EL/1.2.9.1 /AAL

Dated - 30.03.2016

Chief Electrical Engineer,

1. Central Railway, Mumbai, CST-400 001.
2. Northern Railway, Baroda House, New Delhi-110001.
3. North Central Railway, Block A2, Subedar ganj Allahabad- 211 033
4. Eastern Railway, Fairlie Place, Kolkata -700 001.
5. East Central Railway, Hazipur-844101.
6. East Coast Railway, Chandrashekharpur, Bhubaneshwar-751016
7. Southern Railway, Park Town, Chennai-600 003.
8. South Central Railway, Secunderabad-500 371.
9. South Eastern Railway, Garden Reach, Kolkata -700 043.
10. South Western Railway, Hubli (Karnataka).
11. South East Central Railway, Bilaspur-495004
12. Western Railway, Churchgate, Mumbai-400 020.
13. West Central Railway, Jabalpur-482001.

MODIFICATION SHEET No. RDSO/2016/EL/MS/0449-Rev.'0' Dated- 30.03. 2016

1.0 TITLE :

The reliable and cost effective replacement of cooling fan motor in 180 KVA Static Converter (AAL make) having M/s. ZIEHL-ABEGG make motor of 0.53 KW by indigenously developed motor.

2.0 OBJECT:

There had been frequent failures of cooling fan motor causing serious reliability problem for locomotive operation. Therefore efforts have been made to find out a practical solution to improve the reliability. In this direction, indigenous cooling fan motor 0.750kW capacity has been used in place of existing imported motor. This arrangement has been in used in Zonal Railway for more than one year and working found satisfactory. Therefore in pursuance to the decision taken during 37th MSG meeting, the necessary

modification is now being issued. Alternatively modified arrangement issued by M/s AAL is also included in this modification sheet.

3.0 Existing Arrangement:

- (i) M/s. Autometers Alliance Limited/Noida have supplied 180 KVA Static Converter for conventional Electric locomotive which failed frequently on account of different problems in cooling fan right from its inception. After detailed investigation by RDSO in consultation with OEM and user railways, it was found that the bearing of cooling fan of M/s. ZIEHL-ABEGG needs to be replaced after a service period of 36 months. However, even after timely replacement of bearing, the failures of cooling fan persisted. After detailed discussion with railways and OEM, the periodicity of replacement was further reduced to 18 months to improve reliability. Even after this, the failures of cooling fan persisted and remained a major cause of SIV failures.

- (ii) The reliability issues were deliberated in different meeting held at RDSO, Railway board as well as in 37th MSG held at Shimla on 24th & 25th July 2015. In these meetings it was decided to implement modified cooling fan arrangement after sufficient trial in the field. Since performance after trial found satisfactory this modification sheet is being issued.

4.0 Modified Arrangement:

RDSO studied the schemes as implemented by ELS/ED & ELS/BZA. The cooling fan motor shall be used in modified arrangement as under:

SN	Description	Details
1	Make	Motor of M/s BBL/ Siemens/ Havell's.
2	Fan Impeller	Same as original
3	Capacity	750 W
4	Voltage	415 V
5	Current	1.0/1.65 A
6	Bearing type DE/NDE, make	6004 2Z- C3 end type sealed, 20/42 Deep groove, SKF
7	Life	Bearing to be replaced during IOH
8	IP	IP 55
9	Mounting	Foot cum Flange mounted.
10	Air flow	4 to 7 m/s
11	RPM	2800 – 2830

The modified arrangement as implemented by shed is shown in figure below:

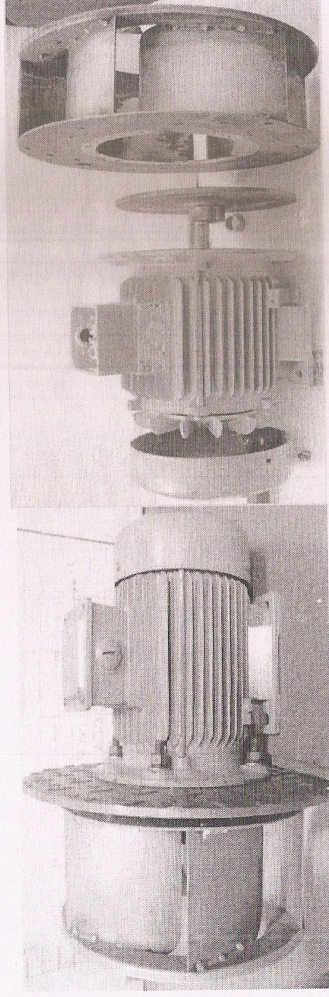


Fig 1: Cooling fan with modified motor of 0.750 kW.

