



TME 2011

PRODUCT STANDARD

TME DIVISION, BHOPAL

TM 88110

PAGE 01 OF 01

SPECIFICATION OF HEAT SHRINKABLE TUBE

1. Scope

This specification describes heat shrinkable silicon rubber tube Sourced from M/s Shinetsu Chemical Co. (Japan) make (ST-110DG) to be used for insulation of electrical machines.

2. Dimension

Dimension of this tube are given in Table 1.

Table 1

Symbol	Before of heat shrinkable	Outer dia. of covering (mm)	After of heat shrinkable	
	Inner dia. (mm)		Inner dia. (mm)	Thickness (mm)
ST-110DG	22	13 ~ 19	13	2.0 ^{+0.3} _{-0.4}
ST-110DG	28	17 ~ 24	14	1.30 ^{+0.3} _{-0.4}
ST-110DG	34	20 ~ 30	17	2.0 ^{+0.3} _{-0.4}

3. Quality

Quality of this tube is given in Table 2.

Table 2

No.	Item	Unit	Quality	Remarks
1.	Specific gravity (at 20°C)	-	1.23	
2.	Spring hardness	Hs	70 ⁺⁵ ₋₇	
3.	Tensile strength	kg/cm ²	≥ 50	
4.	Elongation	%	≥ 300	
5.	Tear strength	kg/cm	≥ 25	
6.	Volume resistivity	Ω-cm	≥ 2×10 ¹⁵	
7.	Breakdown voltage	kV/mm	≥ 25	
8.	Temperature of heat shrinkable	°C	≥ 120	

4. This specification is equivalent to CLW spec no A0251 Alt B

Revision Details: As per revision sheet

Distribution

Qty.

Approved

Sr.DGM/TME

Rev. No.

Date of Rev

Reaffirmed
Year

00

07.09.10

Feb 2022

TME
TXM
TNX
QMX


16

1
1
1
2Prepared
Shishu Pal
Mgr./TMEChecked
V.Rawtiya
DGM/TMEDt. of 1st
Issue

07.09.10

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	PRODUCT STANDARD TME DIVISION, BHOPAL				TM 10444																									
	TME 2011				PAGE 01 OF 01																									
	<div style="display: flex;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small; margin-right: 10px;"> COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED It must not be used directly or indirectly in any way detrimental to the interest of the company </div> <div> <p>1. <u>Scope</u></p> <p>This specification describes polyamide woven tape (NWT) (hereafter abbreviated as tape) to be used for insulation of electrical machines.</p> <p>2. <u>Classification, Dimension and Tolerance</u></p> <p>Classification, dimension and tolerance of this tape are given in Table 1.</p> <p style="text-align: center;">Table 1</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Symbol</th> <th rowspan="2">Nominal thickness (mm)</th> <th rowspan="2">Nominal width (mm)</th> <th rowspan="2">Nominal length (m)</th> <th colspan="3">Tolerance</th> </tr> <tr> <th>Thickness (mm)</th> <th>Width (mm)</th> <th>Length</th> </tr> </thead> <tbody> <tr> <td>NWT 0.13 x [a] - [b]</td> <td>0.13</td> <td>19 25</td> <td>30</td> <td>+0.025</td> <td>+1</td> <td>More than the nominal length</td> </tr> </tbody> </table> <p>Note : [a] : Width [b] : Length</p> <p>3. <u>Quality</u></p> <p>Quality of tape is given in Table 2.</p> <p style="text-align: center;">Table 2</p> <p style="text-align: right;">(Testing method IS:2130)</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Symbol</th> <th>Tensile strength (kg/19mm width)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>NWT-0.13x19</td> <td rowspan="2">≥ 30</td> <td></td> </tr> <tr> <td>NWT-0.13x25</td> <td></td> </tr> </tbody> </table> <p>Ⓐ 4. Shelf life 24 months at (20±15°C, 65±20% RH)</p> <p>5. This specification is equivalent to CLW specification no. A0248 Alt A.</p> </div> </div>						Symbol	Nominal thickness (mm)	Nominal width (mm)	Nominal length (m)	Tolerance			Thickness (mm)	Width (mm)	Length	NWT 0.13 x [a] - [b]	0.13	19 25	30	+0.025	+1	More than the nominal length	Symbol	Tensile strength (kg/19mm width)	Remarks	NWT-0.13x19	≥ 30		NWT-0.13x25
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Revision Details: As per revision sheet			Distribution	Qty.	Approved																									
Rev. No.	Date of Rev	Reaffirmed Year	TME	1	Sr.DGM/TME	Dt. of 1 st Issue																								
00	14.9.10	Feb 2022	TXM	1	Prepared B. Tamrakar Mgr./TME	Checked V.Rawtiya DGM/TME																								
			QMX	1																										



TME 2011

PRODUCT STANDARD

TME DIVISION, BHOPAL

TM 88076

PAGE 01 OF 01

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SPECIFICATION OF HEW502N TYPE SOLVENTLESS EPOXY RESIN

1. Scope

This specification describes HEW502N Type Solventless Epoxy Resin (hereafter abbreviated as HEW502N) to be used for adhesion of electrical machines.

