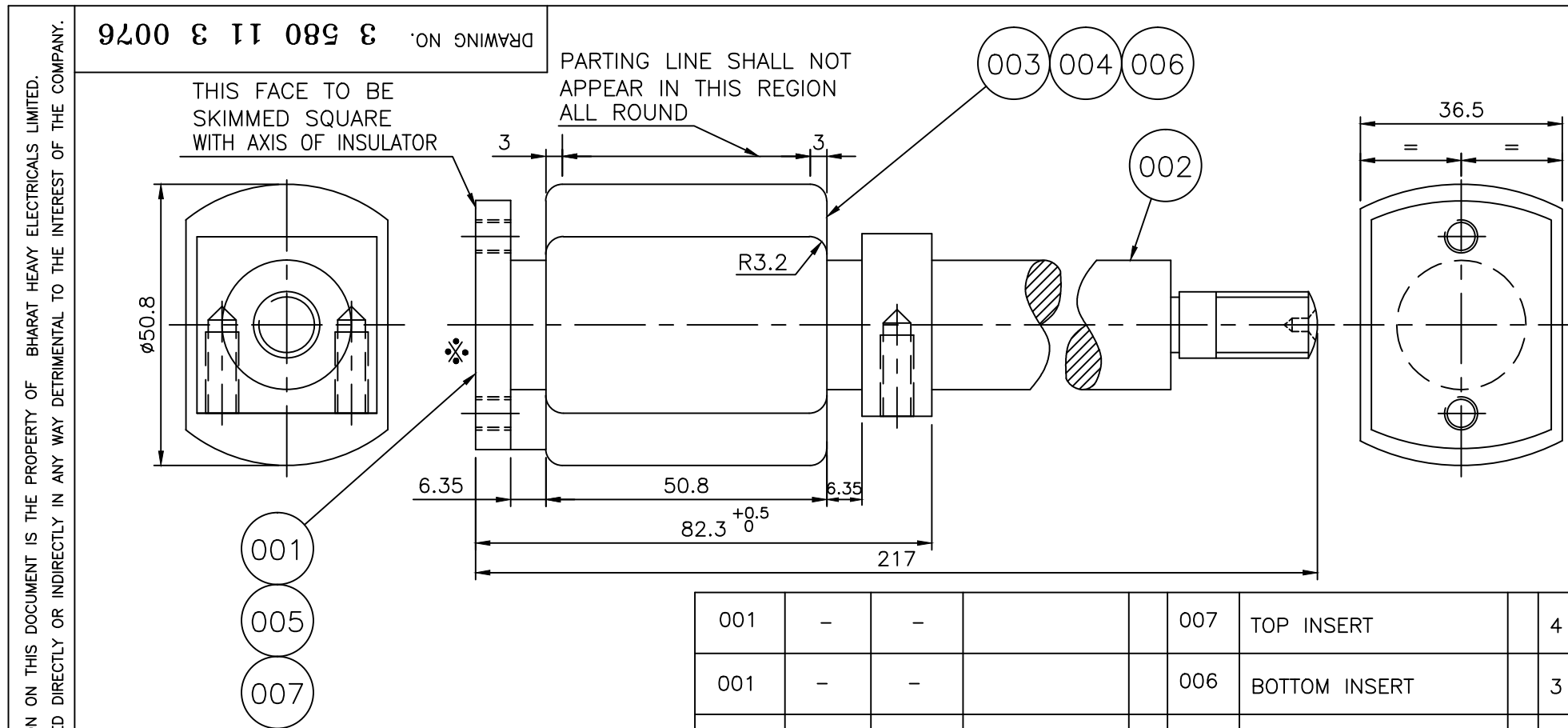


FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm.)



STYLE LIST				
STYLE NO.	ITEM INCLUDED	DESCRIPTION OR REMARKS	RECORDED	
			SIGN	DATE
BP 9088508453	VAR-00	DMC MOULDED PISTON INSULATOR	Sd/—	09.01.85
BP 9088102287	VAR-01	DMC MOULDED PISTON INSULATOR	Sd/—	09.01.85

TOOL LIST		
ITEM	TOOL	DESCRIPTION
VAR 00&01	1486194	ALIGNABILITY CHECKING TEMPLATE
VAR 00	1489085	MOULDING TOOL
VAR 01	1486491	MOULDING TOOL

001	-	-			007	TOP INSERT		4 580 11 30054	003					
001	-	-			006	BOTTOM INSERT		3 580 11 30075	002					
-	001	-			005	TOP INSERT		4 580 11 30054	002					
AS REQD.	AS REQD.	-	STYLE NO. BP9068525298		004	PHENOLIC MOULDING COMPOUND THD 111/20L								
-	-	AS REQD.			003	POLYESTER MOULDING COMPOUND (DMC)				AA 2289026018				
-	001	001			002	BOTTOM INSERT		3 580 11 30075	001					
-	-	001			001	TOP INSERT		4 580 11 30054	001					
VAR. 02	VAR. 01	VAR. 00	REMARKS	VAR NO.	ITEM NO.	DESCRIPTION	SID.	DRAWING NO.	IT. NO.	MATL. CODE.	A/C	UNIT	UNIT WT.	QTY.
									VAR	MATL. SPCN.				