5.0 Revised design given by M/s. AAL for cooling fan motor:

M/s. AAL has submitted a modified cooling arrangement with the help of 1.5 kW motor. They have supplied this modified arrangement with modification kit in Zonal Railways which have been reported to be working satisfactorily. This arrangement can also be implemented by sheds as per the need and suitability. The picture of modified arrangement of M/s AAL is shown below.

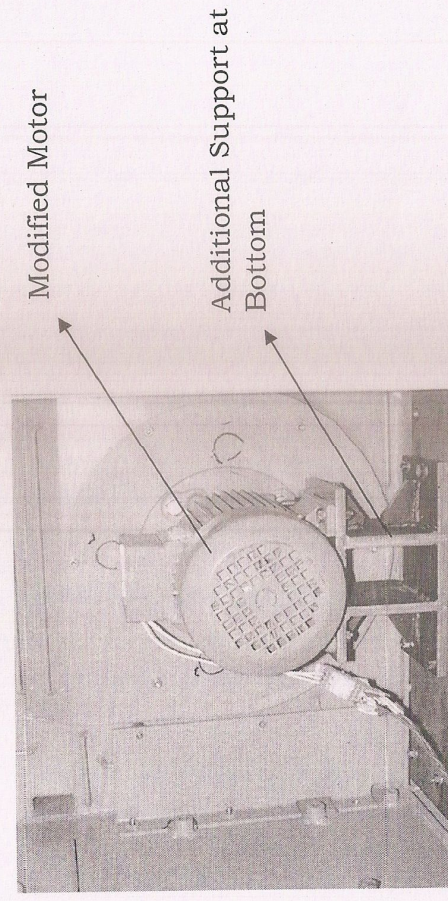


Fig 2: Modified cooling fan of AAL.

6.0 Modification Work to be carried out:

6.1 Modified Cooling Fan as developed by Railways:

- (i) Remove the cooling fan motor of existing ZIEHL-ABEGG make.
- (ii) One 3-Phase squirrel cage induction motor Frame 80, 0.75 kW/1 HP, Duty S1, Insulation class F is to be fitted in existing impeller.
- (iii) The motor is to be replaced by the scheme as given in para 4.0 of this modification sheet.

6.2 Modified cooling fan of AAL:

- (i) Modified design cooling fan with motor-Impeller in the converter serial no OB1800011001 to OB1801008015 needs minor modification i.e. by shifting input plate assembly to side wall.
- (ii) The part no of KIT is HHIM1801858 to be supplied by the firm.

7.0 Application to class of locomotives:

The modification can be implemented in all type of single phase conventional Electric Locomotive having 180 KVA SIV of AAL make by adopting modification as per Para 4.0 or 5.0 of this modification sheet as per the need and suitability.

8.0 Material required for modification:

- (i) 3-Phase squirrel cage induction motor Frame 80, 0.75 kW/1 HP, Duty S1, Insulation class F
- (ii) Adapter - 01 no.
- (iii) Hub - 01 no. (drawings of hub used by ELS/ED and ELS/BZA is attached as annexure I and II for ready reference)
- (iv) Impellor - 01 no

9.0 Material rendered as surplus:

The released fan can be utilized by Shed as unit exchange spare.

10.0 REFERENCES:

Item no 3 of 37th MSG held at Shimla/ NR minutes of meeting about modification of cooling fan in SIV.

11.0 MODIFICATION DRAWING :

NIL

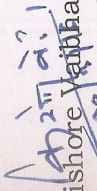
12.0 AGENCY FOR IMPLEMENTATION :

Electric Loco Sheds, POH/MTR Workshops.