2. Ingredient

- 2.1 HEW502N consists of main resin, hardener and accelerator. The composition and mixing ratio are given in Table 1.

Table 1

Composition	Symbol	Mixing ratio (wt)	Shelf life (months)
Main resin	HEW502NA	100	12
Hardener	HEW502NB	80	12
Accelerator	HEW502NC	2	12

- 2.2 As each composition will be sent separately, they have to be mixed before using.

3. Quality

- 3.1 Quality of HEW502N (liquid) which is mixed by Table 1 is given in Table 2 (liquid).

- 3.2 When HEW502N is cured at 130°C/12hrs, quality of HEW502N (solid) is given in Table 2 (solid).

Table 2

Liquid		Solid		
Viscosity (poise)	Gel-time (min)	Tensile strength (kg/cm ²)	Weight loss (%)	200°C/72hrs
Immediately after mixed at 25°C				
	after 30°C 4hrs	at 130°C	at 130°C	
10 - 30	≤ 150	≤ 30	≥ 100	≤ 3

Revision Details: As per revision sheet

Distribution

Qty.

Approved

Sr.DGM/TME

Rev. No.

Date of Rev

Reaffirmed Year

TME
TXM
TNX
QMX1
1
1
2Prepared
Shishu Pal
Mgr./TMEChecked
V.Rawtiya
DGM/TMEDt. of 1st
Issue

1989



BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL

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

QUALITY PLAN NO. – QAP/QTm/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
वरिष्ठ अभियंता/Sr. Engineer

Approved By

जसवंत सिंह राठौर/G.S. RATHORE
प्रबंधक/Manager
क्यू.टी.एम. विभाग/QTm Division
बी.एच.ई.एल., भोपाल/BHEL, Bhopal

19



BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL
QUALITY ASSURANCE PLAN FOR CABLE LEAD TO BHEL ORDERING SPECIFICATION/DRAWING AS PER PO

