

- NOTES:—

1. SPRING PRESSURE : 3.65 ± 4 KG. NEW BRUSH
2.70 \pm 0.3 KG. WORN BRUSH
2. CLAMPING BOLT ITEM 010 TO BE PARKARSED TO PRS. SPEC. NO. 0673616.
3. ITEM 010 AND 011 TO BE ZINC PLATED TO PRS. SPEC. 0673603AND PASSIVATED TO PRS. SPEC. 0673604 WITH A PLATING THICKNESS OF 0.013 TO 0.015 MM.

STYLE LIST	
S NO.	ITEM DESCRIPTION
1.	BRUSH HOLDER ASSY AS PER DRAWING NO. 14592080006. ONE SET CONSISTING OF 2 NOS. BRUSH HOLDER L-H & 2 NOS. BRUSH HOLDER R-H. EACH BRUSH HOLDER L-H CONSISTS OF 01 NO. OF ITEM 001, 007, 012, 013, 014 AND 2 NOS. EACH OF ITEM 008, 009, 015, 016. EACH BRUSH HOLDER R-H CONSISTS OF 01 NO. OF IT. 002, 007, 012, 013, 014 & 2 NOS. OF ITEM 008, 009, 015, 016
	BP9094717468

TOOL LIST		
IT.NO.	TOOL NO.	DESCRIPTION
	1574127	SPRING TENSION CHECKING GAUGE
	1574567	BUSH GEAR SETTING & BLOCK WELDING FIX. (TO CHECK BLOCK WELDING)
	1574576	BUSH GEAR SETTING FIXTURE
	1574712	GAUGE FOR CHECKING ARCING HORN GAP 20-21MM.
	1574719	STEEL PIN

[illegible][illegible]

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.

65209/2024/HEP-TXM20581

A1 SIZE

	REF DRG. NO.	SIGN & DATE	NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DEEMED TO BE IN THE INTEREST OF THE GOVERNMENT.	A
WARRANTY NO.				E

ORG. NO. 14392080004

1

1. REMOVE SHARP CORNERS.
2. ~~BRUSH HOLDER MATERIAL BRONZE TO AA 19943~~
~~ALTERNATIVELY GUN METAL TO AA 19941 CAN BE USED.~~
3. ITEM 001 AND 002 ARE SAME EXCEPT FOR THE DIA. 20 BOSS WITH M8 TAPED HOLE AS SHOWN IN THE DRAWING.
4. FOR FIRST TWO PROTOTYPE TM 4303 BY DIMENSIONS 106 AND 56 SHOULD BE MAINTAINED AS 126 & 76 RESPLY.

3	ZONE
---	------

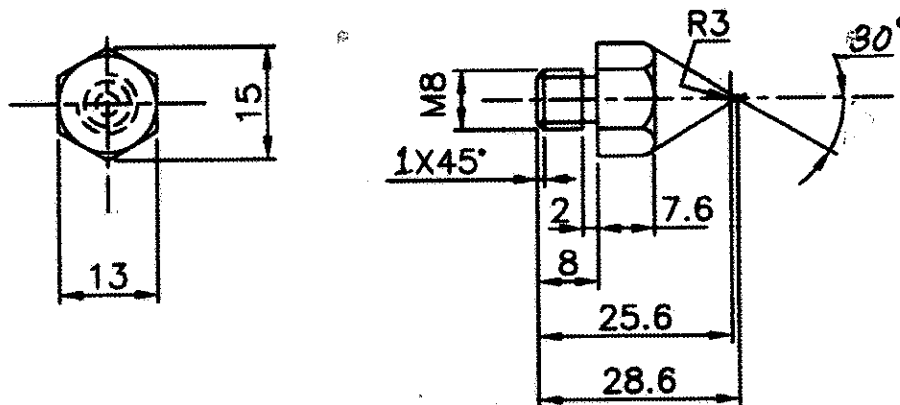
NO. OF
ITEM
02
REV.
12

REV.	DATE	ALT.	CHD	REV.	DATE	ALT.	CHD	REV.	DATE	ALT.	CHD	REV.	DATE	ALT.	CHD	REV.	DATE	ALT.	CHD								
12	13-08-16	APPD.	13/1/16	11	25-2-10	APPD.	10	12-07-07	APPD.	09	31-8-05	APPD.	08	22-10-02	APPD.	07	24-07-01	APPD.	06	20-4-01							
DIMM. 116 & 56 WERE NOT EQUIVALENT ON BOTH SIDES IN TOOL LIST TOOL NO. 1574714 APPD. 20-05 ON DIMM. 1574716 WAS NOT ON. (T.C.M. 348)				VIEW DIMS. 31 WAS 25 (REF B/2) VIEW DIM. 31 WAS 25 (REF E/16)				IN BOM 17 OCT 1902 MATC SPEC AR 19941 WAS AR 19943. NOTE-2 WAS ON.				IN VIEW DIM 2 WAS ON (E/5) DIM 58 & 116 & 0.15 WERE 0.05 DIM 60 & 118 & 0.15 & 0.05.				E-6 DIMS. 60 & 118 & 0.15 DIMS. 60 & 118 & 0.15 WERE 58 & 116 & 0.15.				DIM 42, 4, R2, R38 & R42 WERE ON. DIM 76 WAS GB. VIEW UPDATED.				Ø 162 WAS Ø 16. TOOL LIST WAS NOT ON. (T.C.M. 288 SNO 17 TO 23)			
																6				7				8			

