

Product Technical details for GEM/NIC		
Minimum Technical Qualifications Required for supplying ring transformer		
Sl. No.	Technical Requirement	
1	RING TRANSFORMER	
	1.1	RING TRANSFORMER as per drawing no. 3.12.100.00835, 3.12.100.00836, 3.12.100.00837, 3.12.100.00838, 3.12.100.00839
	1.2	Test Requirement as per Drawing & Vendor Test Report

Product Technical details for GEM/NIC

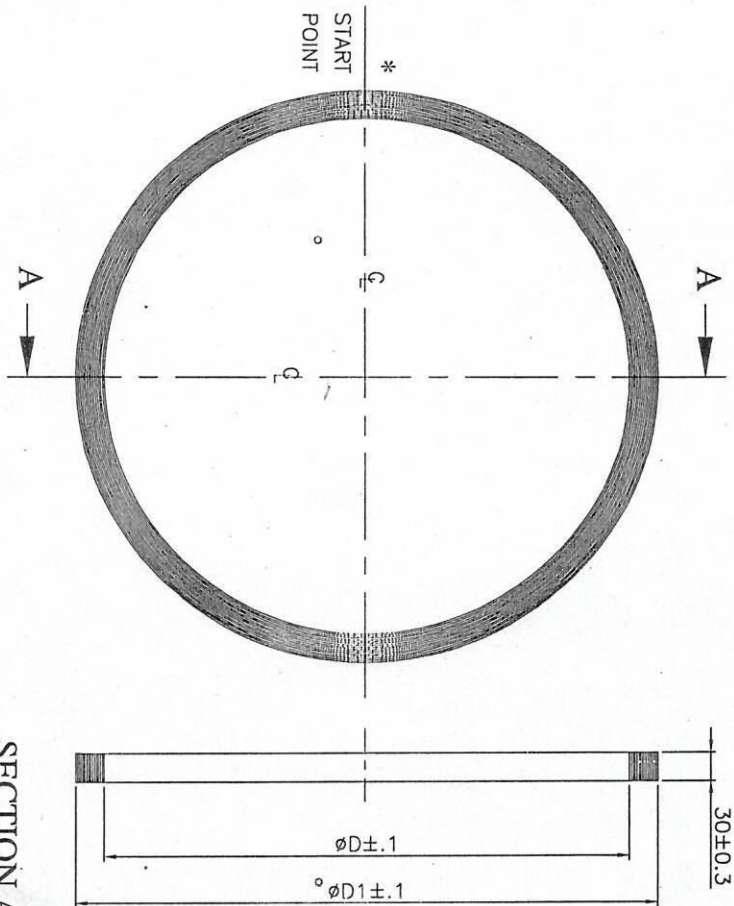
Minimum Technical Qualifications Required for supplying ring transformer

Sl. No.	Technical Requirement
1	RING TRANSFORMER
1.1	RING TRANSFORMER as per drawing no. 3.12.100.00865, 3.12.100.00866, 3.12.100.00867, 3.12.100.00868, 3.12.100.00869
2	RING TRANSFORMER
2.1	RING TRANSFORMER as per drawing no. 3.12.100.00860, 3.12.100.00861, 3.12.100.00862, 3.12.100.00863, 3.12.100.00864
2.2	Test Requirement as per Drawing & Vendor Test Report

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

53800.001.21.3.0N.DRG



SECTION A-A

LAMINATION SIZE : 0.3x30 mm. M/s. MIDHANI HYD.
SOFTMAG 78 COLD ROLLED & ANNEALED)

NOTES:

1. WRAPPING IN CLOCKWISE DIRECTION, FROM THE POINT MARKED *
2. APPLY VARNISH CLASS-F, ANABOND AT THE START & FINISH FOR ON A SUITABLE FORMER.
3. WRAP GLASS FIBRE TAPE (25mm WIDE HALF LAP) ALL AROUND AND IMPREGNATE AND CURE AT 90°C FOR 12 Hrs. CHECK.
4. THE CENTRE LINE TO BE MARKED ON THE TAPE AFTER WRAPPING.
5. TOTAL WEIGHT OF THE CORE IS : 22.11 KG. (APPRX.)
6. LEAVE 6" TAPE AT THE STARTING POINT AND START WRAPPING.
7. TENSION REQUIRED WHILE WRAPPING FOR TIGHTNESS OF THE CORE
8. CHECK THE CONCENTRICITY, SHOULD BE ± 2 mm.

CORE ID = SHAFT DIA+50
CORE OD = CORE ID+60
L = 30mm

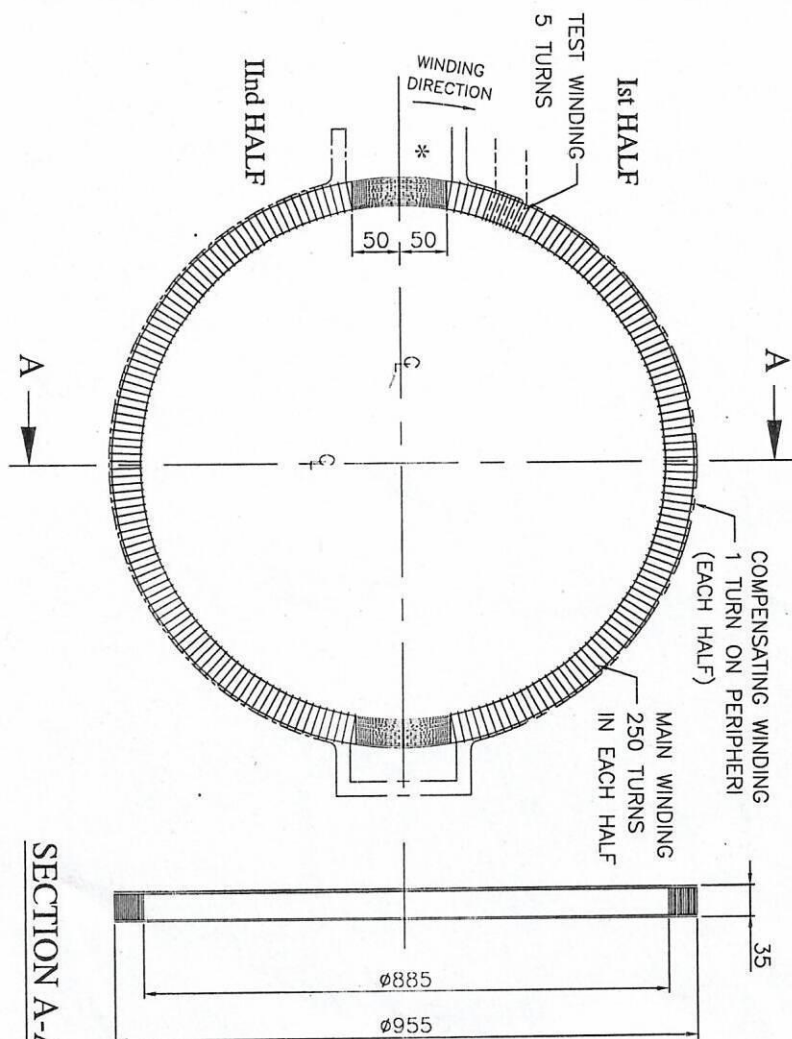
SHAFT DIA	CORE ID 'D'	CORE OD 'D1'
840	840+50=890	890+60=950

INVENTORY NO. SIGN. & DATE REF. DRG. NO.