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

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

Prepared By

अमित सेन/AMIT SEN

वरि. अभियंता/Sr. Engineer

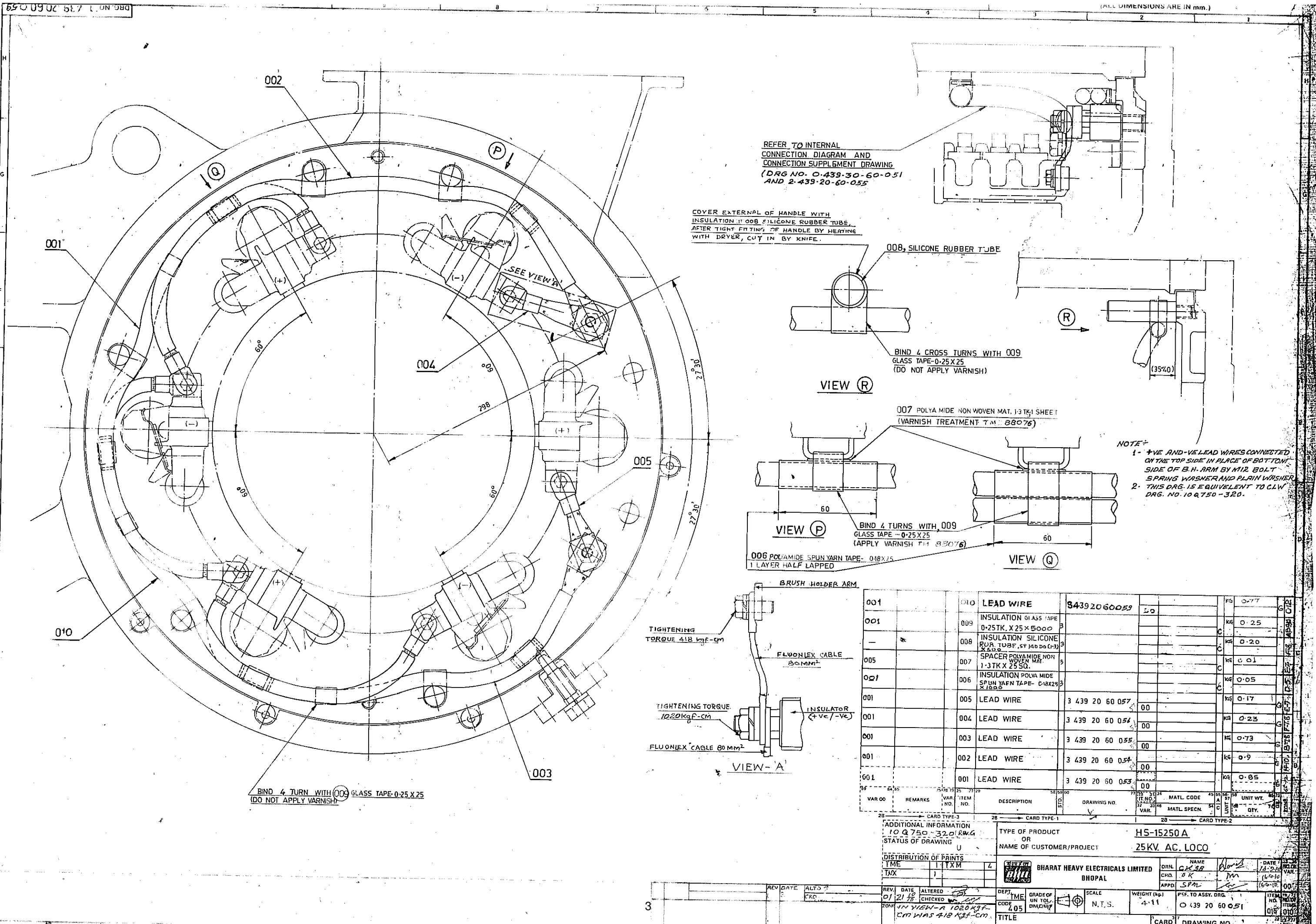
Approved By

जे.एस. राठोरी/G.S. RATHORE

प्रबंधक/Manager

क्यू.टी.एम. विभाग/QTm Division

बी.एच.ई.एल., भोपाल/ BHEL, Bhopal




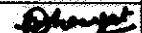



(ALL DIMENSIONS ARE IN mm)

Technical drawing of a long, thin mechanical component, likely a shaft or tube. The drawing shows the component with dimensions and callouts. The total length is 770 with a tolerance of $+2/-0$. The diameter is specified as $\phi 12.7$ and $\phi 17.9 \pm 0.9$. Callouts 1, 2, and 3 point to specific features. A dimension of 5 is shown at both ends.

COVER EXPOSED CORE OF LEAD WIRE WITH INSULATING TUBE. (IT.003) AFTER TIGHT FITTING ON CORE BY HEATING WITH DRYER.

1. CABLE (IT.001) SHALL BE 80mm² FLAME RETARDANT FLUONLEX INSULATED WIRE (WFM2) TO 1500V GRADE AS RDSO APPROVED HITACHI SPECN. NO. E0028 BY RDSO APPROVED PART-1 (REGULAR) VENDORS.
2. SOLDERLESS TERMINALS (IT.002) SHALL BE CRIMPED WITH CABLE (IT.001), 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 (IT.002),
 - i) THE COMPRESSION JOINT OF CONDUCTOR WITH SOLDERLESS TERMINAL (IT.002), WHEN TESTED IN ACCORDANCE WITH JIS:C2805-1991 TO ESTABLISH GOOD ELECT./MECH. CONTACT SHALL WITHSTAND THE PULL OFF LOAD 357 KGS. THE JOINT SHALL BE JUDGED TO HAVE FAILED WHEN CONDUCTOR STARTS SLIPPING OUT OF THE SOLDERLESS TERMINALS (IT.002) END. THE LOAD READING AT WHICH SLIPPING OR YIELD OF CONDUCTOR COMMENCES CAN BE RECORDED.
 - ii) CRIMP JOINT RESISTANCE SHALL NOT EXCEED 5μΩ.
4. THIS DRAWING IS SIMILAR TO CLW'S DRG. NO. 3.TWD.095.075, ALT.0

