




OUTER SHEET

SHEET NO. 1/4

SPECIFICATION FOR
LEAD WIRES
(12 ITEMS) IN THE FORM OF SETS FOR
HITACHI TRACTION MOTOR TYPE-HS 15250 A

SEE SHEET NO-2

 SEE/TMD.	 CHKD.	<p>SPECIFICATION FOR LEAD WIRES (12 ITEMS) IN THE FORM OF SETS FOR HITACHI TRACTION MOTOR TYPE-HS 15250A</p>	 DY.CEE/TMD.	<p>CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA. NO.4 TMS.095-028 DATE: 23.9.2004</p>
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Signature Not
Verified

Digitally signed by
BYOMKES MANDAL

Date: 2021.11.08

16:42:56+05'30'

Reason: IRRPS-CRIS
Location: K V Suhas

File No: HEP-TXM20500(51)/42/2026-HEP-TXM20500 (Computer No. 300726)

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4 TMS 095-028

SHEET NO.2/4

[illegible]

SEE SHEETNO-3

1. FORWARD :

This specification covers the supply the Lead wires in "Sets" for Hitachi Traction Motor , Type-HS 15250A in Chittaranjan Locomotive Works.

2. SUPPLY CONDITION :

Lead wires are to be supplied in "SETS" against stocking C&D No.7119/5550/000.

2.1 Tenderers shall quote their rates in sets for the following 12(Twelve) Lead wires.

SL	Covering, C & D No.	Description/Drg.No.	Qty/Sets
1.	5580/100	Lead wire (A) (150 mm ²) to Drg.No.3TWD.095.067	1 No.
2.	5580/200	Lead wire (AA) (150 mm ²) to Drg.No.3TWD.095.068	1 No.
3.	5580/300	Lead wire (150 mm ²) to Drg.No.3TWD.095.069	1 No.
4.	5580/400	Lead wire (150 mm ²) to Drg.No.3TWD.095.070	2 Nos.
5.	5580/500	Lead wire (150 mm ²) to Drg.No.3TWD.095.071	2 Nos.
6.	5580/600	Lead wire (150 mm ²) to Drg.No.3TWD.095.072	1 No.
7.	5580/700	Lead wire (F) (150 mm ²) to Drg.No.3TWD.095.073	1 No.
8.	5580/800	Lead wire (FF) (150 mm ²) to Drg.No.3TWD.095.074	1 No.
9.	5565/250	Lead wire (80 mm ²) to Drg.No.3TWD.095.075	1 No.
10.	5565/300	Lead wire (80 mm ²) to Drg.No.3TWD.095.076	1 No.
11.	5565/350	Lead wire (80 mm ²) to Drg.No.3TWD.095.077	1 No.
12.	5565/650	Lead wire (80 mm ²) to Drg.No.3TWD.095.078	1 No.

NB : The Lead wires shall be confirmed to the latest revision of the respective drawings.

3. INSPECTION CLAUSE :**3.1 METALLURGICAL INSPECTION:**

Metallurgical inspection shall be conducted by Govt. approved independent test laboratories before offering prototype samples and also before starting bulk manufacture and the test results are to be submitted to the Inspecting authority at the time of inspection . The cost of such test shall be borne by the supplier.

3.2 PROTOTYPE SAMPLE INSPECTION :

One set of prototype sample shall be submitted by the successful tenderers to DY.CEE/TMD/CLW/Chittaranjan, for approval before starting bulk manufacturing and after getting approval of metallurgical inspection report from Govt. approved independent test laboratories.

SEE/TMD	SPECIFICATION FOR LEAD WIRES (12 ITEMS) IN THE FORM OF SETS FOR HITACHI TRACTION TOR TYPE : HS15250A		
CHECKED			
DRAWN			
		DY.CEE/TMD	See Sheet - 4 CHITTARANJAN LOCOMOTIVE WORKS, WEST BENGAL, INDIA No.4TMS.095.028 DATED : 23.9.2004

4. MARKING AND PACKING :

- 4.1 The identification mark of each firm has to be given at the place located in the drawing of Copper tube connectors, Solderless terminal and Connectors .
- 4.2 It is to be ensured that each set of Lead wires is to be separately tagged on both ends and packed by durable polythene packet separately and finally to be kept in wooden box.

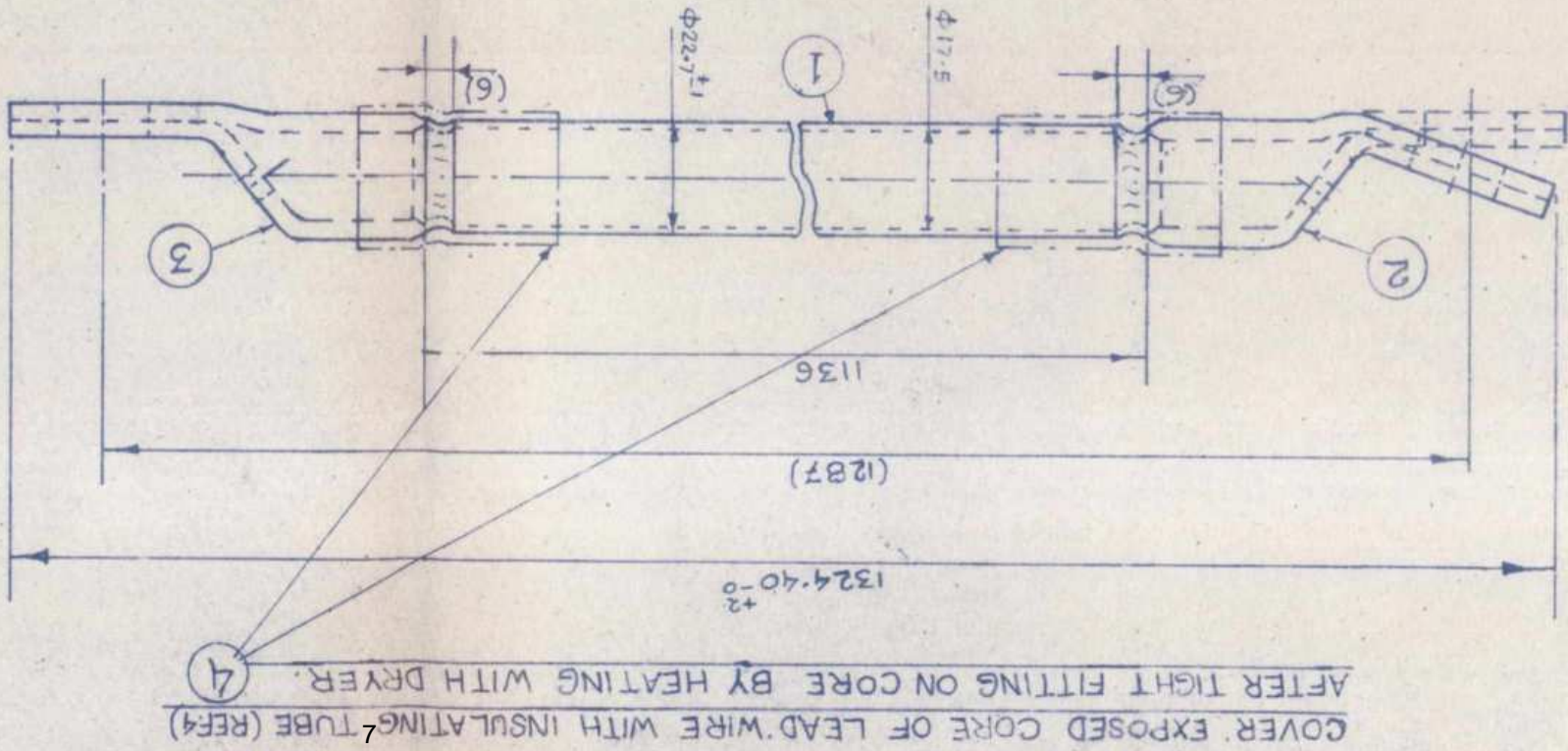
Ten sets of Lead wire shall be properly packed in one wooden box to avoid damage during handling and transportation. Two cards indicating description of materials against C&D No.7119/5550/000, the Description, Drg.No. of individual item and Qty. duly signed by CLW Inspector shall be tagged for one inside and other outside the wooden box.

