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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 - 226 011

### **TECHNICAL CIRCULAR NO.3**

No EL 2.2.23/1

**FAX MESSAGE**

Dated 09/10.10.1997

Fax Nos.

#### **CHIEF ELECTRICAL ENGINEER**

- |   |               |
|---|---------------|
| - Northern Railway, Baroda House- New Delhi -110001 | {011-3384503} |
| - Eastern Railway, Fairlie Place, Calcutta-700001   | {033-2480370} |
| - S-E Railway, Garden Reach, Calcutta 700042        | {033-494913}  |
| - Central Railway, Mumbai CST-400001                | {022-2612354} |
| - Western Railway, Churchgate, Mumbai-400020        | {022-2017631} |
| - Southern Railway, Park Town, Chennai-600003       | {044-5357805} |
| - South -Central Railway, Secunderabad-71           | {040-834179}  |

#### **Sub:- Provision of 380/415 Volts Lightning Arrestor across a0-a1 auxiliary winding of the transformer.**

In order to suppress surges developed during opening closing of the vacuum circuit breakers provided on the locomotives. RC networks are being provided across a0 -a1 380/415 Volts auxiliary winding of the transformers. The provision of RC networks does not appear to be very effective and also leads to heavy inrush current to the transformer during closing of the VCBs. RDSO have since developed a 380 Volts lightning arrestor and one such unit has already been put in service on a locomotive based at Electric Loco Shed. Kanpur for sevice trials.

During the last co-ordination meting with M/s GAI held at Allahabad, it was decided that all sheds will procure and provide 10 NOs, each of 380 Volts lightning arrestors across auxiliary winding of the transformer on locomotive fitted with VCBs in place of existing RC networks. A copy of the technical data and the OGA drawing for the 380 volts lightning arrestors is enclosed for further necessary action at your end.The performance of these lightning arrestors in service may be closely monitored and feed back sent to this office periodically.

**Encl: as above.**

(ARUNSRIVASTAVA)  
for DIRECTOR GENERAL (ELECTRICAL)

#### **Copy to:-**

1. The Secretary{Elect},Railway Board Rail Bhawan. {011-3384481}  
New Delhi-110001 {Kind Attn: Shri I.C.Shrma EDEE.RS}
2. Chief Electrical Engineer,Chittarnjan Locomotive Works. {0341-525641}  
Chitaranjan 713331-Dist, Burdwan{WB}

Encl: As above.

(ARUN SRIVASTAVA)  
for DIRECTOR GENERAL (ELECTRICAL)

**TECHNICAL DATA FOR 380V LIGHTNING ARRESTER**

**LA SPECIFICATION**

Normal system Voltage	:	380 AC
Max variation of voltage	:	± 20 % (being loco application)
Arrester rated voltage	:	600 Volts
MCOV	:	500 Volts
Nominal Discharge Current	:	1.5 kA Peak
Protective Level (Max.)	:	

**Lightning Impulse**

750A 8/20 μ sec impulse	:	2.3 k VP
1500A 8/20 μ sec impulse	:	2.5 k VP
3000A 8/20 μ sec impulse	:	2.75 k VP

**Switching Impulse**

125A 30/60 μ sec impulse	:	2.05 kVP
500A 30/60 μ sec impulse	:	2.75 kVP

**High Current Withstand**

20kA 4/10 μ sec Current impulse

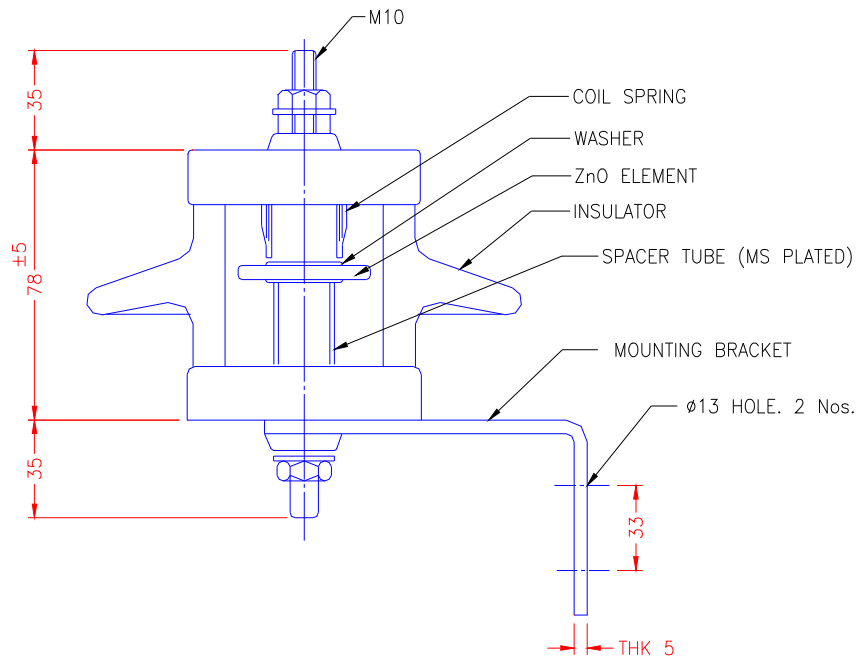
**Energy Capability** : 2 kJ

**Arrester Insulation**

Material	:	Porcelain
Creepage	:	25mm (Min)

**GA Drawings enclosed**

Drg P.F. voltage withstand	:	1 kV of 1min (of arrestor insulation )
Over Voltage Capacity	:	
1 sec	:	650 Volts
10 sec	:	600 Volts



GENERAL ARRANGEMENT FOR 380 V  
LIGHTNING ARRESTER