



सत्यमेव जयते

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GOVERNMENT OF INDIA - MINISTRY OF RAILWAYS  
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No. EL/3.2.1/Radiator

Dt. 24.01.2014

All Chief Electrical Engineers,

**SPECIAL MAINTENANCE INSTRUCTION NO. RDSO/2014/EL/SMI/ 0279  
(REV. '0') --dated 24.01.2014**

**1.0 Title:**

Removal of orifice ring provided in the inlet & outlet flanges of Converter Oil Cooler(COC) and Transformer Oil Cooler(TOC) of 3-ph oil cooler assembly manufactured and supplied by M/s Apollo.

**2.0 Brief History:**

- 2.1 Apollo make oil cooler assembly for 3-ph locomotives are provided with orifice ring in the inlet & outlet flanges of converter oil cooler & transformer oil cooler to match the oil pressure drop[0.6 to 0.66(max.) for converter & 0.6 to 0.76(max.) for transformer] mentioned in the CLW spec. No. CLW/ES/3/0102(Alt.D).
- 2.2 Oil pressure drop mentioned in the above CLW specification has been re-examined and reviewed afresh. It has been observed that there is no restriction on the lower side oil pressure drop for converter & transformer oil cooler.
- 2.3 Test results of oil cooler with and without orifice ring indicate that capacity of converter cooler increased by approx. 4%& capacity of transformer cooler increased by approx. 3% respectively by removing orifice ring in these Apollo make radiators.

**3.0 Object:**

To increase the heat dissipation capacity by 3-4% of Converter Oil Cooler(COC) and Transformer Oil Cooler(TOC) of 3-ph oil cooler assembly manufactured and supplied by M/s Apollo.



#### **4.0 Modified Instructions:**

- 4.1 Orifice ring provided in the inlet & outlet flanges of Converter Oil Cooler(COC) and Transformer Oil Cooler(TOC) of 3-ph oil cooler assembly of M/s Apollo is required to be removed.
- 4.2 Step by step procedure to remove orifice ring is enclosed as Annexure.
- 4.3 M/s Apollo will not provide orifice ring in the inlet & outlet flanges of Converter Oil Cooler(COC) and Transformer Oil Cooler(TOC) of 3-ph oil cooler assembly to be supplied to CLW/Railways.
- 4.4 CLW may also remove the orifice ring as stated in Para 4.2 for radiators available with them of Apollo make with orifice ring.

#### **5.0 Application to the Class of Locomotives:**

25 KV AC 3-Ph electric locomotives provided with Apollo make oil cooler radiator having provision of orifice ring.

#### **6.0 Agency of Implementation:**

All Electric Loco Sheds and POH Workshops/CLW with 3-Ph electric locomotives.

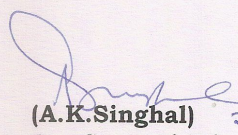
#### **7.0 Periodicity of Implementation:**

AOH, IOH and POH overhauling schedules.

#### **8.0 Distribution:**

- As per mailing list
- M/s Apollo Industrial Corporation,  
Indo Industrial Estate No. -2,  
Plot No. 109, Navghar Village,  
Vasai Road (E), Dist. - Thane,  
Maharashtra, - 401 210.  
(Fax: 0250-2392121)

DA: As above

  
(A.K. Singhal)  
for Director General (Elect.)

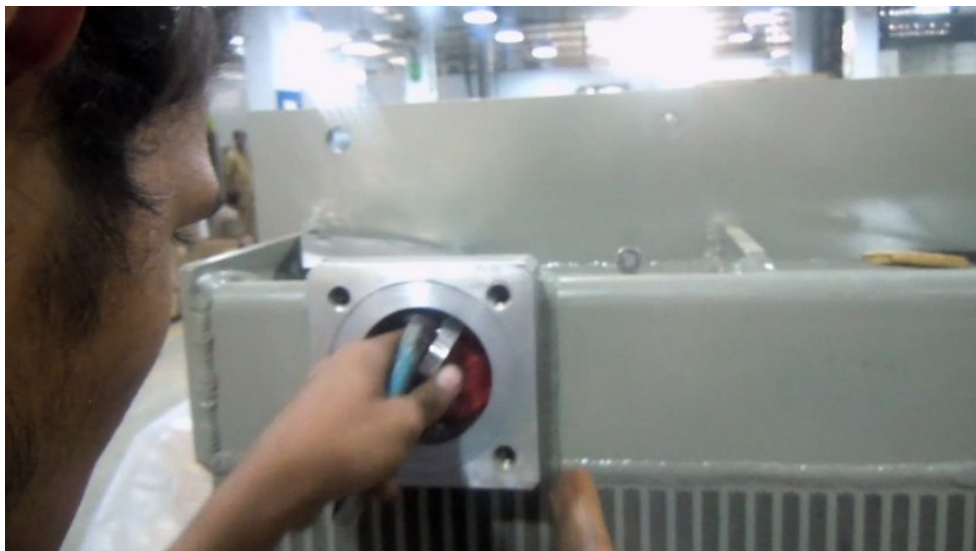
## **ANNEXURE**

### **STEP BY STEP PROCEDURE TO REMOVE ORIFICE RING FROM INLET AND OUTLET FLANGES OF TRANSFORMER/CONVERTOR OIL COOLER RADIATOR OF 3 PHASE CLW LOCO.**

STEP 1) Chip off weld tacks 4 Nos. using chisel as illustrated in the picture. First weaken the tag by chiseling out partially weld material on the flange. Then chip off complete tag. You may put small paper inside to collect all chips and prevent them from going inside the cooler.



Step 2) Remove the orifice ring by very light hammering such that it does not damage the flange.





Step 3) Remove again remaining welding material using chisel.



Step 4) Remove the burrs and finish by half round file and / or polish paper.



Precaution: 1) Flange should not get damaged while working with half round file and/or chisel. 2) Burrs should not enter in the oil passage. 3) Carefully take paper out from inside collecting all chips. No chips should fall inside while removing paper.