NOTE :-

1. FACE ✖ TO BE AT RIGHT ANGLE TO AXIS OF COMPLETE INSULATOR.
2. THE TWO TAPPED HOLES IN ITEM- 001 TO BE SQUARE WITH ITEM-002.
3. INSERTS TO BE CONCENTRIC WITHIN ± 0.4 AFTER MOULDING.
4. INSULATORS ARE TO BE CAPABLE OF WITH STANDING 25 KV FLASH TEST FOR ONE MINUTE BETWEEN INSERTS.
5. TOLERANCES ON MOULDED DIMENSIONS TO BE TO CLASS III TOLERANCE OF B.S. 2026-1953.
6. TORQUE TEST :- SUBJECT 3 % (MIN 5 NOS.) OF EACH BATCH OF PRODUCTION TO A TORQUE TEST OF 10 Kg METRE FORCE.
7. ITEMS TO BE PELIFILM DIPPED TO PROTECT THE MACHINED SURFACES.
8. PREHEATING IS TO BE DONE AT 110-115°C.
9. MOULDING TEMPERATURE IS $165 \pm 5^\circ\text{C}$ AND PRESSURE IS 75-80 TONS MINIMUM.

ADDITIONAL INFORMATION			22PC		उत्पाद का प्रकार या ग्राहक/परियोजना का नाम					AC/DC EMU							
STATUS OF DRAWING			M		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT					INDIAN RAILWAYS							
DISTRIBUTION OF PRINTS OFFICE COPY - 1 SWM - 4 TCX (SWM) - 1					<div>बी.एच.ई.एल. भारत हेवी इलेक्ट्रिकल्स लिमिटेड भोपाल BHEL BHARAT HEAVY ELECTRICALS LTD. BHOPAL</div>			खनया DRN.		नाम /NAME		हस्ता/SIGN.		दि./DATE		पे.रि की संख्या NO. OF VAR.	
								जॉचा CKD.		A.S.A.		Sd/-		09.01.85		09.01.85	
								स्वीकृत APPD.		V.P.A.		Sd/-		10.01.85		02	
REV	DATE	ALTERED	M.S.J.	-sd-	विभाग DEPT. CEE	अनु.टोल.नाप की त्रुटि UNTOL. DIMS. GR.		अनुपात SCALE	भार कि.ग्रा. WEIGHT (K.G.)	उसे. डाईंग का संदर्भ REF. TO ASSY.		मद संख्या ITEM NO.		मद संख्या NO. OF ITEM			
05	07.10.04	CHECKED	N.K.M.	-sd-	कोड CODE. 407	CG 06503		1:1	-	0 580 11 3 0004 0 580 11 3 0005		003 003		007 007			
NOTES 8 & 9 ADDED.					शीर्षक/TITLE MOULDED PISTON INSULATOR					डाईंग क्र./DRAWING NO.						पुन./REV.	
										3 580 11 3 0076						07	
										शीट क्र /SHT.NO 01				शीटों की सं./NO.OF.SHT. 01			

(ALL DIMENSIONS ARE IN mm)

REV.	DATE	ALTERED	T.R.D.	REV.	DATE	ALTERED	J.D.B.	ADDITIONAL INFORMATION
15	24.10.17	CHECKED	D.D.	14	20.07.12	CHECKED	B.K.T.	AC/DC EMU
		APPROVED	R.K.S.			APPROVED	R.K.S.	
DIMS. 6.35 -0.051 WAS 6.35				DRG. COMPUTERISED.				STATUS OF DRAWING M
								DISTRIBUTION 0/C - 1 SWM - 4
								OF PRINTS TCX (SWM) - 1

15.875 -0.051

5

31.75 FOR IT. 001

24 FOR IT. 002 & 003

45

SERRATION 1 DEEP x 1.6 WIDTH

REMOVE SHARP CORNERS

25 FOR IT. 001

22 FOR IT. 002 & 003

022.0 -0.05

6.35 -0.051

31

0.8

9

SERRATION

31.75

19

SEE NOTE TO 'U' SHAPE

UNDER CUT 'U' SHAPE TO 21

2-HOLES M8 CONCENTRIC WITH 22 & CENTRE LINE PARALLEL TO FLATS

NOTE :-

- PUT 'O' PUNCH MARK AT LOCATION SHOWN THUS * .