5. INFORMATION TO BE FURNISHED BY THE TENDERS IN THEIR OFFER :

- A list of plant and machinery available with them for manufacture, testing and inspection.
- Deviation, if any shall clearly be brought out indicating advantages in detail result of such deviation from drawing/specification an offer without any justification regarding deviation is liable to rejected.
- Tenders along with their quotation shall furnish documents regarding performance of their past supplies of such materials to Govt. organization/Public sector undertaking.

SEE/TMD			
MSDai CHECKED	SPECIFICATION FOR LEAD WIRES (12 ITEMS) IN THE FORM OF SETS FOR HITACHI TRACTION TOR TYPE : HS15250A	DY.CEE/TMD	Sheet End. CHITTARANJAN LOCOMOTIVE WORKS, WEST BENGAL, INDIA
DRAWN			No.4TMS.095.028 DATED : 23.9.2004

ALT NO	AUTHORITY	DESCRIPTION	INITIAL	DATE



NOTES:-

1. CABLE (REF.1) SHALL BE 150 mm² FLAME-RETARDANT FLUONLEX INSULATED WIRE (WFM-2) TO HITACHI SPECN. NO. E0028.

2. SOLDERLESS TERMINAL (REF.2 AND 3) SHALL BE CRIMPED WITH CABLE (REF.1), PREFERABLY BY W-TYPE CRIMPING TOOL, TO WITHSTAND THE CRIMPING TEST/PULL-OUT STRENGTH TEST SPECIFIED IN NOTE-3.

3. CRIMPING TEST/PULL-OUT STRENGTH TEST OF SOLDERLESS TERMINAL (REF.2 AND 3):-

(i) THE COMPRESSION JOINT OF CONDUCTOR WITH SOLDERLESS TERMINAL, (REF.2 & 3) WHEN TESTED IN ACCORDANCE WITH IIS:C2805-1991 TO ESTABLISH GOOD ELECT./MECH. CONTACT, SHALL WITHSTAND THE PULL-OFF LOAD 418 KGS. THE JOINT SHALL BE JUDGED TO HAVE FAILED WHEN CONDUCTOR STARTS SLIPPING OUT OF THE SOLDERLESS TERMINAL (REF.2 AND 3) END. THE LOAD READING AT WHICH SLIPPING OR YIELD OF CONDUCTOR COMMENCES CAN BE RECORDED.

(ii) CRIMP JOINT RESISTANCE SHALL NOT EXCEED 5 MΩ.

CD NO.	REF NO.	PART DRG. NO.	NAME	SIGN	DATE	DESCRIPTION	QTY/HTM	RAW MATL	SPECN	WITN
5580/104	4	-	INSULATING TUBE	2 PCS	130 mm	ST-1700G(20)	A0251	-	-	-
5580/103	3	4TWD.095.081	SOLDERLESS TERMINAL	1 NO.	-	-	-	-	-	-
5580/102	2	4TWD.095.083	SOLDERLESS TERMINAL	1 NO.	-	-	-	-	-	-
5580/101	1	-	CABLE - 150 mm ²	1 NO.	1215 mm	E0028	-	-	-	-
5580/100	-	-	LEAD WIRE (A)	1 NO.	-	-	-	-	-	-
TRACTION MOTOR										
HS: 15250 A										
CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA										

APPROVED-
NAME H RAO
DATE 27-01-98

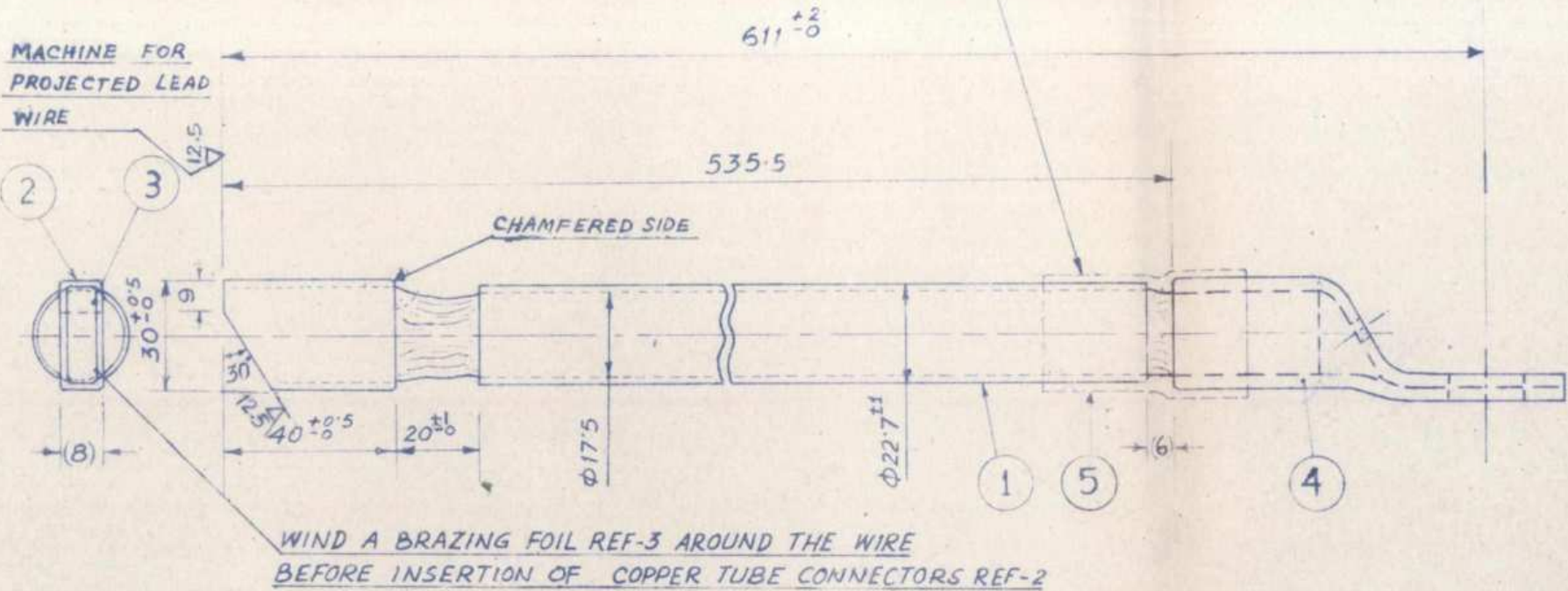
LEAD WIRE (A)

