

**Government of India  
Ministry of Railways  
Research, Designs & Standards Organisation  
Manak Nagar, Lucknow - 226 011**

No. EL/3.2.30/CG

Dated : 24.6.1985

**MODIFICATION SHEET NO. WAM4/145**

**Introduction of loctite between the mating surface of cams  
and cam shaft and on grub screws and tapped holes of tap  
changer No. 32 of HBB make.**

**1. OBJECT**

Railways have reported a few cases of breakage of grub screws provided to hold the cams on cam shaft resulting in cam shifting from the roller contact surface leading to locomotive failure. Following changes were made by BBC from time to time on cam shaft assembly (51).

- i) Shaft design modified and material of cams changed from resin bonded paper to steel from 1968 onward upto tap changer No. 31281207. The cams were fixed to shaft by grub screws and check nuts, and spacers were eliminated.
- ii) Introduction of loctite on grub screws of cam shaft (without spacers) from tap changer No. 31080126.
- iii) In addition to item (ii), check nut of grub screw removed from tap changer No. 31281207.
- iv) In addition to item (iii) loctite introduced on square portion of mating surface of cam and cam shaft from tap changer No. 31183303.

**2. WORK TO BE CARRIED OUT :**

Cam shaft assembly (51) of tap changers supplied from 1968 (without spacers) is to be modified as per the following instructions.

- Unscrew the check nut (5115) if provided
  - Unscrew the grub screw (5114)
  - Displace the cams from position
  - Degree the grub screw, tapped hole for grub screw on cams and cam shaft, mating surface of cam shaft (5101) and cam (5105) with Trichlorethylene with the help of a brush.
  - Allow the Trichlorethylene to evaporate completely before applying loctite, to ensure that it sets.
  - Provide lotite "Blue" Code No. 0241, uniformly on threaded portion of grub screws, tapped holes, square mating surfaces of cam shaft and cams.
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- Cams are to be slid to its location and moved to and fro many times so that loctite gets filled properly in mating surfaces and entrapped air is released.
  - Adjust the cams to its proper location.
  - Fix and tighten the grub screw already provided with loctite.
  - Excess loctite to be wiped off.

- Cam shaft is to allow for setting of loctite for minimum 5 hours.

**IMPORTANT PRECAUTIONS FOR USE OF LOCITE :**

- Close the loctite bottles immediately after use.
- Store the loctite below 20<sup>0</sup> C.
- Never pour superfluous loctite back into the bottle.

**NOTE :**

- i) HBB have already incorporated res-i-glass tape in between the cams of cam shaft assembly and loctite application grub screw and cams from tap changer No. 31183303.
- ii) BBC will provide steel spacers alongwith shims in between the cams alongwith the provision of loctite on grub screws and between the mating surface of cam shaft and cams in future supply.
- iii) Refer for application of loctite item 3.3 of page 30 of BBC Overhaul Instructions No. HAMT 30074E on Rly. tap changer No.32/3.

**3. APPLICATION :**

Locos fitted with No. 32 tap changers of HBB make.

**4. MATERIAL REQUIRED :**

- Loctite - Supplier address : AEICORP PVT LTD.  
Mercantile Building,  
10 Lall Bazar Street,  
Calcutta 700 001

- Trichlorethylene

- Grub screws if found broken during opening

**5. MATERIAL SURPLUS :**

Check nut (if provided) 4 Nos..

**6. REFERENCE :**

Item 2.1.7.3 (page 4) of the Minutes of the meeting held between RDSO, Railways and HBB in July, 1984 circulated vide RDSO letter No. EL/3.2.30/CG dated 29.9.84.

**7. MODIFICATION DRAWING :**

Nil

**8. AGENCY OF IMPLEMENTATION :**

- Railways for existing locomotive.
- CLW for locomotives under production.
- HBB/BBC as per note given under item 2.

**9. DISTRIBUTION :**

As per list attached.

A handwritten signature in red ink, appearing to be 'S.S. Khurana', with a long horizontal stroke extending to the right.

**(S.S. Khurana)**  
for Director General/Elec.

Encl./ Nil