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

No. EL/3.2.5 Dated 24.05.1995

Modification Sheet No. RDSO/WAM4/191

1. Title :
Adoption of teflon ring in lieu of teflon band on the exposed surface of V-cone of Traction Motors.

2. Application :
On all Traction Motor.

3. Object :

Railways have reported few cases of the failure of Traction Motors due to the working out of teflon band thus resulting in heavy accumulation of carbon dust/dust on the exposed surface of v-cone and simultaneously causing heavy flash-over / burning of V-cone.

To overcome this problem, it is recommended to adopt teflon ring in place of teflon band on the exposed surface of V-cone of all type of Traction Motors.

4. Work to be carried out :

4.1 Remove the existing teflon band.

4.2 Remove the finishing varnish from commutator end face.

4.3 Check the condition of polyglass band of V-cone if its is found in damaged condition, then, do the polyglass banding as per laid down procedure.

4.4 Roughen the surface of the polyglass band on the exposed surface of v-cone with the help of emery cloth.

4.5 Remove the dust/carbon dust/foreign particles from the exposed surface of V-cone preferably by vacuum cleaner or dry compresses air.

4.6 measure insulation resistance. Its value should not be less than 100 Mega Ohms.

4.7 Do the impulse test.

4.8 In air and impulse test result are not OK, then do the additional cleaning and put the armature in oven for heating at 130 degree for 12 hrs. to remove the moisture etc.

4.9 Repeat clause 4.6 and 4.7 Check the results. If OK, then go ahead.

4.10 Remove teflon ring from the holder PVC tube and wipe the surface with cloth dipped in acceton. Teflon ring is shrinkable, so, always remove Teflon ring from the holder just before using.

4.11 Evenly apply the adhesive on the exposed surface of V-cone as well as on the teflon ring inner surface. Adhesive varnish HEW 502N should be used for Hitachi Traction Motors, while araldite 7-Eloxy-C560mixed just before use in equal proportion with hardener C-560 or equivalent adhesive should be used for the rest Traction Motors.

4.12 Teflon rong as per RDSO Drawing No.SK. EL. 4348 and SK. EL. 4350 should be used for TMMG 7.10, TAO 659 & MG 1580 and HS 15250 A respectively.

4.13 The thickness of teflon ring is not uniform on HS15250 A Hitachi TM. Therefore insert the teflon ring from thicker side as shown in RDSO drg. No. SKEL - 4350.

4.14 Push the teflon ring as per RDSO's drawing number SK. EL. 4348 and 4350 gently up to the commutator edge to make good contact. There should not be any gap between commutator edge and teflon ring.

4.15 Heat the teflon ring by dryer uniformly, then teflon ring will shrink and its completely.

4.16 Stop heating when the teflon ring shrinks completely around the v-cone polygall band. Wipe off the resin adhesive which has flown out.

4.17 Two or three layer of teflon film tape followed by two or three layer of fibre glass tape should be wound on the teflon ring.

4.18 Cure the whole unit armature at 130 $\pm$ 10^0 C for 12 hrs. in electric oven provided with suitable thermostat & pyrometer etc. Resin/adhesive will be cured in this condition.

4.19 Remove teflon film and fibre glass tapes.

4.20 Check both the edged of teflon ring along the circumference. There should not be any gap at both the edges of teflon ring. If any gap is noticed, then, apply adhesive/resin.

4.21 Clean the commutator end face and surface of teflon reing properly.

4.22 Apply finishing varnish on the commutator end face.

5. **Reference :** RDSO Drg. No. SKEL - 4348 and 4350

6. **Material Required :**

- Teflon Ring,
- Adhesive :-
  - i) HEW 502N for Hitachi Traction Motors only.
  - ii) Araldite 7-Eloxy - C 560 with Hardner C-560 or equivalent for rest Traction Motors.

7. **Sources of supply :**

Railways may procure the material from their existing suppliers.

8. **Schedule of Implementation :**

- For zonal railways - during overhaul/Repair
- Production units - On their regular production

9. **Agency of implementation:**

- All Traction Motor Shops/POH Shops of Zonal Railways.
- CLW/CRJ, BHEL/Bhopal & Crompton Greaves Ltd.
- KEC, Bangalore.

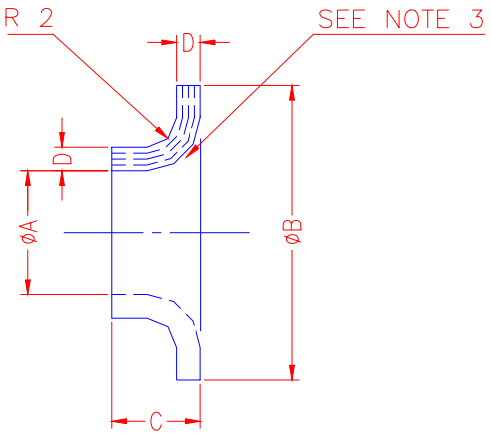
9. **Distribution :**

As per enclosed list.