(150 mm²)

CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA

COVER EXPOSED CORE OF LEAD WIRE WITH INSULATING TUBE REF-5
AFTER TIGHT FITTING ON CORE BY HEATING WITH DRYER

ALT. NO.	AUTHORITY	DESCRIPTION	INITIAL	DATE
1.	DY.CEE/TMD	AGAINST REF.3 THICKNESS & GRADE OF MATERIAL CHANGED REF. NOTING OF DY.CEE/TMD ON JOINT NOTE NO. EL/ITM/2013 DATED. 20. 06. 2002	He	28.06.2002

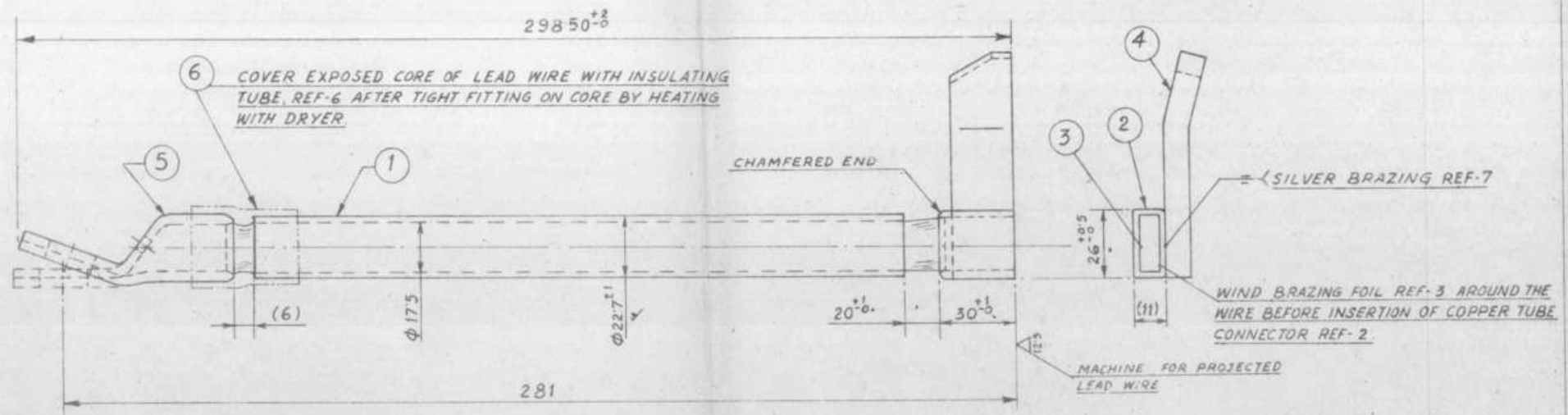


NOTES:-

- 1. CABLE REF-1 SHALL BE 150mm² FLAME RETARDANT FLUONLEX INSULATED WIRE (WFM-2) TO HITACHI SPECN. NO. E0028.
- 2. COPPER TUBE CONNECTOR (REF-2) AND SOLDERLESS TERMINAL (REF-4) SHALL BE CRIMPED WITH CABLE (REF-1), PREFERABLY BY W-TYPE CRIMPING TOOL FOR REF-4, TO WITHSTAND THE CRIMPING TEST/PULL-OUT STRENGTH TEST SPECIFIED IN NOTE-3.
- 3. CRIMPING TEST/PULL-OUT STRENGTH TEST OF COPPER TUBE CONNECTOR (REF-2)/SOLDERLESS TERMINAL (REF-4):-
 - i) THE COMPRESSION JOINT OF CONDUCTOR WITH COPPER TUBE CONNECTOR (REF-2)/SOLDERLESS TERMINAL (REF-4) WHEN TESTED IN ACCORDANCE WITH JIS: C 2805-1991 TO ESTABLISH GOOD ELECT./MECH. CONTACT SHALL WITHSTAND THE PULL OFF LOAD 418 KG. THE JOINT SHALL BE JUDGED TO HAVE FAILED WHEN CONDUCTOR STARTS SLIPPING OUT OF THE COPPER TUBE CONNECTOR (REF-2) AND SOLDERLESS TERMINAL (REF-4) END. THE LOAD READING AT WHICH SLIPPING OR YIELD OF CONDUCTOR COMMENCES CAN BE RECORDED.
 - ii) CRIMP- JOINT RESISTANCE SHALL NOT EXCEED 5 mΩ.

5580/205	5.	—	INSULATING TUBE	1 NOS.	65 mm	A0251-ST-170 DG (2.0)	—
5580/204	4.	4TWD.095-081	SOLDERLESS TERMINAL	1 NO.	—	—	—
5580/203	3.	—	BRAZING FOIL 40x70x0.1mm THK.	1 NO.	—	IS:292775 GR. BACu-5 Ag-16A	—
5580/202	2.	4TWD.095-080, REF-4	COPPER TUBE CONNECTOR	1 NO.	—	—	—
5580/201	1.	—	CABLE - 150 mm ²	1 NO.	585 mm	E0028	—
5580/200	—	—	LEAD WIRE (AA)	—	—	—	—
CE'D. No	REF. NO.	PART DRG NO	DESCRIPTION	QTY./HTM.	RAW MATL	SPECN.	WT./HTM.
DGN.	NAME	SIGN	DATE	HITACHI TRACTION MOTOR HS-15250A.			
DRN.	U.K. PISHAR	18/10/98	05.1.98	CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA			
TRD.				LEAD WIRE (AA)			
CKD	M.S. PAI	14.1.98		(150 mm ²)			
COMP.				APPROVED - H. RAO			
SCALE: N.T.S.				NAME - H. RAO			
REF: 105813-670, ALT D				DATE 27-01-98			
				No. 3TWD.095-068			
				ALTERATION			

ALT. NO.	AUTHORITY	DESCRIPTION	INITIAL	DATE
1.	DYCEL/TMD	AGAINST REF.3 THICKNESS AND GRADE OF MATERIAL CHANGED REF NOTING OF DYCEL/TMD ON JOINT NOTE NO. EL/ITM/2013 dt. 20.6.2002	HB	28.06.2002