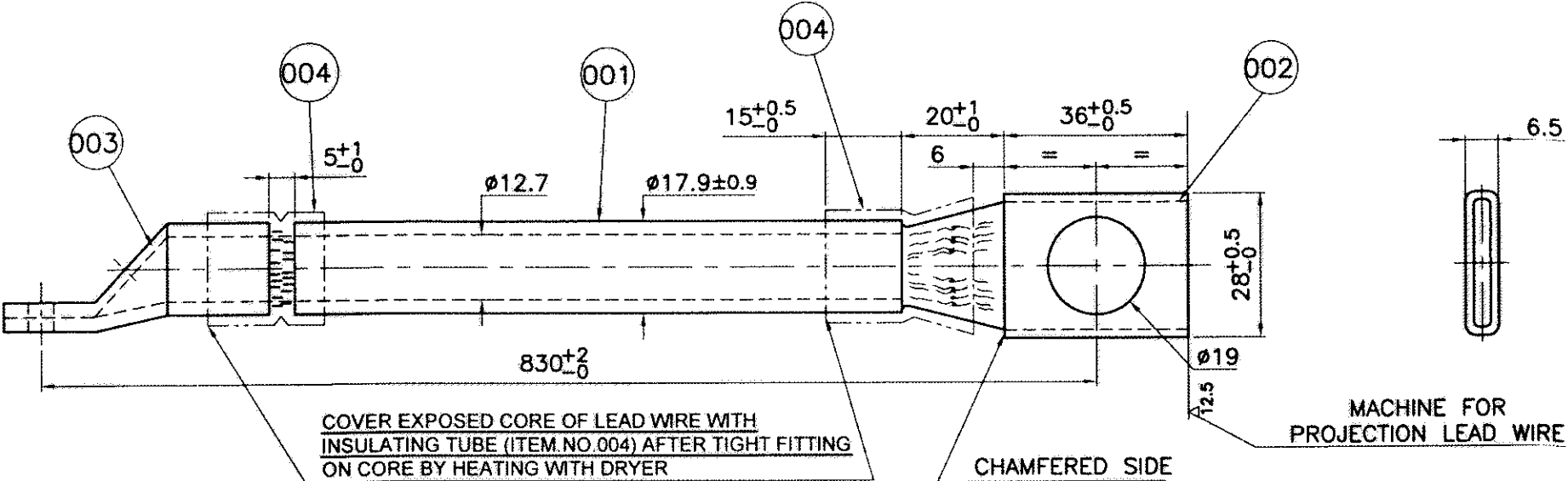
[illegible]

ADDITIONAL INFORMATION			TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT										TRACTION MOTOR HS:15250A			
STATUS OF DRAWING			<div>BHARAT HEAVY ELECTRICALS LTD BHOPAL</div>							- NAME	SIGN	DATE	NO. OF VAR.			
DISTRIBUTION OF PRINTS									DRN.	S.D.BHAGAT		20/09/10				
TME-1, TXM-3, TNX-1									CHD.	D.K.		20/09/10				
									APPD.	SPAL		20/09/10				
REV.	DATE	ALTERED	DEPT.	UNTOL. DIMS. GR.		SCALE	WEIGHT (K.G.)	REF. TO ASSY. DRG.		ITEM NO.	NO. OF ITEM					
		CHECKED	TME													
		APPROVED	CODE	405		1:5		1 439 20 60 053	001	001						
ZONE			TITLE					DRAWING NO.			REV.					
			LEAD WIRE (80 mm ²)					3 439 20 60 053			00					
								SHT. NO.	01	NO. OF SHT.	01					

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

34392060054
ORG. NO.



NOTES:-

- CABLE (ITEM NO. 001) SHALL BE 80mm² FLAME - RETARDANT FLUONLEX INSULATED WIRE (WFM2)1500V GRADE AS PER RDSO APPROVED HITACHI SPEC.NO. E 0028 BY RDSO APPROVED PART-1(REGULAR) VENDERS.
- COPPER TUBE CONNECTOR (ITEM NO. 002) AND SOLDERLESS TERMINAL (ITEM NO. - 003) SHALL BE CRIMPED WITH (ITEM NO. - 001) PREFERABLY BY W-TYPE CRIMPING TOOL FOR (ITEM NO. -003), TO WITHSTAND THE CRIMPING TEST/ PULL-OUT STRENGTH TEST SPECIFIED IN NOTE - 4.
- COPPER TUBE CONNECTOR (ITEM NO.- 002) TO BE TINNED IN TIN SOLDER BATH AFTER DRILLING AND DRESSING.
- CRIMPING TEST / PULLOUT STRENGTH TEST OF COPPER TUBE CONNECTOR (ITEM NO. - 002) & SOLDERLESS TERMINAL (ITEM NO. -003) :
 - THE COMPRESSION JOINT OF CONDUCTOR WITH COPPER TUBE CONNECTOR (ITEM NO. 002) / SOLDERLESS TERMINAL (ITEM NO.- 003) WHEN TESTED IN ACCORDANCE WITH JIS : C 2805-1991 TO ESTABLISH GOOD ELECT. / MECH. CONTACT SHALL WITHSTAND THE PULL OFF LOAD 357 KGS THE JOINT SHALL BE JUDGED TO HAVE FAILED WHEN CONDUCTOR STARTS SLIPPING OUT OF THE COPPER TUBE CONNECTOR (ITEM NO.-002) AND SOLDERLESS TERMINAL (ITEM NO. - 003) END. THE LOAD READING AT WHICH SLIPPING OR YIELD OF CONDUCTOR COMMENCES CAN BE RECORDED.
 - CRIMP JOINT RESISTANCE SHALL NOT EXCEED 5μΩ
- THIS DRG. IS EQUIVALENT TO CLW DRG. NO. 3TWD 095.076 (ALT.- 00)

		004	INSULATING TUBE			TM 88110	Kg		
		003	SOLDLESS TERMINAL	44393060053			Kg		
		002	COPPER TUBE CONNECTOR	44393060051			Kg		
		001	CABLE 80 mm ²			E0028	Kg		
VAR 00	REMARKS	VAR NO.	ITEM NO.	DESCRIPTION	STD.	DRAWING NO.	IT.NO.	MATL. CODE	UNIT WT.
							VAR	MATL. SPCN.	QTY.