DIM 22 WAS FOR IT 002 ONLY
MAT. SNEEN FOR IT 003 WAS BP 10690

ITEM	TOOL	DESCRIPTION
001	1555672	STABMILL CUTTER WITH SERRATIONS ON DIAMETER
001	1489517	DRILL JIG
001	1486231	CALLIPER GAUGE FOR DIM. 6.35 -0.051
001	1555326	SET OF CAMS AND TOOLS
001	1555504	FIXTURE FOR STRADDLE MILLING

REMARKS	ITEM NO.	DESCRIPTION	STD	MATL. CODE	A/C	UNIT	UNIT WT.
	003	45 DIA. HIGH STRENGTH RUST LESS ST. BAR		CG 07007			0.42
STYLE NO. BP 9078102292	002	45 DIA. HIGH TENSILE BRASS ROD	1	AA 1210217090			0.42
STYLE NO. BP 9078514221	001	45 DIA. HIGH TENSILE BRASS ROD	1	AA 1210217090			0.42
				AA 12117			31.0
				AA 12117			31.0

INVENTORY NO.	SIGN. & DATE	DEPT. CEE	UNTO. DIMS. GR.	SCALE	WEIGHT(KG)	REF.TO ASSY.DRG.	ITEM NO.	NO.OF ITEM
dEi:wVj Mz&Abox		407	CG 06503	1:1	-	3 580 11 3 0076	001,005	003
iQAbY deAad 45801130054								

Bharat Heavy Electricals Ltd. Bhopal			
DRN.	T.S.E.	Sd/-	09.01.85
CKD.	A.S.A.	Sd/-	09.01.85
APPD.	V.P.A.	Sd/-	10.01.85
DRAWING NO.		REV	
4 580 11 3 0054		15	
SHT.NO	01	NO.OF.SHT.	01

		<div><div><div>बीएसईएल</div><div>BHEL</div></div></div>	<div>PRODUCT STANDARD</div> <div>Control Equipment Engineering</div>		<div>CG 07007</div> <div>Page 1 of 4</div>		
		<div>1000N/mm² 0.2% Rp RUSTLESS STEEL BARS</div>					
<div>COPY RIGHT AND CONFIDENTIAL</div> <div>The information on this document is the property of BHEL Bhopal</div> <div>It must not be used directly or indirectly in any way detrimental to the interest of the company</div>		<div>1. GENERAL : This specification governs the quality of hot rolled rustless steel bar up to 50 mm diameter.</div>					
		<div>2. APPLICATION : Manufacture of piston Insulator inserts of Pneumatic power contactor.</div>					
		<div>3. CONDITION OF DELIVERY : The material shall be supplied as straight length in the Hot rolled descaled condition.</div>					
		<div>4. COMPLIANCE WITH NATIONAL STANDARDS : There is no Indian or British Standard covering this type or material.</div>					
		<div>5. DIMENSIONS AND TOLERANCES : <div>5.1 Dimensions As specified on the order</div><div>5.2 Tolerances On bars upto and including 50 mm diameter + 0.62 mm - 0.00</div></div>					
		<div>6. MANUFACTURE : The material shall be made from electric furnace process steel and shall be free from harmful segregation.</div>					
		<div>7. HEAT TREATMENT : The material shall be subject to the following three stages heat treatment.</div>					
		<div>7.1 Stage -1 The material shall be heated to a temperature within the range 1000 ± 10°C and soaked for at least a ½ hours after whole of the material has attained the prescribed temperature. Soaking shall be followed by cooling in air to ambient temperature.</div>					
		<div>7.2 Stage - 2 The material shall be slowly and uniformly heated to a temperature within the range 850 ± 10°C and soaked for at least a ½ hours after whole of the material has attained the prescribed temperature. Soaking shall be followed by cooling in air to ambient temperature.</div>					
		<div>The material shall then be held at a temperature below 20°C for at least 24 hours.</div>					
		<div>Rev 01</div> <div>Date : 03.02.2024</div> <div><div><div><div>Issued by : Dinesh Dubey</div></div></div></div>	<div>Distribution:</div> <div><div><div>SWM</div><div>QTX</div><div>QC (SCR)</div><div>O/C</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div></div></div>		<div>Prepared By</div> <div><div>R K Sharma</div><div>Issued By:</div></div>		<div>Filename:</div> <div>CG07007</div> <div>Date: 03.07.06</div>

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7.3 Stage - 3

The material shall be slowly and uniformly heated to a temperature within the range $510 \pm 10^{\circ}\text{C}$ and soaked for at least a 2 hours after whole of the material has attained the prescribed temperature. Soaking shall be followed by cooling in air to ambient temperature.