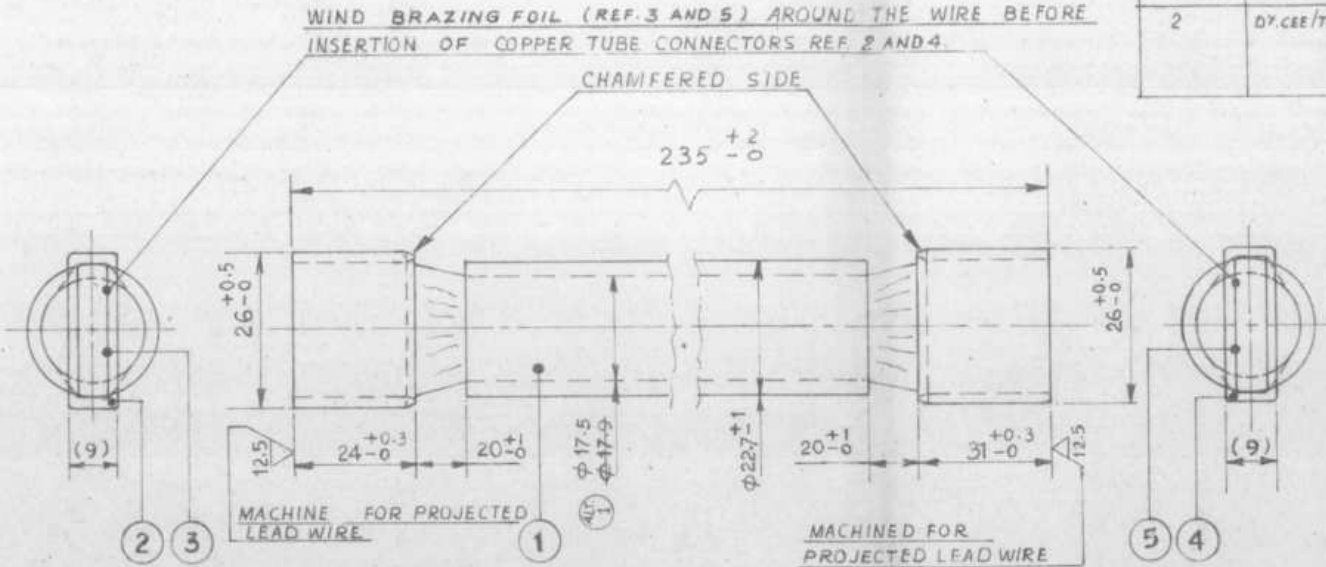


NOTES:-

- CABLE REF-1 SHALL BE 150 mm² FLAME RETARDANT FLUONLEX INSULATED WIRE TO HITACHI SPECN. NO. E0028.
- COPPER TUBE CONNECTOR (REF-2) AND SOLDERLESS TERMINAL (REF-5) SHALL BE CRIMPED WITH CABLE (REF-1), PREFERABLY BY W-TYPE CRIMPING TOOL FOR REF-5, TO WITHSTAND THE CRIMPING TEST/PULL-OUT STRENGTH TEST SPECIFIED IN NOTE-3.
- CRIMPING TEST/PULL-OUT STRENGTH TEST OF COPPER TUBE CONNECTOR (REF-2)/SOLDERLESS TERMINAL (REF-5):-
 - THE COMPRESSION JOINT OF CONDUCTOR WITH COPPER TUBE CONNECTOR (REF-2)/SOLDERLESS TERMINAL (REF-5) WHEN TESTED IN ACCORDANCE WITH JIS C2805-1991 TO ESTABLISH GOOD ELECT/MECH. CONTACT SHALL WITHSTAND THE PULL OFF LOAD 418 kg. ALT. THE JOINT SHALL BE JUDGED TO HAVE FAILED WHEN THE CONDUCTOR STARTS SLIPPING OUT OF THE COPPER TUBE CONNECTOR (REF-2) AND SOLDERLESS TERMINAL (REF-5). END THE LOAD READING AT WHICH SLIPPING OR YIELD OF CONDUCTOR COMMENCES CAN BE RECORDED.
 - CRIMP JOINT RESISTANCE SHALL NOT EXCEED 5 $\mu\Omega$.

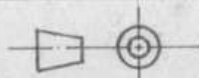

5580/307	7	-	BRAZING FOIL 25x26x0.8mm THK	1 NO.		IS:2927-75 OR BACu/P-9	5 Gms.
5580/306	6	-	INSULATING TUBE	1 NO.	65 mm	A0251 ST170-D6 (2.0)	-
5580/304	5	4TWD.095-083	SOLDERLESS TERMINAL	1 NO.	-	-	-
5580/303	4	4TWD.095-015	CONNECTOR	1 NO.	-	-	-
5580/305	3	-	BRAZING FOIL 33x70x0.1mm THK	1 NO.		IS:2927-75 OR BACu/P-9	2.4 Gms.
5580/302	2	4TWD.095-080, REF-2	COPPER TUBE CONNECTOR	1 NO.	-	-	-
5580/301	1	-	CABLE - 150 mm ²	1 NO.	250 mm	E0028	-
5580/300	-	-	LEAD WIRE	1 NO.	-	-	-
CD NO	REF. NO.	PART DRG. NO.	DESCRIPTION	QTY/HTM	RAW MATL	SPECN	WT/HTM
DGN	NAME	SIGN.	DATE	HITACHI TRACTION MOTOR HS-15250A			
DRN	U.K. SUSHAR		08.1.98	CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA			
TRD				LEAD WIRE (150 mm ²)			
CKD	M. S. PAL	NAGAN	14.1.98	APPROVED.			
COMD				3TWD.095. 69			

ALT. NO.	AUTHORITY	DESCRIPTION	INITIAL	DATE
1	DY.CEE/TMD.	DIMENSION $\phi 17.5$ CORRECTED TO $\phi 17.5$. REF: LETTER NO. EL/TM/2013, DATED: 21-9-99.	Leigh	14-10-99.
2	DY.CEE/TMD	AGAINST REF.3 AND 5 THICKNESS AND GRADE OF MATERIAL CHANGED. REF. NOTING OF DY.CEE/TMD ON JOINT NOTE NO. EL/TM/2013#20 $\frac{5}{82}$	He	28.06.2002