ADDITIONAL INFORMATION 3 TWD.095.076		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT TRACTION MOTOR HS-15250 A	
STATUS OF DRAWING			
DISTRIBUTION OF PRINTS TME- 1 TXM- 3 TNX- 1			
REV.	DATE	ALTERED CHECKED APPD.	DEPT. T.M.E. CODE 405
		GRADE OF UN.TOL. 'M'	SCALE NTS
		WEIGHT(K.G.)	REF.TO ASSY.DRG. 14392060059
		DRAWING NO. 34392060054	
		REV. 00	
		SHT. NO. 01	NO. OF SH. 01

A3 SIZE

FIRST ANGLE PROJECTION

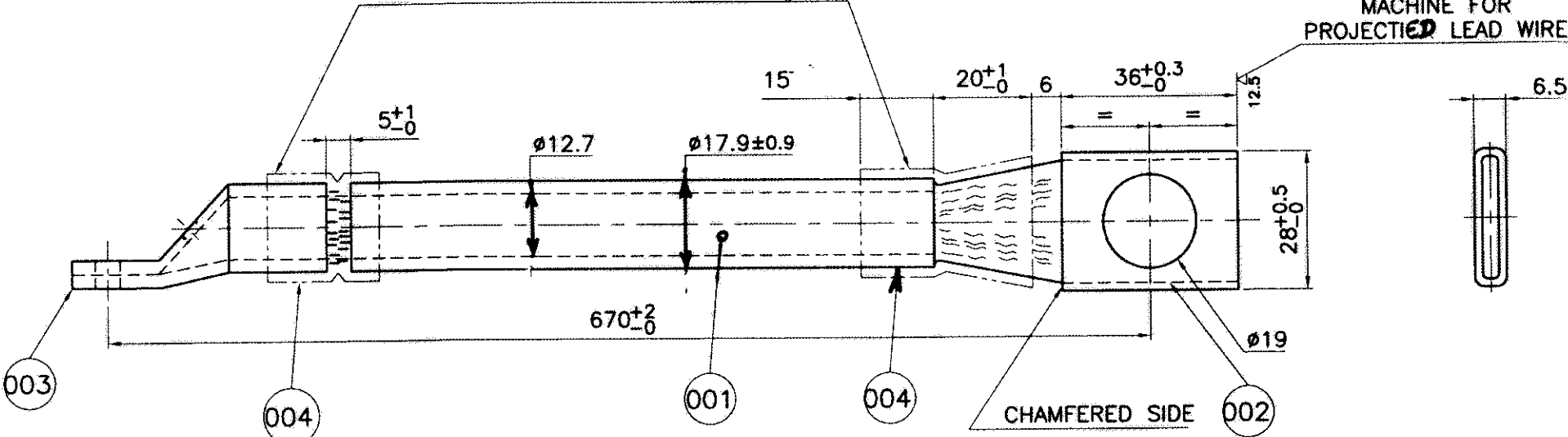
(ALL DIMENSIONS ARE IN mm)