REV.	DATE	ALTERED
		CHECKED
		APPROVED

SHAFT CURRENT MONITOR	
NAME OF PRODUCT OR NAME OF CUSTOMER/PROJECT	
BHARAT HEAVY ELECTRICALS LTD. EMBR MUMBAI	
DATE	12/03/09
BY	SHYAMAL KUMAR
CHECKED	13/04/09
APPROVED	NA
DRAWING NO. 3.12.100.00835	
REV. 01	

SIZE A3



SECTION A-A

14. VARNISH, GRADE CLASS F DR.BECK

REV.	DATE	ALTERED
		CHECKED
		APPROVE

[illegible]

TOROID COIL

SIZE A3

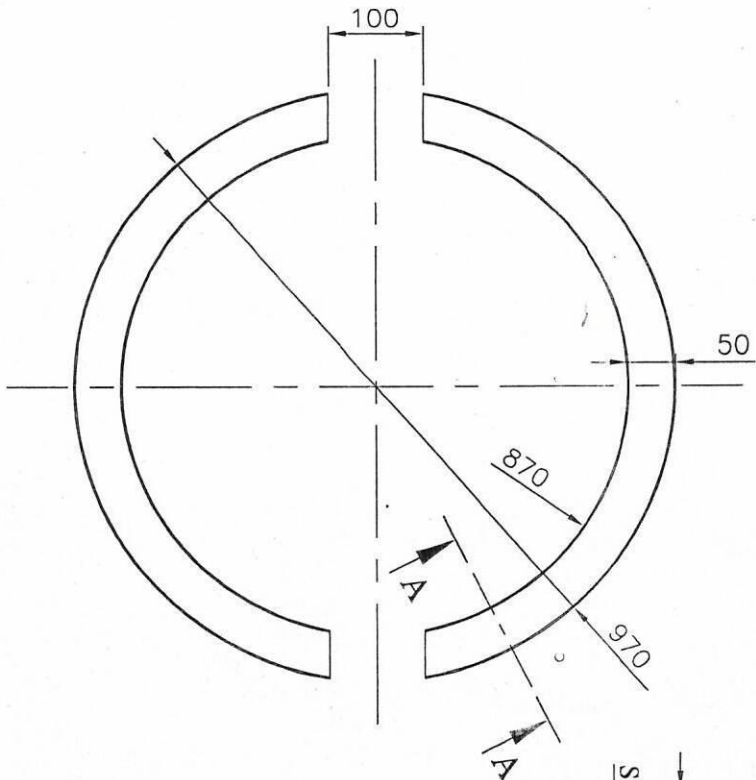
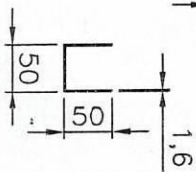
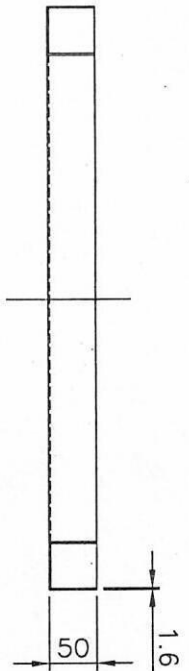
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

63800.001.213.00.DRG.

MATERIAL : MS SHEET

QUANTITY : 01



SECTION A-A

NOTES:

1. SECTION 50 x 50mm. 1.6mm THICK SHEET METAL FABRICATION AA10115
2. SHIELD ID SHAFT OD + 30mm. SHEET METAL WIDTH
3. SHIELD OD SHIELD ID + 100mm. HEIGHT : 50
4. ONE COAT RED OXIDE WRAPPED
5. PAINT STEEL GREY SHADE 638 TO IS : 5.
6. PAINT FINISH : MAT FINISH

SHAFT CURRENT MONITOR

NAME OF CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.
MUMBAI

DATE

REV.

DATE

DATE

DATE

DATE

DATE

SHIELD

3.12.100.00839

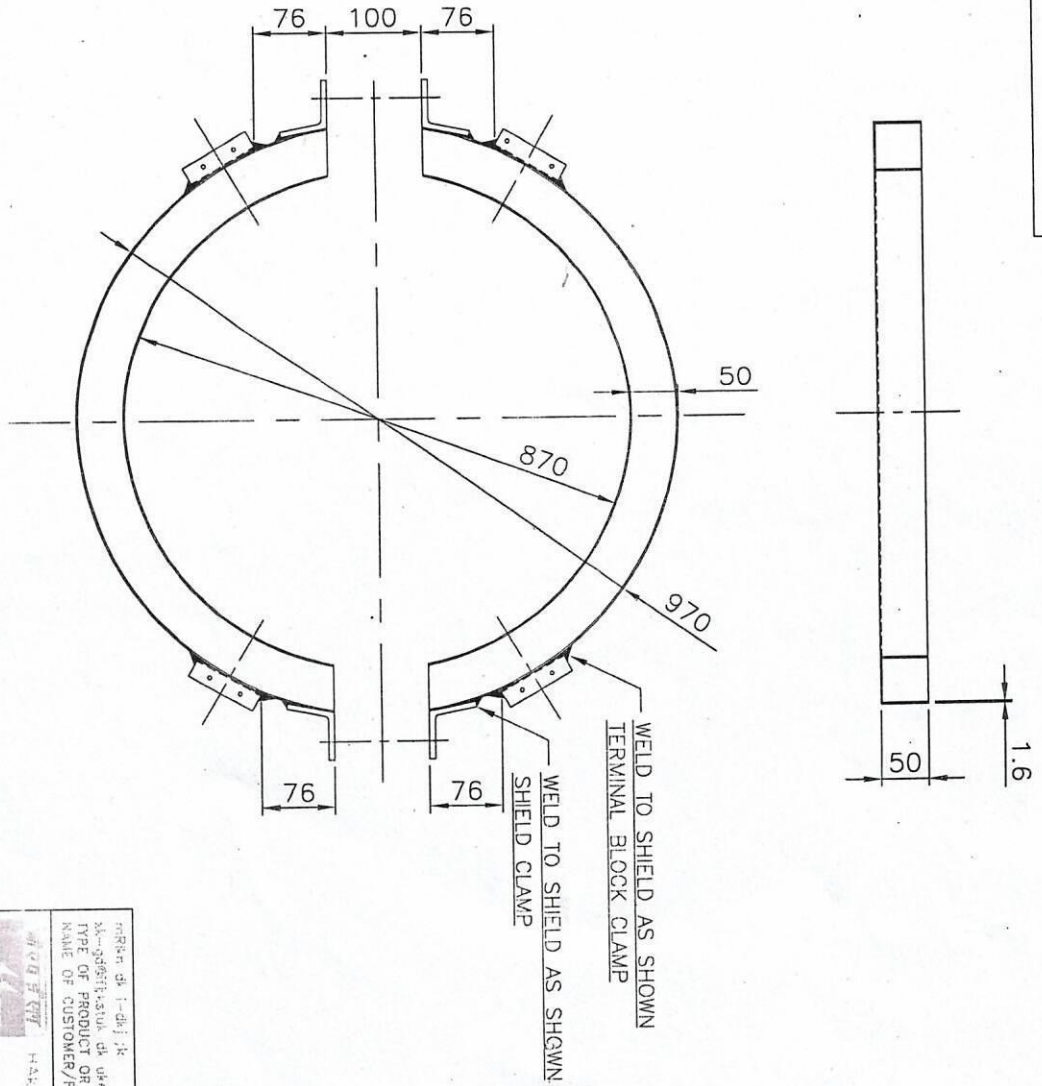
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SIZE A3

DRG. NO. 3.12.100.00837

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)



INVENTORY NO. SIGN. & DATE REF. DRG. NO.