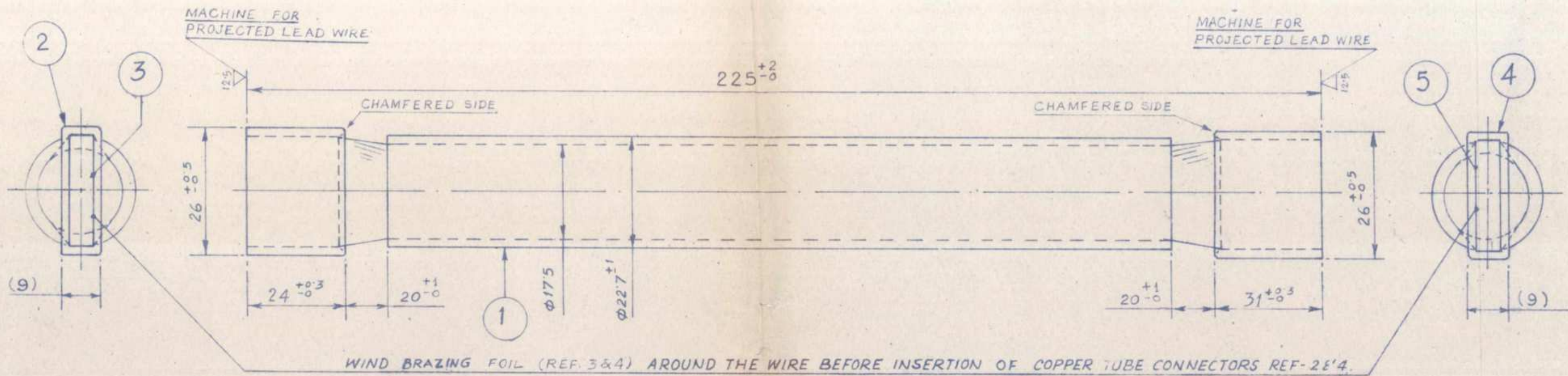


NOTES:-

1. CABLE (REF.1) SHALL BE 150mm² FLAME RETARDANT FLUONLEX INSULATED WIRE TO HITACHI SPECN. NO. E0028.
2. COPPER TUBE CONNECTOR (REF.2 AND 4) SHALL BE CRIMPED WITH CABLE (REF.1) TO WITHSTAND THE CRIMPING TEST/PULL-OUT STRENGTH TEST SPECIFIED IN NOTE-3.
3. CRIMPING TEST/PULL OUT STRENGTH TEST OF COPPER TUBE CONNECTOR (REF.2 AND 4)
- i) THE COMPRESSION JOINT OF CONDUCTOR WITH COPPER TUBE CONNECTOR (REF.2 AND 4) WHEN TESTED IN ACCORDANCE WITH JIS:C2805-1991 TO ESTABLISH GOOD ELECT/MECH. CONTACT SHALL WITHSTAND PULL OF LOAD 418 KG. THE JOINT SHALL BE JUDGED TO HAVE FAILED WHEN CONDUCTOR STARTS SLIPPING OUT OF THE COPPER TUBE CONNECTOR (REF.2 AND 4) END. THE LOAD READING AT WHICH SLIPPING OR YIELD OF CONDUCTOR COMMENCES CAN BE RECORDED.
- ii) CRIMP JOINT RESISTANCE SHALL NOT EXCEED 5 $\mu\Omega$.

ALT. 2	5580/ 405	5	—	BRAZING FOIL SIZE 31x60x0.2 mm THICK	2 NOS	—	IS: 2927:75 Gr. Ba Cu P-5 Ag-16A	8.2gms	Ag-16A
SH 40 2	5580/ 404	4	4TWD.095.080 REF.3	COPPER TUBE CONNECTOR	2 NOS.	—	IS: 2927:75 Gr. Ba Cu P-5 Ag-16A	8.2gms	Ag-16A
	5580/ 403	3	—	BRAZING FOIL SIZE 24x60x0.12 mm THICK	2 NOS.	—	—	—	—
	5580/ 402	2	4TWD.095.080 REF.1	COPPER TUBE CONNECTOR	2 NOS.	—	—	—	—
104)	5580/ 401	1	—	CABLE - 150 mm ²	2 NOS	245mm EACH	E 0028	—	—
	5580/ 400	—	—	LEAD WIRE	2 NOS.	—	—	—	—
	CE'D NO	REF. NO.	PART	DRG. NO.	DESCRIPTION	QTY/HTM	RAW. MATL	SPECN.	WT/HTM
		NAME	SIGN.	DATE	TRACTION MOTOR H5:15250A	CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA			
	DGN.				LEAD WIRE (150 mm ²)			2	
	DRN.	B.K.BISWAS	9.12.97						
	TRD.								
	CKD.	M.S.PAL	14.1.99						
	COMP.								
	SCALE:- N.T.S.					APPROVED - 			
	REF:- 105 808 428 ALT.C					NAME- H.RAO			
						DATE 27-01-98			
						NO. 3 TWD.095.070	ALTERATION		

ALT. NO.	AUTHORITY	DESCRIPTION	INITIAL	DATE
1	DY.CEE/TMD	AGAINST REF 3 AND 5, THICKNESS AND GRADE OF MATERIAL CHANGED. REF. NOTING OF DY.CEE/TMD ON JOINT NOTE NO. ELITM/2013 DT. 20.06.2002	He	28.06.2002

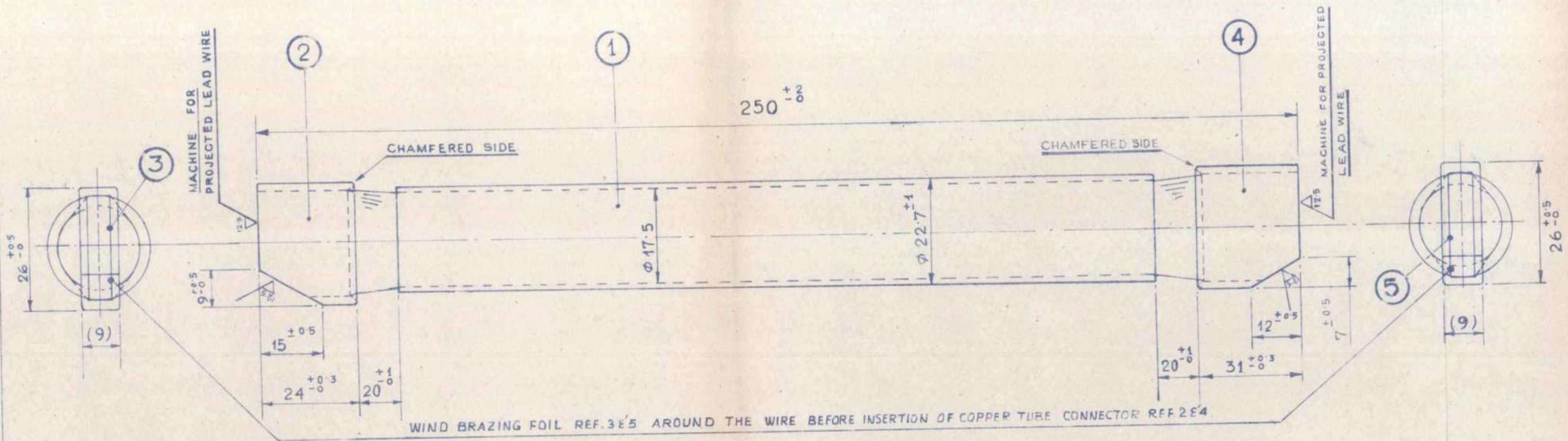


NOTES:-

- CABLE (REF-1) SHALL BE 150 mm² FLAME RETARDANT FLUONLEX INSULATED WIRE TO HITACHI SPECN. NO. E0028.
- COPPER TUBE CONNECTOR (REF. 2 AND 4) SHALL BE CRIMPED WITH CABLE (REF-1), TO WITHSTAND THE CRIMPING TEST/ PULL-OUT STRENGTH TEST SPECIFIED IN NOTE-3.
- CRIMPING TEST/PULL-OUT STRENGTH TEST OF COPPER TUBE CONNECTOR (REF. 2 AND 4):
 - THE COMPRESSION JOINT OF CONDUCTOR WITH COPPER TUBE CONNECTOR (REF. 2 AND 4), WHEN TESTED IN ACCORDANCE WITH JIS: C 2805-1991 TO ESTABLISH GOOD ELECT/MECH. CONTACT SHALL WITHSTAND THE PULL OFF LOAD 418 KGS. THE JOINT SHALL BE JUDGED TO HAVE FAILED WHEN CONDUCTOR STARTS SLIPPING OUT OF THE COPPER TUBE CONNECTOR (REF. 2 AND 4) END. THE LOAD READING AT WHICH SLIPPING OR YIELD OF CONDUCTOR COMMENCES CAN BE RECORDED.
 - CRIMP JOINT RESISTANCE SHALL NOT EXCEED 5 μΩ.