Note : Stages of heat treatment given above is suggestive, however suitable heat treatment shall be carried out to meet mechanical properties given in clause 11 of this standard

8. FREEDOM FROM DEFECTS :

The material shall be free from any harmful defects such as cracks or laminations.

9. CHEMICAL COMPOSITIONS :

The cost analysis shall be as follows :

Element	% Minimum	% Maximum
Carbon	-	0.07
Silicon	-	1.00
Manganese	-	1.00
Phosphorus	-	0.04
Sulphur	-	0.03
Chromium	13.00	17.5
Molybdenum	0.0	2.00
Nickel	3.00	6.00
Copper	1.40	5.0
Niobium	0.15	0.45
Columbium plus Tantalum	0.0	0.45

10. TEST SAMPLE :

Brinell Hardness tests shall be taken on one and selected at random and at mid-length of each bar. Bars in each heat treatment batch of each cast having the highest and lowest hardness values shall be identified and sent for tensile tests.

If a heat treatment batch contains more than one section of material, test samples shall be selected as above for each section.

The Brinell Hardness ranges shall be recorded on the test certificate.

11. MECHANICAL PROPERTIES :

11.1 Tensile :

When tested in accordance with IS : 1608, the test samples shall show the following values :

*Tensile Strength	:	1008 - 1190 N/mm ²
0.2% Proof Stress	:	1000 N/mm ² Min
Elongation on 5√SO G.L. :	:	12% Min .
Reduction in Area	:	40% Min.

One of the values from tensile strength and 0.2% proof stress is to be guaranteed.

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Date :03.07.06

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<div>COPY RIGHT AND CONFIDENTIAL</div> <div>The information on this document is the property of BHEL Bhopal</div> <div>It must not be used directly or indirectly in any way detrimental to the interest of the company</div>	<div>11.2 Hardness :</div> <div>When tested in accordance with IS : 1500, the samples shall show a value between 321- 356 BHN</div> <div>A Brinell Hardness test shall be taken on the tensile test pieces and recorded on the test certificate. Any difference in excess of 10 points between the hardness value on the test piece and that on the bar from which it was taken shall be reported to BHEL-BHOPAL.</div> <div>12. TEST CERTIFICATE :</div> <div>Three copies of the test certificate, shall be supplied unless otherwise stated on the order.</div> <div>In addition, supplier shall ensure the enclose one copy of the test certificates along with their dispatch documents to facilities quick clearance of the material.</div> <div>The test certificate shall bear the following information</div> <div>BHEL Reference :,</div> <div>CG07007</div> <div>Rev. 01</div> <div>Our order no.</div> <div>Supplier's Name</div> <div>Identification No.</div> <div>Malt. No.</div> <div>Size & Number of Bars</div> <div>Particulars of Heat treatment (actual soaking temperature time and cooling media for each stage of heat treatment)</div> <div>Results of Test :</div> <div>Results of the chemical analysis of the cast and all mechanical tests including the hardness range obtained on the batch.</div>	
	<div>Revision : 01</div> <div>Date : 03.02.2024</div> <div>Revision: 00</div> <div>Date :03.07.06</div>	

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<div>COPY RIGHT AND CONFIDENTIAL</div> <div>The information on this document is the property of BHEL Bhopal</div> <div>It must not be used directly or indirectly in any way detrimental to the interest of the company</div>	<div>13. PACKING & MARKING :</div> <div>The bars shall be packed in straight length and suitably protected against damage transit. Each bar shall be stamped CG07007. The bars shall be bundled in either cast or heat treatment batches with tags at each end, bearing the following information.</div> <div>BP 10690 : 1000 N/mm², 0.2% Rp Rustless Steel Bars.</div> <div>Order No.</div> <div>Heat Treatment No.</div> <div>Cast No.</div> <div>14. SUPPLY OF MATERIAL :</div> <div>Material shall be supplied in pieces of length specified in PO.</div>	
	<div>Revision : 01</div> <div>Date : 03.02.2024</div> <div>Revision: 00</div> <div>Date :03.07.06</div>	