REV	DATE	ALTERED
		CHECKED
		APPROVED

SHIELD WITH CLAMPS

SHAFT CURRENT MONITOR



BHARAT HEAVY ELECTRICALS LTD.
Bhilai, India

NAME OF PRODUCT OR
NAME OF CUSTOMER/PROJECT

DATE	BY	CHKD	APPD	DATE	BY	CHKD	APPD
12/09	12/09	12/09	12/09	12/09	12/09	12/09	12/09

3.12.100.00837

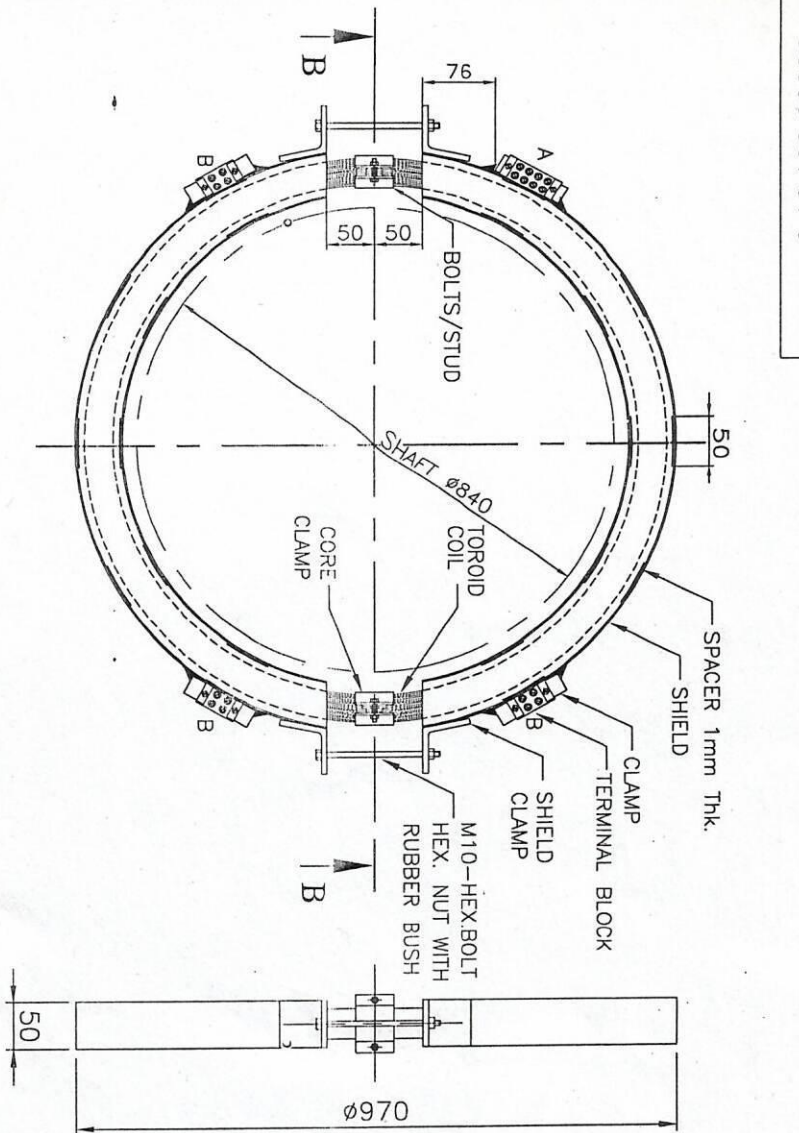
SIZE A3

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FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

83800.001.21.3.0N DRG.



- NOTES:**
1. PUT THE WOUND CORE IN THE SHIELD AND MAINTAIN THE CONCENTRICITY.
 2. TEST THE CONTINUITY AND I.R. TEST AT THIS STAGE.
 3. ENCAPSULATING OF THE WINDING.
 4. FILL THE EPOXY RESIN WITH SMOOTH FINISH WITHOUT ANY BUBBLES (RED COLOR).
- TERMINAL BLOCKS ARE OF 2 TYPE
TYPE A : 8 CONNECTORS TYPE B : 4 CONNECTORS



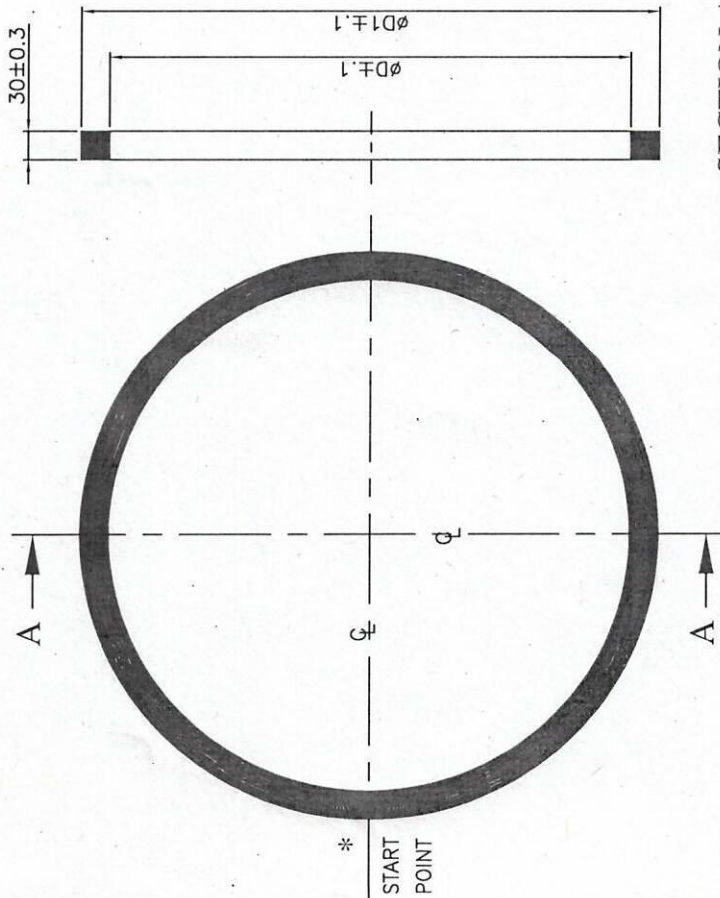
INVENTORY NO. SIGN. & DATE REF. DRG. NO.