5580/505	5	—	BRAZING FOIL 0.1mm THICK SIZE: 31 X 60 X 0.42mm	2 NOS.	—	IS: 2927'75 GR. BACu-P-5	8 Gms. Ag-16A
5580/504	4	4TWD.095.080 REF. 3	COPPER TUBE CONNECTOR	2 NOS.	—	—	—
5580/503	3	—	BRAZING FOIL 0.1mm THICK SIZE: 24 X 60 X 0.42mm	2 NOS.	—	IS: 2927'75 GR. BACu-P-5	6.2 Gms. Ag-16A
5580/502	2	4TWD.095.080 REF. 1	COPPER TUBE CONNECTOR	2 NOS.	—	—	—
5580/501	1	—	CABLE - 150 mm ²	2 NOS.	235mm EACH	E0028	—
5580/500	—	—	LEAD WIRE	2 NOS.	—	—	—
CE'D. No.	REF. NO.	PART DRG. No.	DESCRIPTION	QTY/HTM	RAW MATL.	SPECN.	WT./HTM
	NAME	SIGN.	DATE	TRACTION MOTOR HS: 15250A		CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA	
DGN.							
DRN.	U.K. BISWAS	31.12.97					
TRD.							
LEAD WIRE							

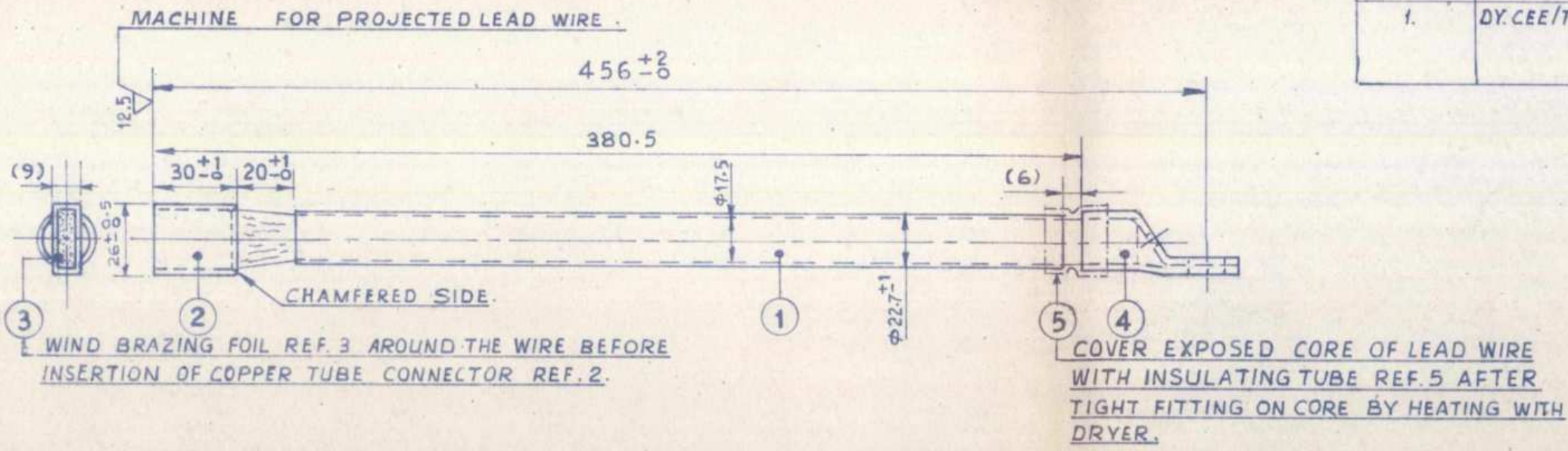
ALT. NO.	AUTHORITY	DESCRIPTION	INITIAL	DATE
1.	DY. CEE/TMD	AGAINST REF 3 AND 5, THICKNESS AND GRADE OF MATERIAL CHANGED REF. NOTING OF DY. CEE/TMD ON JOINT NOTE NO. EL/TM/2013 DT 20.06.2002	He	28.06.2002



NOTES:-

- CABLE REF. 1 SHALL BE 150 mm² FLAME RETARDANT FLUONLEX INSULATED WIRE TO HITACHI SPECN. NO. E 0028.
- COPPER TUBE CONNECTOR (REF. 2 AND 4) SHALL BE CRIMPED WITH CABLE (REF. 1) TO WITHSTAND THE CRIMPING TEST / PULL-OUT STRENGTH TEST SPECIFIED IN NOTE - 3.
- CRIMPING TEST / PULL-OUT STRENGTH TEST OF COPPER TUBE CONNECTOR (REF. 2 AND 4) -
(i) THE COMPRESSION JOINT OF CONDUCTOR WITH COPPER TUBE CONNECTOR (REF. 2 AND 4) WHEN TESTED IN ACCORDANCE WITH JIS: C 2805 - 1991 TO ESTABLISH GOOD ELECT./MECH. CONTACT SHALL WITHSTAND PULL OFF LOAD 418 KGS. THE JOINT SHALL BE JUDGED TO HAVE FAILED WHEN CONDUCTOR STARTS SLIPPING OUT OF THE COPPER TUBE CONNECTOR (REF. 2 AND 4) END. THE LOAD READING AT WHICH SLIPPING OR YIELD OF CONDUCTOR COMMENCES CAN BE RECORDED.
(ii) CRIMP JOINT RESISTANCE SHALL NOT EXCEED 5 $\mu\Omega$.