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DRG. NO. 34392060055

COVER EXPOSED CORE OF LEAD WIRE WITH INSULATING TUBE (ITEM NO.004) AFTER TIGHT FITTING ON CORE BY HEATING WITH DRYER

MACHINE FOR PROJECTED LEAD WIRE



NOTES:-

- CABLE (ITEM NO. 001) SHALL BE 80mm² FLAME - RETARDANT FLUONLEX INSULATED WIRE (WF M2) 1500V GRADE AS PER RDSO APPROVED HITACHI SPEC.NO. E 0028 BY RDSO APPROVED PART-1(REGULAR) VENDERS.
- COPPER TUBE CONNECTOR (ITEM NO. 002) AND SOLDERLESS TERMINAL (ITEM NO. - 003) SHALL BE CRIMPED WITH (ITEM NO.- 001) PREFERABLY BY W-TYPE CRIMPING TOOL FOR (ITEM NO.-003), TO WITHSTAND THE CRIMPING TEST/ PULL-OUT STRENGTH TEST SPECIFIED IN NOTE - 4.
- COPPER TUBE CONNECTOR (ITEM NO.- 002) TO BE TINNED IN TIN SOLDER BATH AFTER DRILLING AND DRESSING.
- CRIMPING TEST / PULLOUT STRENGTH TEST OF COPPER TUBE CONNECTOR (ITEM NO. - 002) & SOLDERLESS TERMINAL (ITEM NO.-003) :
 - THE COMPRESSION JOINT OF CONDUCTOR WITH COPPER TUBE CONNECTOR (ITEM NO. 002) / SOLDERLESS TERMINAL (ITEM NO.- 003) WHEN TESTED IN ACCORDANCE WITH JIS : C 2805-1991 TO ESTABLISH GOOD ELECT. / MECH. CONTACT SHALL WITHSTAND THE PULL OFF LOAD 357 KGS THE JOINT SHALL BE JUDGED TO HAVE FAILED WHEN CONDUCTOR STARTS SLIPPING OUT OF THE COPPER TUBE CONNECTOR (ITEM NO.-002) AND SOLDERLESS TERMINAL (ITEM NO.- 003) END. THE LOAD READING AT WHICH SLIPPING OR YIELD OF CONDUCTOR COMMENCES CAN BE RECORDED.
 - CRIMP JOINT RESISTANCE SHALL NOT EXCEED 5μΩ.
- THIS DRG. IS EQUIVALENT TO CLW DRG. NO. 3TWD.095.077 (ALT.- 00)

002		004	INSULATING TUBE Ø80			7M28110	Kg		
001		003	SOLDLESS TERMINAL	44393060053			Kg		
001		002	COPPER TUBE CONNECTOR	44393060051			Kg		
001		001	CABLE 80 mm ² X 675			E0028	Kg		
VAR 00	REMARKS	VAR NO.	ITEM NO.	DESCRIPTION	STD.	DRAWING NO.	UNIT	UNIT WT.	ZONE

CARD TYPE 3		28		28		CARD TYPE 1		28		CARD TYPE 2	
ADDITIONAL INFORMATION 3 TWD.095.077				TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT TRACTION MOTOR HS-15250 A							
STATUS OF DRAWING											
DISTRIBUTION OF PRINTS TME- 1 TXM- 3 TNX- 1				Bharat Heavy Electricals Ltd. Bhopal				DRN ASWINI J. SIGN DATE NO. OF VAR. CKD D.K. 20.09.10 APPD S.PAL. 20.09.10 01			
REV.	DATE	ALTERED CHECKED APPD.	DEPT. T.M.E. CODE 405	GRADE OF UN.TOL. 'M'	SCALE NTS	WEIGHT(K.G.)	REF.TO ASSY.DRG. 14392060059	ITEM NO. 003	NO.OF ITEM 004		
TITLE LEAD WIRE (80 mm ²)							DRAWING NO. 34392060055		REV. 00		
							SHT. NO. 01		NO. OF SHT. 01		

A3 SIZE

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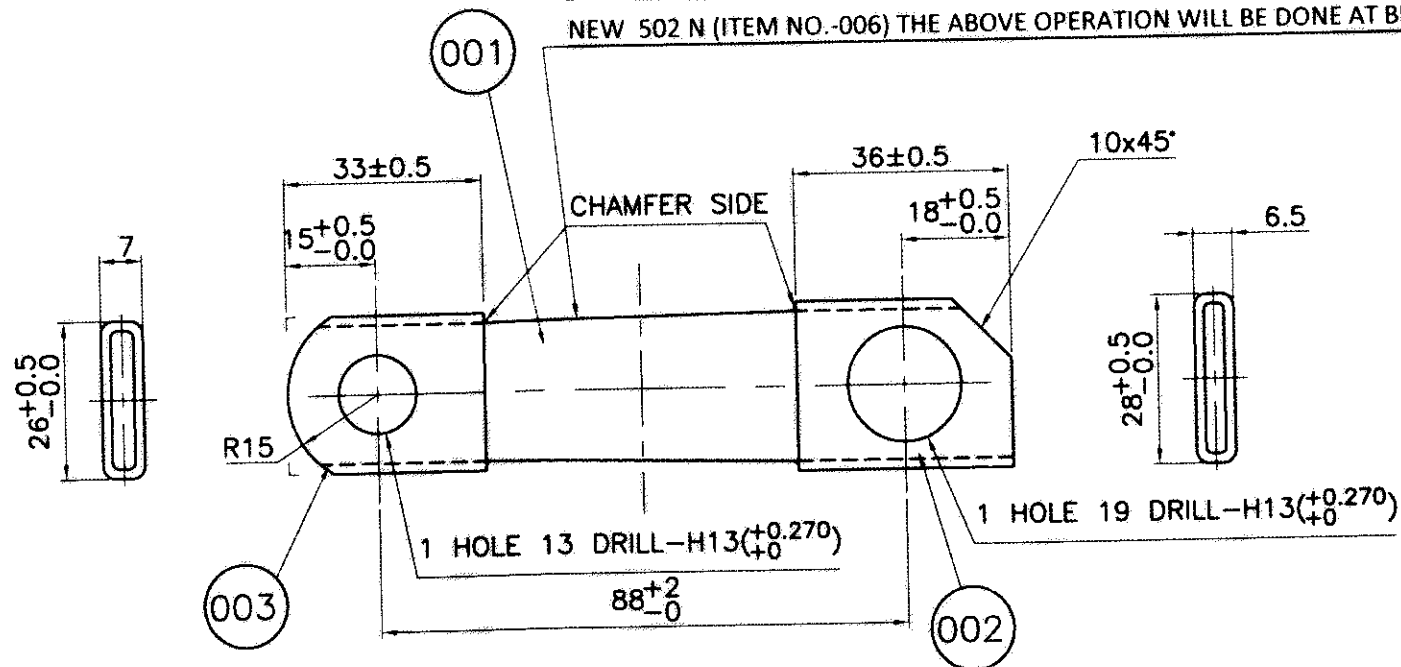
REF. DRG. NO.