REV.	DATE	ALTERED
		CHECKED
		APPROVED

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT SHAFT CURRENT MONITOR		DATE 12/09/2019	
DESIGNER S. L. 12/09/2019		DATE 12/09/2019	
DESIGN CHECKED S. L. 12/09/2019		DATE 12/09/2019	
DESIGN APPROVED S. L. 12/09/2019		DATE 12/09/2019	
DESIGNING NO. 9.12.100.00838		DATE 12/09/2019	
DESIGNING NO. 9.12.100.00838		DATE 12/09/2019	

SIZE A3

DRG. NO. 3.12.100.00860



SECTION A-A

SHAFT DIA	CURE ID D	CURE OD DI
470	470+50=520	520+60=580

SHAFT CURRENT MONITOR

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INVENTORY NO. SIGN. & DATE	REV.	DATE	ALTERED		HAK j' gsch bysFDV&Yl fyfvsV b,EAvk,jjh eaqgbZ BHARAT HEAVY ELECTRICALS LTD. EMRP MUMBAI	use@NAME SACHIN LONKAR SCL SHIWANI GUPTA शिवानी SHIWANI GUPTA	GLK@GDN SCL शिवानी	inst@DATE 12/12/2012	est@_dn 12/12/2012
			CHECKED APPROVED						
					HAK j' gsch bysFDV&Yl fyfvsV b,EAvk,jjh eaqgbZ BHARAT HEAVY ELECTRICALS LTD. EMRP MUMBAI	use@NAME SACHIN LONKAR SCL SHIWANI GUPTA शिवानी SHIWANI GUPTA	GLK@GDN SCL शिवानी	inst@DATE 12/12/2012	est@_dn 12/12/2012
INVENTORY NO. SIGN. & DATE	REV.	DATE	ALTERED		HAK j' gsch bysFDV&Yl fyfvsV b,EAvk,jjh eaqgbZ BHARAT HEAVY ELECTRICALS LTD. EMRP MUMBAI	use@NAME SACHIN LONKAR SCL SHIWANI GUPTA शिवानी SHIWANI GUPTA	GLK@GDN SCL शिवानी	inst@DATE 12/12/2012	est@_dn 12/12/2012
			CHECKED APPROVED						
					HAK j' gsch bysFDV&Yl fyfvsV b,EAvk,jjh eaqgbZ BHARAT HEAVY ELECTRICALS LTD. EMRP MUMBAI	use@NAME SACHIN LONKAR SCL SHIWANI GUPTA शिवानी SHIWANI GUPTA	GLK@GDN SCL शिवानी	inst@DATE 12/12/2012	est@_dn 12/12/2012
INVENTORY NO. SIGN. & DATE	REV.	DATE	ALTERED		HAK j' gsch bysFDV&Yl fyfvsV b,EAvk,jjh eaqgbZ BHARAT HEAVY ELECTRICALS LTD. EMRP MUMBAI	use@NAME SACHIN LONKAR SCL SHIWANI GUPTA शिवानी SHIWANI GUPTA	GLK@GDN SCL शिवानी	inst@DATE 12/12/2012	est@_dn 12/12/2012
			CHECKED APPROVED						
					HAK j' gsch bysFDV&Yl fyfvsV b,EAvk,jjh eaqgbZ BHARAT HEAVY ELECTRICALS LTD. EMRP MUMBAI	use@NAME SACHIN LONKAR SCL SHIWANI GUPTA शिवानी SHIWANI GUPTA	GLK@GDN SCL शिवानी	inst@DATE 12/12/2012	est@_dn 12/12/2012
INVENTORY NO. SIGN. & DATE	REV.	DATE	ALTERED		HAK j' gsch bysFDV&Yl fyfvsV b,EAvk,jjh eaqgbZ BHARAT HEAVY ELECTRICALS LTD. EMRP MUMBAI	use@NAME SACHIN LONKAR SCL SHIWANI GUPTA शिवानी SHIWANI GUPTA	GLK@GDN SCL शिवानी	inst@DATE 12/12/2012	est@_dn 12/12/2012
			CHECKED APPROVED						
					HAK j' gsch bysFDV&Yl fyfvsV b,EAvk,jjh eaqgbZ BHARAT HEAVY ELECTRICALS LTD. EMRP MUMBAI	use@NAME SACHIN LONKAR SCL SHIWANI GUPTA शिवानी SHIWANI GUPTA	GLK@GDN SCL शिवानी	inst@DATE 12/12/2012	est@_dn 12/12/2012
INVENTORY NO. SIGN. & DATE	REV.	DATE	ALTERED		HAK j' gsch bysFDV&Yl fyfvsV b,EAvk,jjh eaqgbZ BHARAT HEAVY ELECTRICALS LTD. EMRP MUMBAI	use@NAME SACHIN LONKAR SCL SHIWANI GUPTA शिवानी SHIWANI GUPTA	GLK@GDN SCL शिवानी	inst@DATE 12/12/2012	est@_dn 12/12/2

SIZE A3

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IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY
WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

SIGN. & DATE

INVENTORY NO.



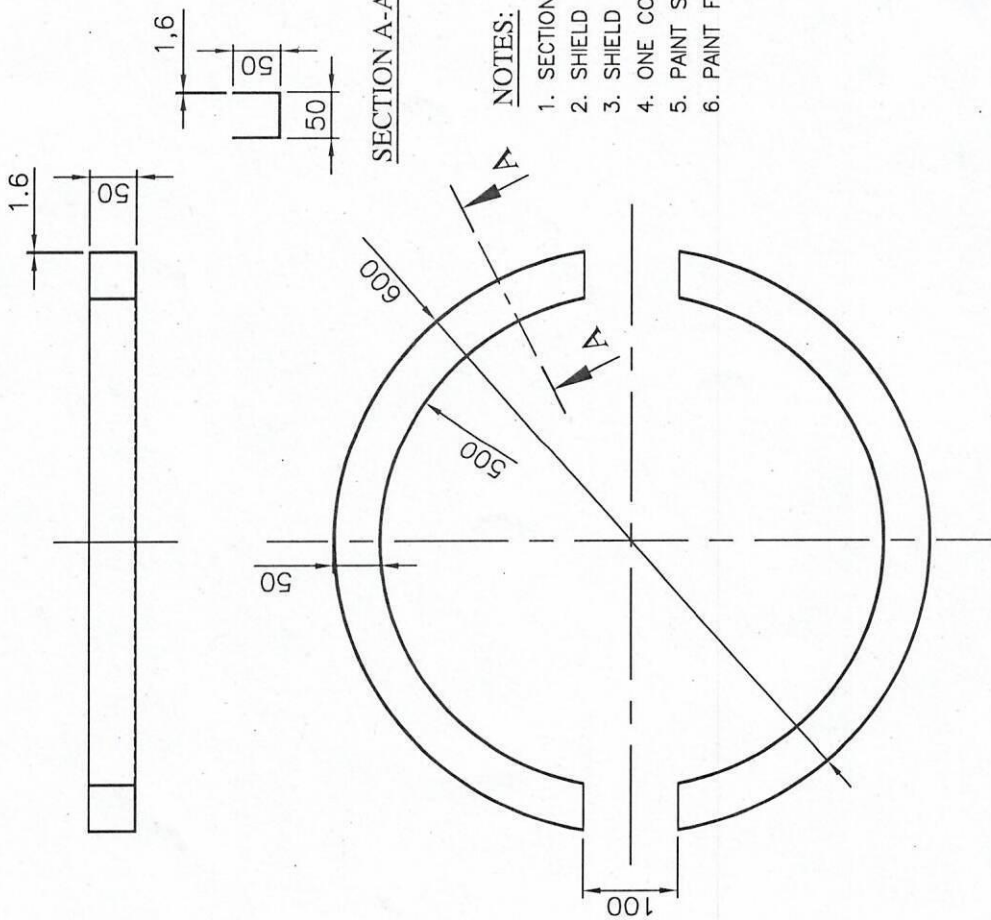
_____ MAIN WINDING
_____ COMPENSATORY WINDING
----- TEST WINDING