ALT. 1	5580/605	5	—	BRAZING FOIL 31X60X0.12 mm THK	1 NO.	—	IS: 2927-75	4 gms
ALT. 1	5580/604	4	4TWD.095.080 REF-3	COPPER TUBE CONNECTOR	1 NO.	—	—	—
ALT. 1	5580/603	3	—	BRAZING FOIL 24X60X0.12 mm THK	1 NO.	—	IS: 2927-75	3.1 gms
	5580/602	2	4TWD.095.080 REF-1	COPPER TUBE CONNECTOR	1 NO.	—	—	—
	5580/601	1	—	CABLE - 150 mm ²	1 NO.	260 mm	E0028	—
	5580/600	—	—	LEAD WIRE	1 NO.	—	—	—
CE'D. NO.	REF. NO.	PART DRG. NO.		DESCRIPTION	QTY/HTM	RAW MATL.	SPECN.	WT/HTM
		NAME	SIGN	DATE	TRACTION MOTOR HS: 15250 A			
DGN.					LEAD WIRE (150 mm ²)			
DRN.	PK DUTTA			09.1.98				
TRD.								
CKD.	M. SPAL			14.1.98				
COMP.								
SCALE: N T S					CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA			
REF: 105 808-4300					APPROVED- NAME - H. RAO DATE - 27-01-98			
					NO 3TWD.095.072			



ALT. NO.	AUTHORITY	DESCRIPTION	INITIAL	DATE
1.	DY.CEE/TMD	AGAINST REF. 3 THICKNESS AND GRADE OF MATERIAL CHANGED JOINT REF. NOTING OF DY.CEE/TMD ON NOTE NO. EL/TH/2013 Dt 20.06.2002	Hle	28.6.2002

NOTES:-

- 1. CABLE REF.1 SHALL BE 150mm² FLAME RETARDANT FLUONLEX INSULATED WIRE TO HITACHI SPECN. NO. E0028.
- 2. COPPER TUBE CONNECTOR REF.2 AND SOLDERLESS TERMINAL REF.4 SHALL BE CRIMPED WITH REF.1. PREFERABLY BY W-TYPE CRIMPING TOOL FOR REF.4, TO WITHSTAND THE CRIMPING TEST/PULL-OUT STRENGTH TEST SPECIFIED IN NOTE - 3.
- 3. CRIMPING TEST/ PULL OUT STRENGTH TEST OF COPPER TUBE CONNECTOR (REF.2)/SOLDERLESS TERMINAL (REF.4):-
 - i) THE COMPRESSION JOINT OF CONDUCTOR WITH COPPER TUBE CONNECTOR (REF.2)/SOLDERLESS TERMINAL (REF.4) WHEN TESTED IN ACCORDANCE WITH JIS: C 2805-1991 TO ESTABLISH GOOD ELECT/MECH. CONTACT SHALL WITHSTAND THE PULL OFF LOAD 418 KG. THE JOINT SHALL BE JUDGED TO HAVE FAILED WHEN CONDUCTOR STARTS SLIPPING OUT OF THE COPPER TUBE CONNECTOR (REF.2) AND SOLDERLESS TERMINAL (REF.4) END. THE LOAD READING AT WHICH SLIPPING OR YIELD OF CONDUCTOR COMMENCES CAN BE RECORDED.
 - ii) CRIMP- JOINT RESISTANCE SHALL NOT EXCEED 5 μΩ.

5580/705	5	—	INSULATING TUBE	1 NO.	65 mm	A0251ST	—
5580/704	4	4TWD.095.081	SOLDERLESS TERMINAL	1 NO.	—	—	—
5580/703	3	—	BRAZING FOIL 0.1mm 30x70x0.12mm THICK.	1 NO.	—	IS:2927'75	2.4 Gr.BaCuAg 2ms.
5580/702	2	4TWD.095.080 REF. 2	COPPER TUBE CONNECTOR	1 NO.	—	—	Ag-16A
5580/701	1	—	CABLE 150 mm ²	1 NO.	425 mm	E0028	—
5580/700	—	—	LEAD WIRE	1 NO.	—	—	—

CED.NO.	REF.NO	PART DRG. NO.	DESCRIPTION	QTY./HTM	RAW MATL.	SPECN.	WT./HTM
	NAME	SIGN.	DATE	TRACTION MOTOR HS:15250A			
DGN.				CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA.			
DRN.	B.K.Biswas	12.1.98					
TRD.							
CKD.	M.S.PAL	14.1.98					
COMP.							

SCALE:- N.T.S.

REF:- 105 813-671 ALT.E

LEAD WIRE(F)

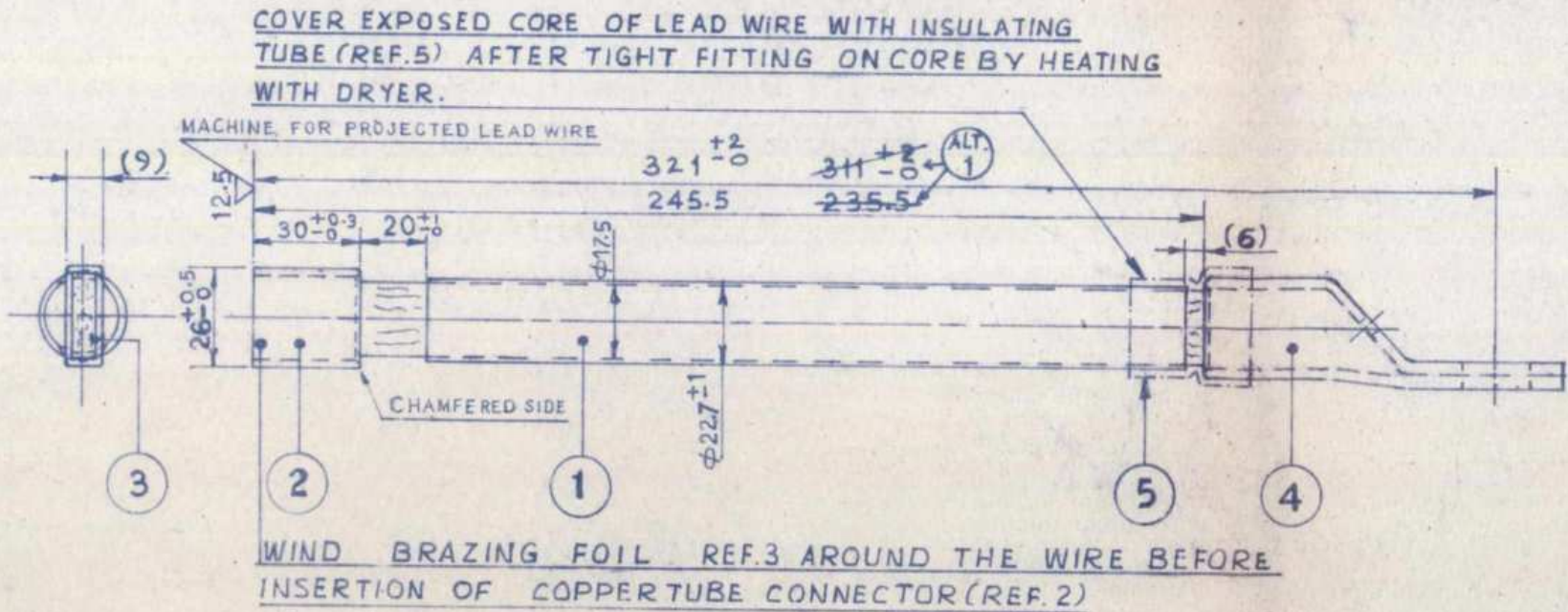
(150 mm²)