13.0 DISTRIBUTION :

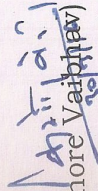
As per standard Mailing List

Encl : NIL


(Kishore Varshney)
for Director General/Elect.

Copy to: As per Standard Mailing List No.EL/M/0019

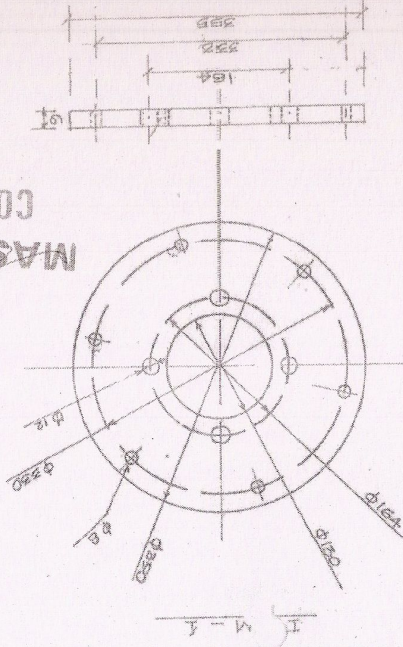
Encl : NIL


(Kishore Varshney)
for Director General/Elect.

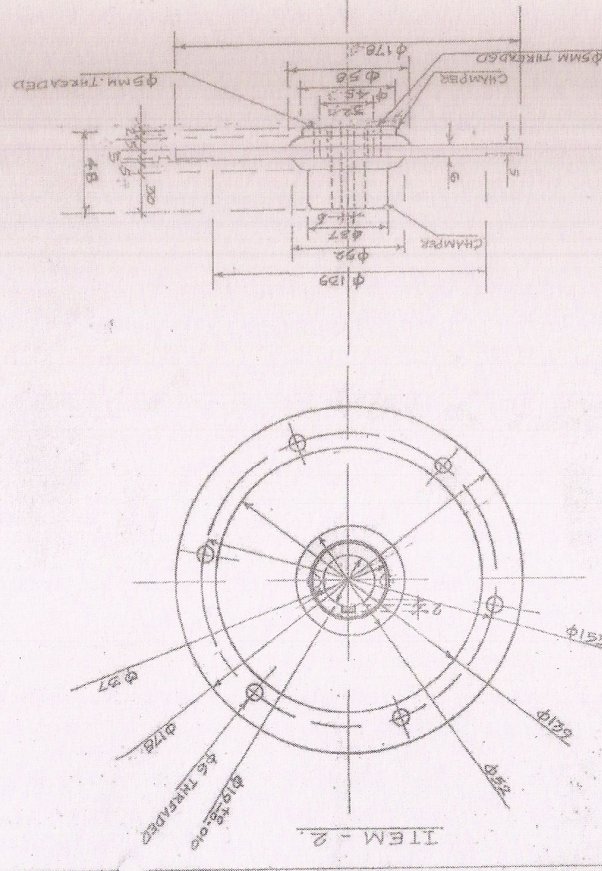
REF: AS PER SAMPLE	DRN.	<i>[Signature]</i> 17/10/14	CHKD 556/ADK	SSB Drg. <i>[Signature]</i> 17/10/14	ADCE <i>[Signature]</i> 17/10/14	SCALE: N.T.S.	DATE: 05.3.14	SR.DEE/RS/ED/eng-122
HUB FOR SIL COOLING FAN AND FIXING			SOUTHERN RAILWAY			ELECTRIC LOCOMOTIVE		
PLATE FOR SIL COOLING FAN (MIL MAKE)			APPROVED			SR.DEE/RS/ED		
			<i>[Signature]</i>			DRG. NO:		

NOTE:

1. ALL DIMENSIONS ARE IN MM.
2. SHARP EDGES TO BE SMOOTHENED.
3. ONE SAMPLE SHOULD BE GOT APPROVED BEFORE EFFECTING BULK SUPPLY.



ITEM NO.	DESCRIPTION	MATERIAL & SPECN.
1	HUB FOR SIV COOLING TAN. FIXING PLATE FOR SIV COOLING TAN (CAL MAKE)	M. STEEL IS: 1875 CLASS 4.
2		M. STEEL IS: 1875 CLASS 4.



Annexure II