SIGN. & DATE

INVENTORY NO.

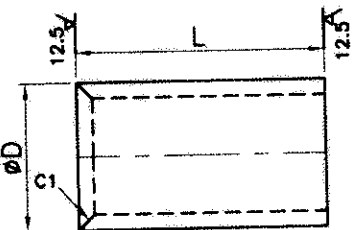
DRG. NO. 34392060057

THE BARE CONDUCTOR SHALL BE INSULATED WITH ONE LAYER HALF LAP
SILICONE RUBBER TAPE HTV- HBT- H5 0.5X25 (ITEM NO.-004) AND ONE LAYER HALF LAP
NWT TAPE 0.13X25 (ITEM NO.-005) WHILE TAPING WITH NWT TAPE APPLY VARNISH
NEW 502 N (ITEM NO.-006) THE ABOVE OPERATION WILL BE DONE AT BHFL (SEE NOTE.6)



DETAILS OF TERMINALS ITEM NO. 002 & 003

TERMINAL REF.	LENGTH (L)	OUT SIDE DIA ØD	THICKNESS (T)
ITEM NO.- 2	36	20±0.1	1.6±0.1
ITEM NO.- 3	33	20±0.1	1.6±0.1



MATERIAL - TERMINAL SHALL BE HIGH CONDUCTIVITY ELECTROLYTIC COPPER TUBE
TO IS : 2501-85 GRADE-ETP ANNEALED (O).

COPPER TUBE SHALL BE ELECTRO-TINNED (BRIGHT) TO THICKNESS 0.01mm AFTER CHAMPFERING AND DRESSING.

NOTES:-

1. UNINSULATED FLEXIBLE ELECTROTINNED ANNEALED HIGH CONDUCTIVITY COPPER WIRES TO IS : 8130-84 THE FLEXIBLE CONDUCTOR SHALL HAVE THE FOLLOWING PARAMETERS
 - a) DIA OF CONDUCTOR - 12.7 MM
 - b) CONSTRUCTION OF CONDUCTOR = 19/79/0.26
 - c) RESISTANCE OF CONDUCTOR = 0.249Ω/KM AT 20°C
2. COPPER TUBE TERMINALS (ITEM NO.-002.003) SHALL BE CRIMPED WITH THE FLEXIBLE CONDUCTOR (ITEM NO. -001) TO WITHSTAND THE CRIMPING TEST / PULL OUT STRENGTH TEST OF COPPER TUBE TERMINAL (ITEM NO.-002) TEST SPECIFIED IN NOTE NO. 2(a) & 2(b) CRIMPING TEST / PULL OUT STRENGTH TEST OF COPPER TUBE TERMINAL (ITEM NO. 002 & 003)
- a) THE COMPRESSION JOINT OF CONDUCTOR WITH COPPER TUBE CONNECTOR (ITEM NO.002 & 003) WHEN TESTED IN ACCORDANCE WITH JIS: C 2805-1991 TO ESTABLISH GOOD ELECT./ MECH. CONTACT SHALL WITHSTAND THE PULL LOAD OF 357 KGS. THE JOINT SHALL BE JUDGED TO HAVE FAILED WHEN CONDUCTOR STARTS SLIPPING OUT OF THE COPPER TUBE TERMINAL (ITEM NO. 002 & 003) END. THE LOAD READING AT WHICH SLIPPING OR YIELD OF CONDUCTOR COMMENCES CAN BE RECORDED.
- b) CRIMPED JOINT RESISTANCE , SHALL NOT EXCEED 5μΩ
3. SUPPLIER SHALL INDICATE THEIR IDENTIFICATION MARK ON THE COMPONENT.
4. THE ELECTRO-TINNED TERMINALS ITEM NO.002 & 003 ARE TO BE TINNED IN SOLDER BATH AFTER DRILLING , CHAMFERING AND DRESSING .
5. HEAT SHRINKABLE RUBBER TUBE (ITEM NO.-007) IS TO BE PROVIDED ON BARE PORTION OF THE CONDUCTOR AT BHEL PROVISION OF HBT TAPE (ITEM NO.-004) NWT TAPE (ITEM NO.-005) AND NEW 502 N VARNISH (ITEM NO. 006) WILL DISCONTINUE
6. THIS DRG. IS EQUIVALENT TO CLW DRG. NO. 3TWD.095 058 (ALT. NO. 7)

