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Organization, LUCKNOW - 226011

EL/3.1.3

Date: 07/06/2010

Chief Electrical Engineers,

1. Central Railway, Mumbai CST -400 001
2. Western Railway, Church Gate, Mumbai-400 020

DRAFT TECHNICAL CIRCULAR No: RDSO/2010/EL/TC/0103

Sub: Regarding Maintenance of Voltage Sensing Device in AC/DC locos WCAG1, WCAM1, WCAM2 and WCAM3.

543164

Cases of bursting of capacitor of VSD have been reported. The capacitor provided in VSD in 4 µF,6.3 kVDC,4.2 kV AC oil filled capacitor. It is observed that a few failures have resulted because of improper voltage output from TFVSD as well. In some cases, bursting of capacitor has also lead to fire in loco. It is therefore necessary to check the health of both these components from time to time.Following guidelines are being issued to enable proper maintenance of voltage sensing device with a view to avoid the cases of capacitor bursting which may lead to fire in locos.

1. In every minor schedule/unscheduled visit of locomotive, thorough checking of any flash/overheating mark on 25 kV bushing, TFVSD and CAPVSD should be carried out. In case of observance of flash/overheating mark, thorough investigation should be carried out to rectify the fault/replace the defective item.

2. In AOH, IOH and POH schedules, following items should be invariably checked.

   a. TFVSD:

   i. Tan delta should be measured and recorded. The value should be compared with last records and if showing deteriorating trend TFVSD should be replaced.

   ii. Surge test should be carried out and in case of observing inter-turn short, the TFVSD should be replaced.

   iii. Continuity and Ratio test should be carried out to confirm the correct ratio of transformer. In case of deviations with respect to standard value, TFVSD should be replaced.

b. **CAPVSD**

(i) Measurement of Capacitance of CAPVSD should be carried out and if value is found beyond ±10% tolerance, CAPVSD should be replaced.

(ii) KYN shed has provided a dry type capacitor of Advance Components & Instruments Pvt Ltd, Mysore on one loco which has already completed more than 6 months and performance of the same is reported to be satisfactory. M/s EPCOS and M/s VISHAY are also manufacturing dry type capacitors. Railways may get developed dry capacitor for CAPVSD application from these firms as well. Whenever CAPVSD is found defective, it should be replaced with a dry type capacitor.

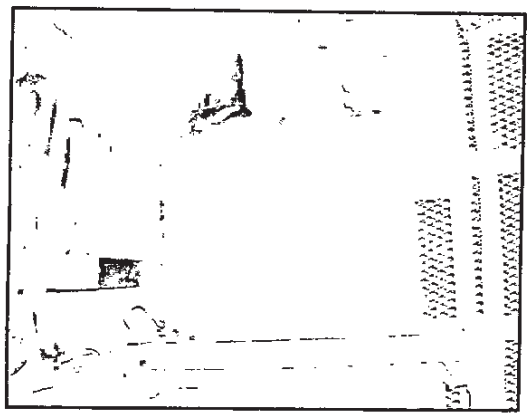
3. **CYCLIC CHECK:**

A one time cyclic check of all AC/DC loco should be expeditiously carried out by sheds for checking of TFVSD and CAPVSD and defective items should be replaced as indicated above.

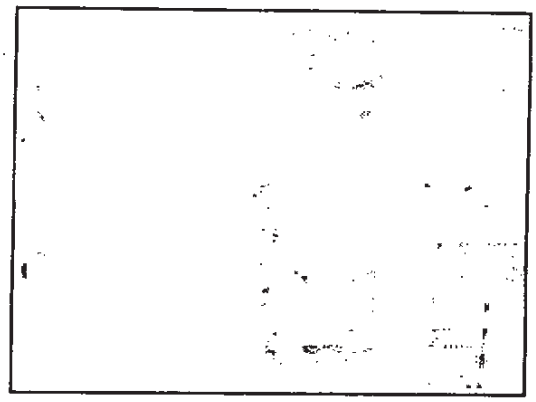
4. **Modification of Shifting of VSD Panel**

KYN shed has carried out a modification in which VSD Panel has been shifted away from TFVSD to segregate HV and ground potential. Also solid earthing of VSD Circuit is ensured by providing Ring Main Earthing. This modification should be implemented in all AC/DC locos. The photographs of original and modified arrangement is shown below.

543165



Original Arrangement



Modified Arrangement

Concerned Railways/sheds are requested to complete action as per above modification accordingly.

(Ishaq Khan)
For Director General Stds (Elect)

Details specification as Embosed on name plate

CAP VSD
GFB MP

(1) 4/4000E/1024
4NF ± 10%
4 KV DB GSC
6 KV KB GSB
-40/70^0 C
560/11
NON PCB
MADE IN GERMANY
07.94

(2) Electronicon
252.167 – 40440
MPP4NF + - 10%
UN4KV-GSC
Entspricht
0560-11 Del/SH
1.97
Made in Germany

(3) TFVSD

	V 25000 / 250
Type WR-25	VA 1200
B.I.L 24/50/125 KV	Class – 3.0
THVA ---	
W.A No :- WR-04	50HZ/IS 3156
MFD By :- JSL Industries	

54 0163

ADVANCE COMPONENTS AND INSTRUMENTS PVT LTD

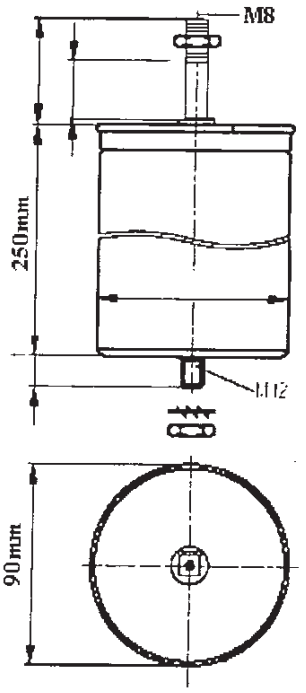
(An ISO 9001 Company)
Manufacturers of PLASTIC FILM CAPACITORS
IN TECHNICAL COLLABORATION WITH GOULD ADVANCE LIMITED U.K.

Registered Office & Factory: 3A-3A 1, Belavadi Industrial Area, Mysore - 570 018, INDIA.
Telephone: (0821) - 2402307, 2402301 Fax: (0821) - 4282058
Website: www.advance-capacitors.com
Mumbai Office: Tel: (022) 22073507, E-mail: info@advance-capacitors.com

Advance Metallised Film Capacitor – Dry Construction

Application: Smoothing, Supporting & Discharge

General Technical Data:
Dielectric Metallised Film
Winding: Non-inductive type
Case: Aluminum Can
Terminals: M8 x 50mm (top) & M12 x 12mm (bottom)
Constructions: Dry construction. filled by solid resin.
Temperature range (case): -40 to +85 Deg C
Temperature storage: -40 to +85 Deg C



Typical Electrical Characteristics of 4Mfd 6300vdc
Capacitance: 4ufd +/-10%
Series Inductance (ESL): 180nH
Series Resistance (ESR): 10mΩ
Current (Imax): 20A
Test Voltage: 9500vdc between terminals for 10 seconds.

Typical Dimensions of 4mfd 6300vdc
Diameter : 90mm
Height: 250mm (excluding terminals)
Top terminal M8 x 65mm
Bottom terminal M12 x 18mm
Product Code: ASPR-55

543167

DET NORSKE VERITAS
ISO 9001:2000
Certificate No. 00052-2003-AQ-BAL-RvA