SHAFT CURRENT MONITOR

mRikn dk l--dkj :k xk-gdgrfzAstuk dk uke TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		HAKj' gsoh bysDv&dYl fyfevsh b.eAqVjh eacozZ BHARAT HEAVY ELECTRICALS LTD. EMRP MUMBAI	cuka:k DIN: Wt:k COO DED JAPD	used:bwE SACHIN LOWKAR SHIWANI GUPTA SHIWANI GUPTA	gURk SON SSC SHIWANI GUPTA	frack:bwE 10/12	caskl... dh lq:k of WAs NA
g&M CODE —	g&M DEPT ENG —	g&M V&S d&S d&S UNTOLOV&S OR —	w&S SCALE N.T.S 	w&S REF. TO ASSY. Dwg. —	w&S d&S REF. NO. —	w&S d&S REF. NO. 001	lq:d--bwE 00
'kh' AZ&B&E	TOROID COIL	vkjs[A d--B&WING NO. 3.12.100.00861	lq:W d--B&E No. 01	lq:W d--B&E of SHT. 01	lq:W d--B&E of SHT. 01	lq:W d--B&E of SHT. 01	lq:W d--B&E of SHT. 01

SIZE A3

QUANTITY : 01



SECTION A-A

NOTES:

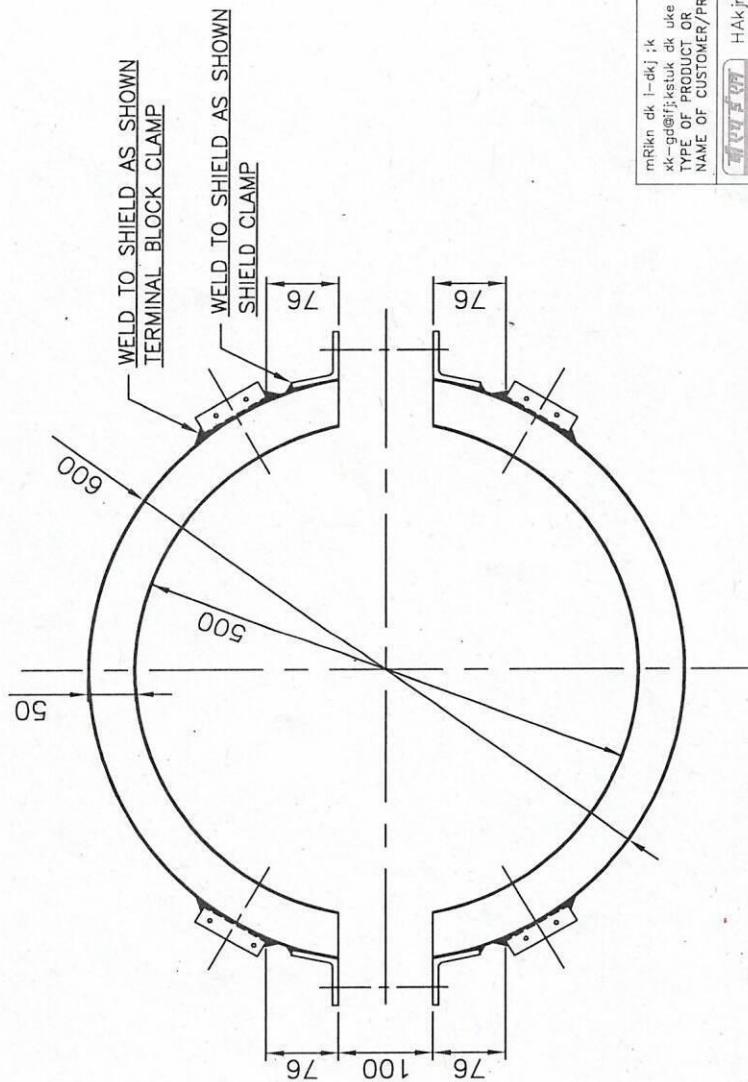
1. SECTION 50 x 50mm. 1.6mm THICK SHEET METAL FABRICATION AA10115
2. SHIELD ID SHAFT OD + 30mm. SHEET METAL WIDTH
3. SHIELD OD SHIELD ID + 100mm. HEIGHT : 50
4. ONE COAT RED OXIDE WRAPPED
5. PAINT STEEL GREY.SHADE 638 TO IS : 5.
6. PAINT FINISH : MAT FINISH

[illegible]

SIZE A3

(ALL DIMENSIONS ARE IN mm)

Technical drawing of a rectangular plate. The drawing shows a top view with a width of 1.6 and a length of 50. The dimensions are indicated by arrows and numerical labels.



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[illegible]

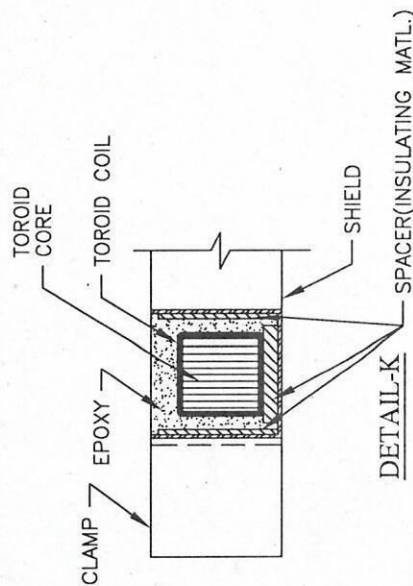
SHAFT CURRENT MONITOR

		HAKIR gsoh bysDV&dY fyfeyvsh b.EA vk'jh eqacbz BHARAT HEAVY ELECTRICALS LTD. EMPR MUMBAI		use NAME SACHIN LONKAR SHIWANI GUPTA SHIWANI GUPTA	GURK SON 586 12/19/11	PROCEED DATE 11/12 12/19/11	CASH. NO. 001
VZ - VZ - VZ - VZ - VZ - UNLTD. OR.	WGTGR SCALE N.T.S.	HAKIR fd. sk - WEIGHT (K.G.) —	en d - ITEM NO. —	en - en - REV 001	en - en - REV 001	en - en - REV 001	en - en - REV 001
SHIELD WITH CLAMPS		VZ[S d - DRAWING NO. 3.12.100.00863		00		00	

SIZE A3

(ALL DIMENSIONS ARE IN mm)

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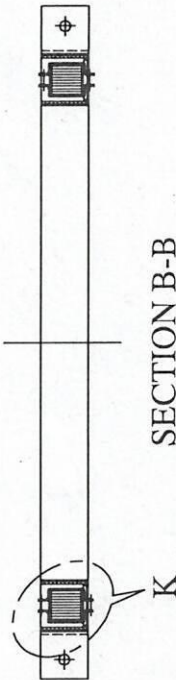


NOTES:

1. PUT THE WOUND CORE IN THE SHIELD AND MAINTAIN THE CONCENTRICITY.
2. TEST THE CONTINUITY AND I.R. TEST AT THIS STAGE.
3. ENCAPSULATING OF THE WINDING.
4. FILL THE EPOXY RESIN WITH SMOOTH FINISH WITHOUT ANY BUBBLES (RED COLOR).