[illegible]

CARD TYPE 3 —————→ 28

28 ——— GOOD TYPE 1

AND BOX 9

28

CARD TYPE :

ADDITIONAL INFORMATION
3 TWD.095.058 (ALT.NO.7)

TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECT

TRACTION MOTOR

HS-15250 A

[illegible]

DISTRIBUTION OF PRINTS
TME- 1 TXM- 3
TNX- 1



BHARAT HEAVY ELECTRICALS LTD
BHOPAL

	NAME	SIGN	DATE	NO. OF VAR. 01
DRN	ASWINI J.	<i>Aswini</i>	20.09.10	
CKD	D.K.		20.09.10	
APPD	S.PAL.	<i>[Signature]</i>	20.09.10	

REV.	DATE	ALTERED <i>[Signature]</i>
01	19-10-2010	CHECKED <i>[Signature]</i>
		APPD. <i>[Signature]</i>

DEPT.	T.M.E.
CODE	105

GRADE OF UN.TOL.
'M'



SCALE
NTS

WEIGHT(K.G.)

REF.TO ASSY.DRG.

ITEM NO.

NO. OF
ITEM

DRG. UPDATED.

TITLE

LEAD WIRE
(80 mm²)

DRAWING NO.
34392060057

REV.
01

SHT. NO.

NO. OF SHT.	01
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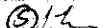
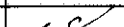
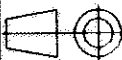
A3 SIZE

(ALL DIMENSIONS ARE IN mm)

NOTES:-

1. CABLE (IT.001) SHALL BE 80mm² FLAME RETARDANT FLUONLEX INSULATED WIRE (WFM2) TO 1500V GRADE AS RDSO APPROVED HITACHI SPECN. NO. E0028 BY RDSO APPROVED PART-1 (REGULAR) VENDORS.
2. SOLDERLESS TERMINALS (IT.002) SHALL BE CRIMPED WITH CABLE (IT.001), 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 (IT.002),
 - i) THE COMPRESSION JOINT OF CONDUCTOR WITH SOLDERLESS TERMINAL (IT.002), WHEN TESTED IN ACCORDANCE WITH JIS:C2805-1991 TO ESTABLISH GOOD ELECT./MECH. CONTACT SHALL WITHSTAND THE PULL OFF LOAD 357 KGS. THE JOINT SHALL BE JUDGED TO HAVE FAILED WHEN CONDUCTOR STARTS SLIPPING OUT OF THE SOLDERLESS TERMINALS (IT.002) END. THE LOAD READING AT WHICH SLIPPING OR YIELD OF CONDUCTOR COMMENCES CAN BE RECORDED.
 - ii) CRIMP JOINT RESISTANCE SHALL NOT EXCEED 5μΩ.
4. THIS DRAWING IS SIMILAR TO CLW'S DRG. NO. 3.TWD.095.078, ALT.0

[illegible]

ADDITIONAL INFORMATION			TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT										TRACTION MOTOR HS:15250A				
STATUS OF DRAWING			<div> BHARAT HEAVY ELECTRICALS LTD. BHOPAL</div>											NAME	SIGN	DATE	NO. OF VAR.
DISTRIBUTION OF PRINTS																	
TME-1, TXM-3, TNX-1																	
													DRN.	S.D.BHAGAT		20/09/10	01
													CHD.	D.K.		20/09/10	
													APPD.	SPAL		20/09/10	
REV.	DATE	ALTERED	DEPT.	UNTOL. DIMS. GR.		SCALE	WEIGHT (K.G.)	REF. TO ASSY. DRG.	ITEM NO.	NO. OF ITEM							
01	19.10.10	CHECKED	TME			NTS		1 439 20 60 059	010	003							
ZONE		APPROVED	CODE														
DRG. UPDATED.			TITLE					DRAWING NO.			REV.						
			LEAD WIRE (80 mm²)					3 439 20 60 059			01						
								SHT. NO.		NO. OF SHT.							
								01		01							

SIZE A3