APPROVED- H. RAO

DATE-27-01-98

NO. 3TWD.095.073 ALTERATION

ALT No.	AUTHORITY	DESCRIPTION	INITIAL	DATE
1	DY.CEE/TMD	LENGTH OF LEAD WIRE INCREASED. REF. L.NO.EL/TM/4108dt.12.02.01	Ssc 142.wo	14-02-01
2	DY.CEE/TMD	AGAINST REF.3 THICKNESS AND GRADE OF MATERIAL CHANGED REF. NOTING OF DY.CEE/TMD ON JOINT NOTE NO EL/TM/2013 dt. 20.06.2002	He	28.06.2002



NOTES:-

- CABLE (REF.1) SHALL BE 150 mm² FLAME RETARDANT FLUONLEX INSULATED WIRE WFM2 TO HITACHI SPECN. NO.E0028.
- COPPER TUBE CONNECTOR (REF.2) AND SOLDERLESS TERMINAL (REF.4) SHALL BE CRIMPED WITH CABLE (REF.1), PREFERABLY BY W-TYPE CRIMPING TOOL FOR REF.4, TO WITHSTAND THE CRIMPING TEST/PULL-OUT STRENGTH TEST SPECIFIED IN NOTE-3.
- CRIMPING TEST/ PULL OUT STRENGTH TEST OF COPPER TUBE CONNECTOR (REF.2) AND SOLDERLESS TERMINAL (REF.4):-
 - THE COMPRESSION JOINT OF CONDUCTOR WITH COPPER TUBE CONNECTOR (REF.2)/ SOLDERLESS TERMINAL (REF.4), WHEN TESTED IN ACCORDANCE WITH JIS: C 2805-1991 TO ESTABLISH GOOD ELECT/MECH. CONTACT SHALL WITHSTAND PULL OFF LOAD 418 KGS. THE JOINT SHALL BE JUDGED TO HAVE FAILED WHEN CONDUCTOR STARTS SLIPPING OUT OF THE COPPER TUBE CONNECTOR (REF.2) AND SOLDERLESS TERMINAL (REF.4) END. THE LOAD READING AT WHICH SLIPPING OR YIELD OF CONDUCTOR COMMENCES CAN BE RECORDED.
 - CRIMP JOINT RESISTANCE SHALL NOT EXCEED 5 $\mu\Omega$.

5580/805	5	—	INSULATING TUBE	1 NO	65 mm	A0251 ST-170DG(2.0)	—
5580/804	4	4TWD.095.081	SOLDERLESS TERMINAL	1 NO.	—	—	—
5580/803	3	—	BRAZING FOIL 30X70X0.12 mm thk.	1 NO.	—	IS:2927'75 Gr.BaCuAg 9ms. Ag-16A	2.4
5580/802	2	4TWD.095.080 REF.2	COPPER TUBE CONNECTOR	1 NO.	—	—	—
5580/801	1	—	CABLE 150 mm ²	1 NO	295 mm 285 mm	E 0028	—
5580/800	—	—	LEAD WIRE (FF)	1 NO.	—	—	—
C & D No.	REF. No.	PART DRG. NO.	DESCRIPTION	QTY/HTM.	RAW MATL.	SPECN.	WT/ HTM
	NAME	SIGN	DATE	TRACTION MOTOR HS : 15250 A			
DGN.				LEAD WIRE (FF) (150 mm ²)			
DRN.	B. R. S. PAL	R. R. S.	08.1.98				
TRD.							
CRD.	M. S. PAL	M. S. PAL	14.1.98				
CHKD.							
SCALE: N.T.S.				CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA			
REF: 100.01.1.1				APPROVED - H. R. S. 14.1.98			
				NO 31WD.095.074			



BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL

QUALITY ASSURANCE PLAN FOR CABLE LEAD TO BHEL ORDERING SPECIFICATION/DRAWING AS PER PO

QUALITY PLAN NO. – QAP/QTMM/VENDORQAP/2024-25/CABLE LEAD DTD 24.07.2025 REV 00
Reference Document- PO DRAWING/SPECIFICATION

Page : 1 of 2

SL. NO	COMPONENT	CHARACTERISTICS	TYPE OF CHECK	QUANTAM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	INSPECTION AGENCY	REMARKS
				TP	TPIA					
1)	Raw material 1.Flexible cable 2.Terminal 3. Heat shrinkable Tube 4.Brazing filler	All tests as per specification	TC verification	100%	100%	As per PO drawing & specification	As per PO drawing & specification	MTC	BHEL/TPIA	TEST LAB NABL/EQUIVALENT ACCREDITED/SOURCE MILL /Supplier to get the raw material TC correlated with material TC. All Test certificate (type & routine) of copper wire, insulation & final cable to be reviewed as per RDSO specification mentioned in drawing by TPJA and submitted to BHEL OF each batch. Batch No. to be co- related with verified by TPJA
2)	Testing	Routine test	TC verification & test	100%	1% or min 2 nos cable	As per drawing & specification	As per drawing & Specification	Supplier record	BHEL/TPJA	100 % RR & 1% Witness

Prepared By

अमित सेन/AMIT SEN

परि. अभियंता/Sr. Engineer

क्यू.टी.एम. विभाग/QTMM Division

बी.एच.ई.एल.भोपाल/BHEL, Bhopal

Approved By

जसदीप सिंह राठौर/G.S. RATHORE

प्रबंधक/Manager

क्यू.टी.एम. विभाग/QTMM Division

बी.एच.ई.एल.भोपाल/BHEL, Bhopal



BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL
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QUALITY PLAN NO. – QAP/QTm/VENDORQAP/2024-25/CABLE LEAD DTD 24.07.2025 REV 00
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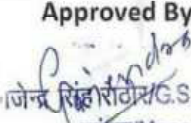
Page : 2 of 2

SL. NO	COMPONENT	CHARACTERISTICS	TYPE OF CHECK	QUANTAM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	INSPECTION AGENCY	REMARKS
				TP	TPIA					
3)	Dimension	Dimension	measurement	100%	5%	As per drawing & specification	As per drawing & Specification	Supplier record	BHEL/TPIA	100 % RR & 5% Witness
4)	Identification vendor name, PO & job serial no.	Verification	Visual	100%	10%	As per drawing & specification	As per drawing & Specification	Supplier record	BHEL/TPIA	
5)	Packing suitable for transit and storage	Visual	visual	100%	-	As per drawing & specification	As per drawing & specification			Packing shall be such that there should no damage during transit.

RR: RECORD REVIEW

TP: TASK PERFORMER

TPIA: THIRD PARTY INSPECTION AGENCY

<p>Prepared By</p> <p></p> <p>अमित सेन/AMIT SEN वरि. अभियंता/Sr. Engineer क्यू.टी.एम. विभाग/QTm Division बी.एच.ई.एल.भोपाल/BHEL, Bhopal</p>	<p>Approved By</p> <p></p> <p>जे.एस. राठोड़/G.S. RATHORE प्रबंधक/Manager क्यू.टी.एम. विभाग/QTm Division बी.एच.ई.एल.भोपाल/BHEL, Bhopal</p>
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