TERMINAL BLOCKS ARE OF 2 TYPE

TYPE A : 8 CONNECTORS TYPE B : 4 CONNECTORS



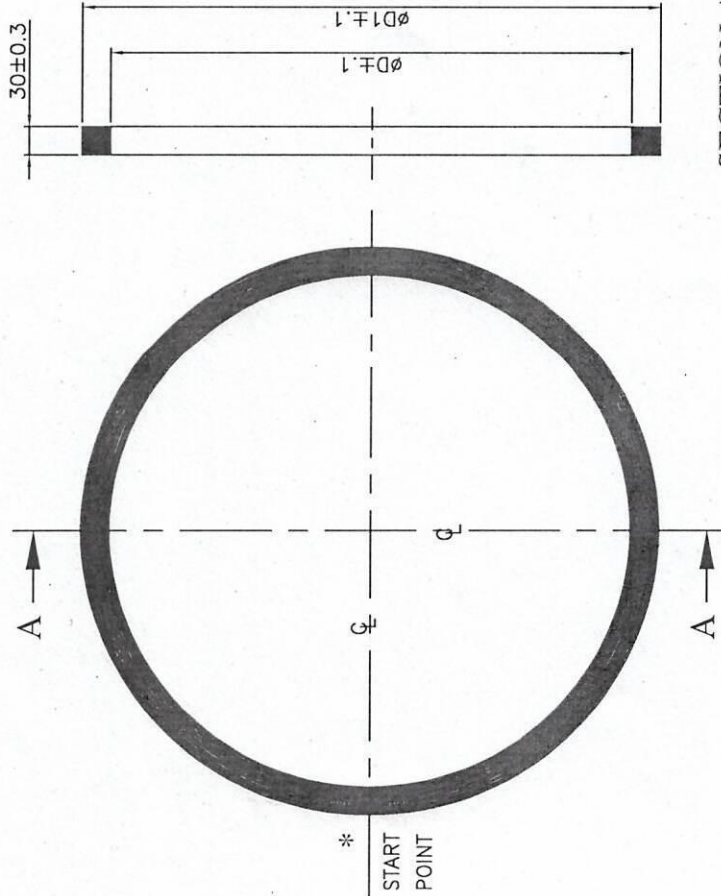
SECTION B-B

SHAFT CURRENT MONITOR

[illegible]

SIZE A3

DRG. NO. 121.3



SECTION A-A

SHAFT DIA	CORE ID 'D'	CORE OD 'D1'
1160	1160+50=1210	1210+60=1270

SHAFT CURRENT MONITOR

mRikn dk l-dkj;k xx-gdgrf;ksduk dk uke TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		HAKJ' gsoh bysDV&dYi fyfeVsM b.EAvkjh eogcbZ BHARAT HEAVY ELECTRICALS LTD. EMRP MUMBAI		SACHIN LONKAR SHIWANI GUPTA SHIWANI GUPTA		SACHIN LONKAR SHIWANI GUPTA SHIWANI GUPTA		SACHIN LONKAR SHIWANI GUPTA SHIWANI GUPTA	
REV. DATE		REV. DATE		REV. DATE		REV. DATE		REV. DATE	
ALTERED		ALTERED		ALTERED		ALTERED		ALTERED	
CHECKED		CHECKED		CHECKED		CHECKED		CHECKED	
APPROVED		APPROVED		APPROVED		APPROVED		APPROVED	
INVENTORY NO.		INVENTORY NO.		INVENTORY NO.		INVENTORY NO.		INVENTORY NO.	
SIGN. & DATE		SIGN. & DATE		SIGN. & DATE		SIGN. & DATE		SIGN. & DATE	
TOROID CORE		TOROID CORE		TOROID CORE		TOROID CORE		TOROID CORE	
W.D. A d-DRAWING NO.		W.D. A d-DRAWING NO.		W.D. A d-DRAWING NO.		W.D. A d-DRAWING NO.		W.D. A d-DRAWING NO.	
3.12.100.00865		3.12.100.00865		3.12.100.00865		3.12.100.00865		3.12.100.00865	
1/4" B d-68F No. 01		1/4" B d-68F No. 01		1/4" B d-68F No. 01		1/4" B d-68F No. 01		1/4" B d-68F No. 01	

SIZE A3

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MAIN WINDING:

1. MAIN WINDING TEFLON WIRE OF $\phi 2\text{mm}$ (BARE)
2. WINDING IN CLOCK WISE DIRECTION
3. 250 TURNS IN EACH HALF WITH UNIFORM PITCH CHECK POINT.
4. LEAD LENGTH 300mm EXTRA AT START AND END POINTS.
5. COLOR RED.

TEST WINDING:

6. PITCH SAME AS MAIN WINDING WITH YELLOW COLOUR
TEFLON WIRE.
7. WINDING IN CLOCK WISE DIRECTION
8. 5 TURNS AT THE START OF FIRST HALF OF CORE AS SHOWN
9. LEAD LENGTH 300mm EXTRA AT START AND END POINTS.

COMPENSATING WINDING:

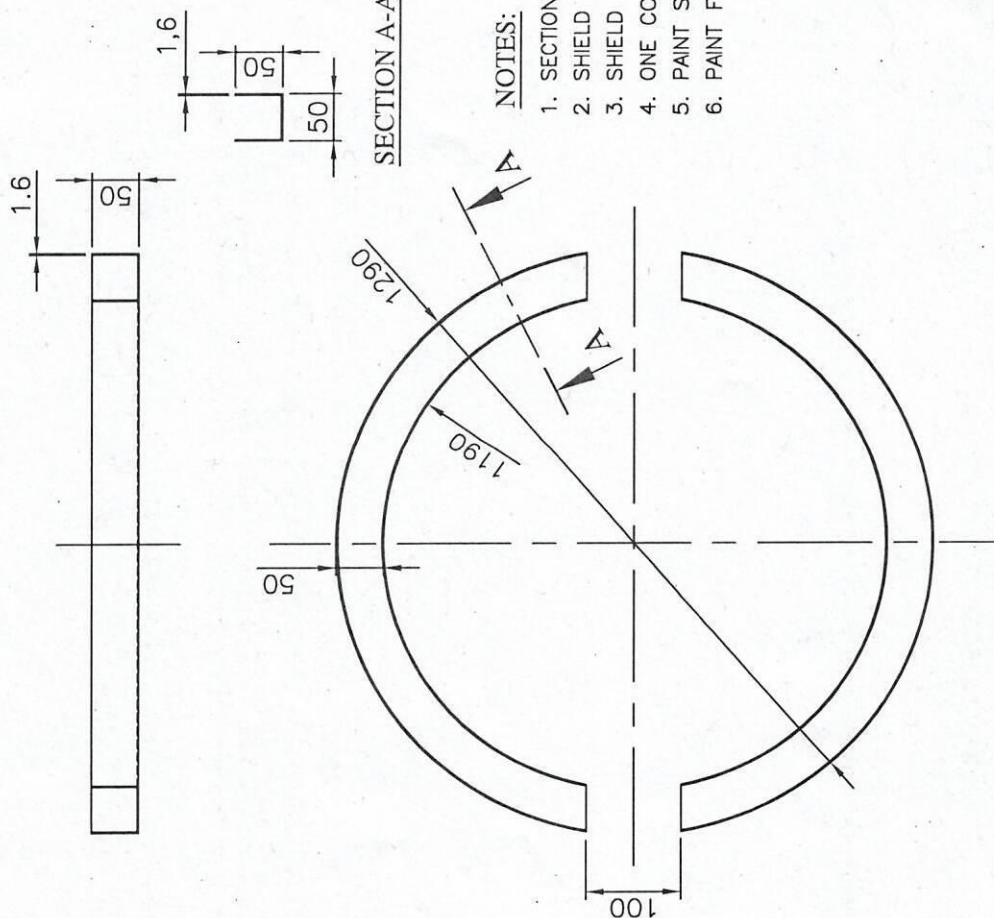
10. ON PERIPHERY IN TWO HALVES SEPARATELY.
11. LEAVE 300mm LEAD LENGTH AT ALL ENDS.
12. USE GLASS FIBRE TAPE 0.5 Thk.x25 mm WIDE TO COVER THE WINDING AND IMPREGNATE WITH VARNISH & CURE IT AT 90°C FOR 12 Hrs.
13. TEST ALL THE WINDINGS FOR CONTINUITY AND I.R. TEST. MIN. 10M Ω AT 250V
14. VARNISH, GRADE CLASS F Dr.BECK.

SHAFT CURRENT MONITOR

COMPENSATORY WINDING										TEST WINDING									
INVENTORY NO. SIGN. & DATE										REV.									
ALTERED										DATE									
CHECKED										DEPT									
APPROVED										CODE									
TOROID COIL										HAKI gsoh bysFDV&di fyfVsy b.EAvk,jjh eaqcbZ BHARAT HEAVY ELECTRICALS LTD. EMRP MUMBAI									
Wt. Vay. ukr dh ush UNTOLEMS. GR.										HAKI fd uk WEIGHT (K.G.)									
N.T.S.										VES. MakBox dk lonHIZ REF. TO ASSY. DRG.									
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SIZE A3

ITEM NO	DESCRIPTION	UNIT	QTY	PRICE	TOTAL	REMARKS
01	MATERIAL : MS SHEET		QUANTITY : 01			



SECTION A-A

NOTES:

1. SECTION 50 x 50mm. 1.6mm THICK SHEET METAL FABRICATION AA101115
2. SHIELD ID SHAFT OD + 30mm. SHEET METAL WIDTH
3. SHIELD OD SHIELD ID + 100mm. HEIGHT : 50
4. ONE COAT RED OXIDE WRAPPED
5. PAINT STEEL GREY.SHADE 638 TO IS : 5.
6. PAINT FINISH : MAT FINISH

SHAFT CURRENT MONITOR

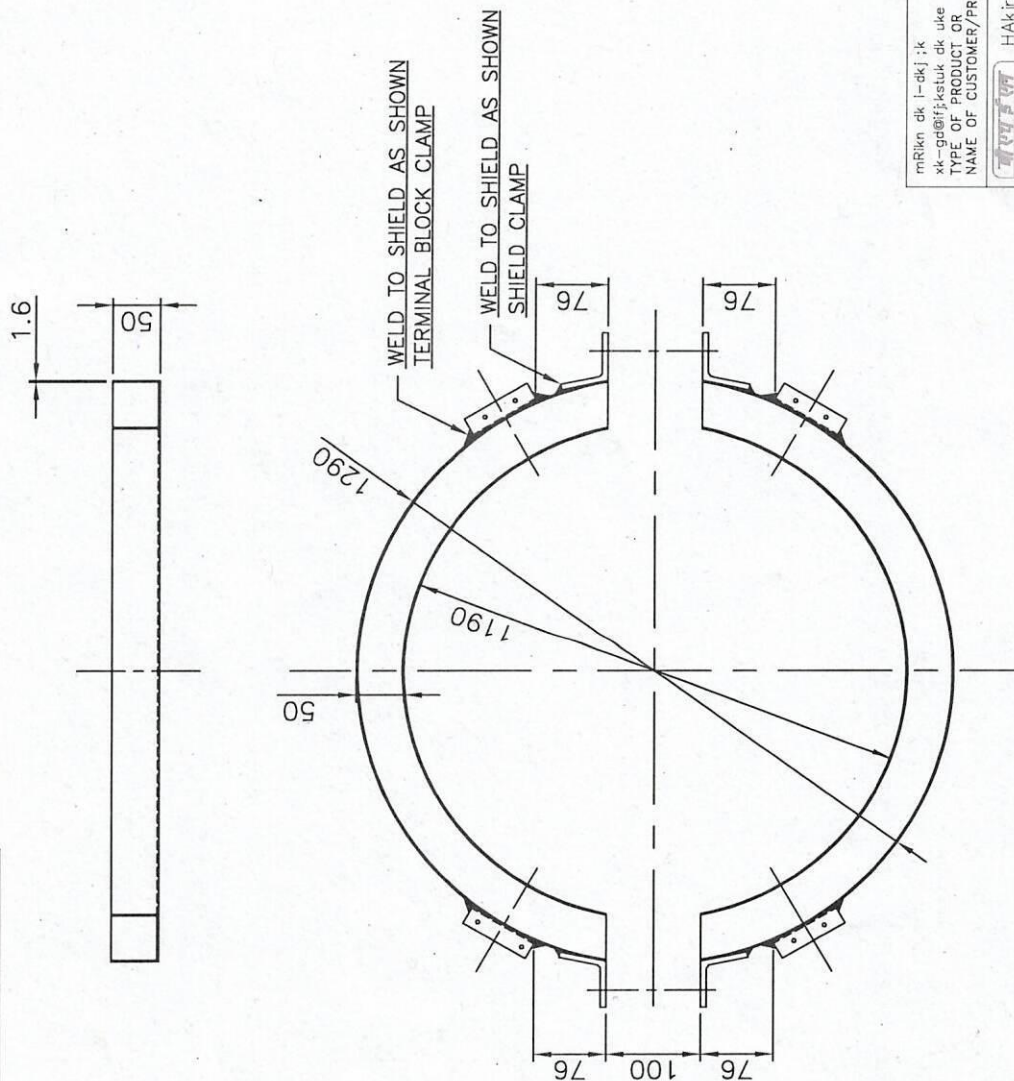
	HAKV gshn bysDV&dy fyfeVSV b,EA&vkh eaocbz BHARAT HEAVY ELECTRICALS LTD. EMPR MUMBAI	use NAME SACHIN LONKAR SHIWANI GUPTA SHIWANI GUPTA	SLIP & SON S.S.C 10/12 10/12	en date en date en date en date
HAKV gshn bysDV&dy fyfeVSV b,EA&vkh eaocbz BHARAT HEAVY ELECTRICALS LTD. EMPR MUMBAI	use NAME SACHIN LONKAR SHIWANI GUPTA SHIWANI GUPTA	SLIP & SON S.S.C 10/12 10/12	en date en date en date en date	en date en date en date en date