Rajiv Kumar

(R. K. Kulshrestha)
for Director General/Electrical

Encl : As above



TYPE OF MOTORS \ DIM.	A	B	C	D
MG–710	370/370.5	382	60	2
MG–1580	612/612.5	627	40	3
TAO–659	352±0.5	358±0.5	35	2

NOTE:–

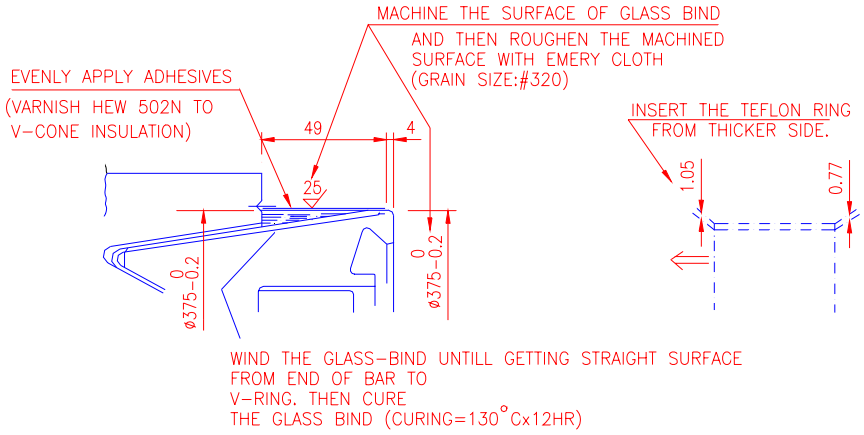
1. ALL DIMENSIONS ARE IN mm.
2. MATERIAL– POLY TETRA FLORO ETHYLENE (TEFLON).
3. THE INNER SURFACE OF THE BUSH WILL BE UNIFORMLY SODIUM ETCHED FOR BONDING IT WITH EPOXY COMPOUND.

REF:–	SCALE:– NTS	APPROVED BY:– Rajiv Kumar FOR D.G.

PTFE BUSH FOR TRACTION MOTORS

RDSO.ELEC.DTE.	SKEL. 4348

Dt.	9.5.95
D	S.CHANDRA
C	H.N.S. DHILLON



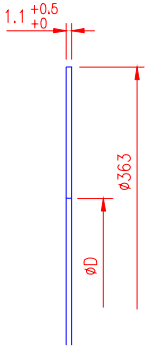


FIG.1

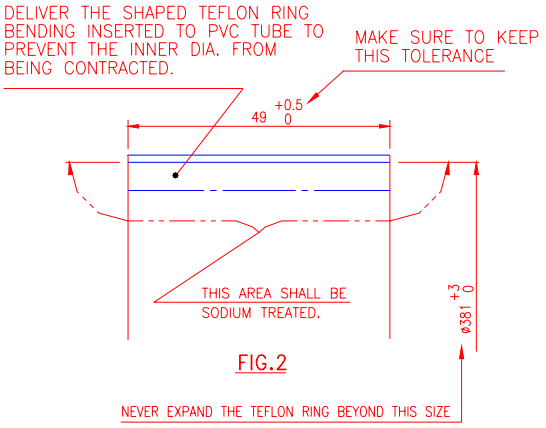
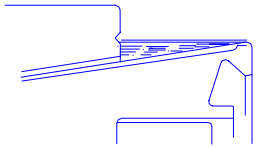


FIG.2



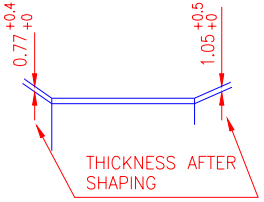


FIG.3

INSTRUCTIONS TO PROCESS THE TEFLON RING (BY MANUFACTURER)

1. EXPAND A CIRCULAR SHAPED TEFLON RING (BY MANUFACTURER) SHOWN IN FIG.1 MATERIAL DRAWING (* SHALL BE DETERMINED BY THE MANUFACTURER) TO THE SHAPE SHOWN IN FIG.2. DELIVER IT AS BEING INSERTED TO PVC TUBE.
2. THROUGHLY ROUGHEN THE INNER CIRCUMFERENCE OF TEFLON RING AND SODIUM TREAT IT.
3. SODIUM TREATMENT SHALL BE APPLIED EVENLY. CARE SHALL BE TAKEN NOT TO HAVE GREASE OR DUST ON SODIUM TREATED SURFACE.
4. WHILE PACKING AND HANDLING, CARE SHALL BE TAKEN NOT TO DAMAGE ANY SURFACE OF TEFLON RING.
5. THE TEFLON RING SHALL BE STORED AND HANDLED WITH CARE NOT TO EXPOSE IT TO ULTRAVIOLET RAYS WHICH WILL DETERIORATE THE SODIUM TREATED SURFACE.
6. SINCE THE PRODUCT IS SHAPED FROM THE CIRCULAR SHAPE SHOWN IN FIG.1 TO THE ONE IN FIG.2 THICKNESS OF THE TEFLON RING VARIES ON BOTH SIDES. MAKE SURE TO ATTAIN TARGET SIZES IN FIG.3.

Dt.	15.5.95
D	S.CHANDRA
G	H.N.S. DHILLON

REF:- WH44/191	SCALE:- NTS	APPROVED BY:- Rajan Kumar FOR D.G.

TEFLON RING FOR TRACTION MOTORS

RDSO.ELEC.DTE. SKEL-4350