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SIZE A3

(ALL DIMENSIONS ARE IN mm)

DRG. NO. 3.12.100.00868



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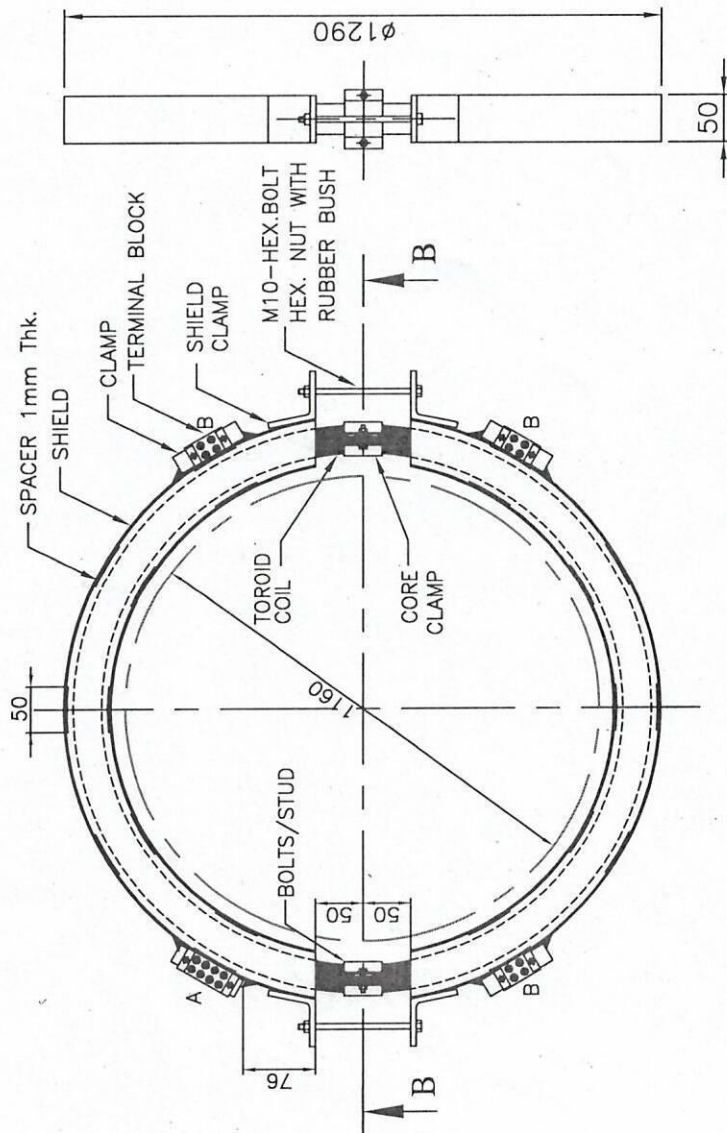
SHAFT CURRENT MONITOR

mRikn dk l--dkj :k xk--gd@f;ksuik dk uke TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		HAK j' gsoh bysDV&dYl tyfvsY b,eAvk j'ih eqacbz BHARAT HEAVY ELECTRICALS LTD. EMPR MUUMBAI	CUMK DIN:	UKEWUE SACHIN LONKAR SHIWANI GUPTA SHIWANI GUPTA	gLWk SIOk 5566 01/12 	enst., dh igLk Wk OF NA NA
(enst.) ENGG DEPT CODE		Wgtr SCALE N.T.S	HAK j' f;g sk-- WEOH (K.G.)	Wk. WkZkZk dk UNHAZ REF. TO ASSY. Dwg.	en d-- EN NO.	en. i;Lk Wk OF ITU 001
(enst.) ASSEMB CODE	—	—	—	vkj[A d--BRAWING NO. 3.12.100.00868	'en--gsv 00	'en--gsv 00
(enst.) ASSEMB CODE	—	—	—	vkj[A d--BRAWING NO. 3.12.100.00868	'en--gsv 00	'en--gsv 00

SIZE A3

(ALL DIMENSIONS ARE IN mm)

DRG. NO. 3.12.100.00869



A cross-sectional diagram of a toroid assembly. The central component is a **TOROID CORE**, depicted with horizontal lines. This core is surrounded by a **TOROID COIL**, represented by a stippled pattern. The coil is further enclosed by a **SHIELD**, shown with diagonal hatching. The entire assembly is held between two **CLAMP** blocks. The interface between the toroid coil and the clamps is filled with **EPOXY**. A **SPACER (INSULATOR)** is located between the shield and the clamps. A bracket on the right side, labeled **DETAIL-K**, encompasses the shield, spacer, and epoxy regions.

NOTES:

1. PUT THE WOUND CORE IN THE SHIELD AND MAINTAIN THE CONCENTRICITY.
2. TEST THE CONTINUITY AND I.R. TEST AT THIS STAGE.
3. ENCAPSULATING OF THE WINDING.
4. FILL THE EPOXY RESIN WITH SMOOTH FINISH WITHOUT ANY BUBBLES (RED COLOR).

TERMINAL BLOCKS ARE OF 2 TYPE

TYPE A : 8 CONNECTORS TYPE B : 4 CONNECTORS

SECTION B-B

SHAFT CURRENT MONITOR

REVISION NO.	REV.	DATE	CHANGED BY: _____ DEPT: _____ DESK: _____ APPROVED: _____		 HAKJY gsoh bysFDV&dYl tyfeVsm b.EAvk jth eqqcbZ BHARAT HEAVY ELECTRICALS LTD. EMRP MUMBAI	 Wt. Vty. ukt dh lsh UNTOLENS. GR. —	Wt. Vty. ukt dh lsh SCALE N.T.S.	HAKJY gsoh bysFDV&dYl tyfeVsm Wt. Vty. ukt dh lsh SCALE N.T.S.	SHIHWANI LONKAR SHIHWANI GUPTA SHIHWANI GUPTA	uKE@NAME gURKB SON SSG	IncludDATE 15/11/2012 12/11/2012	001 001 001	00 00 00		
			k'n AZBBLE CURRENT SENSOR ASSEMBLY CURRENT SENSOR ASSEMBLY CURRENT SENSOR ASSEMBLY											vkjs[A d-BRAWING NO. 3.12.100.00869 3.12.100.00869	
INVENTORY NO.															
SIGN. & DATE															

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SIZE A3