FIRST ANGLE PROJECTION

REV.	DATE	ALTERED	REV.	DATE	ALTERED	CZ	ADDITIONAL INFORMATION
02	21-2-11	CHECKED ML	01	5.6.09	CHECKED ML		
		APPROVED			APPROVED		
BOM MATL. SPECN AA10112 WAS BP10172.			DRG. UPDATED & DIGITIZED.			STATUS OF DRAWING	
						DISTRIBUTION TME-1 TXM -4 OF PRINTS TNX -1	

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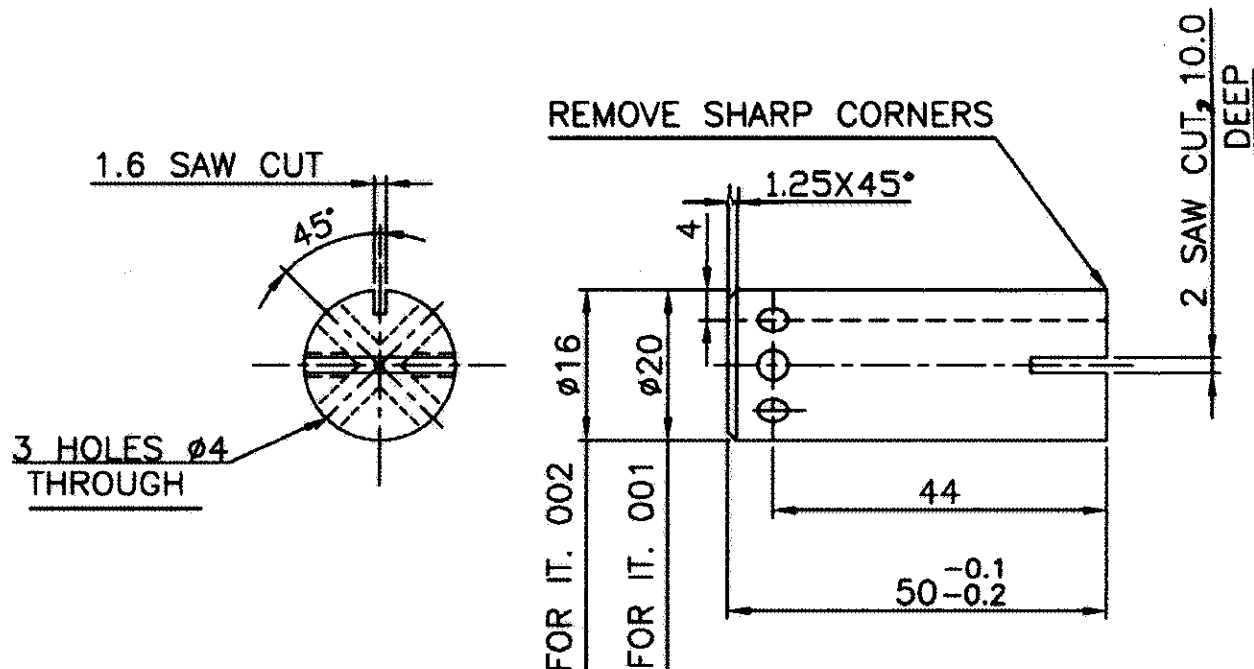
NOTES:-

1. IT.001 TO BE ZINC PLATED TO AA 0673603 AND PASSIVATED TO AA 0673604 WITH A PLATING THICKNESS 0.013 TO 0.015 MM.
2. TOLERANCES ON UNTOLERATED DIMENSIONS ARE ± 0.25

001		HEXAGONAL BAR 13 A/F X 29	BP 1010172085 AA10112	KG	0.025
REMARKS	ITEM NO.	DESCRIPTION	MATL. CODE	A/C	UNIT WT.
			MATL. SPECN.		QTY.
28		28	28		
DEPT. TME		GRADE OF UNTOL. DIM. C/M/F		SCALE	WEIGHT(KG)
CODE 405				NTS	0.025
TITLE		ARCING STUD		DRAWING NO.	
		TM 4303 AZ/BY/DY/CZ		44392080001	
				REV 02	
				SHT.NO 01 NO.OF.SHT. 01	

165209/2024/HEB-EXM20581

REV.	DATE	ALTERED	CZ	ADDITIONAL INFORMATION
CHECKED	4.06.09	CHECKED	MC	
APPROVED		APPROVED	20	
DRG. UPDATED & DIGITIZED.				STATUS OF DRAWING
				DISTRIBUTION OF PRINTS TME-1 TNX -1 TXM -4

**NOTES:-**

1. MACHINE ALL OVER.
2. PIN TO BE ZINC PLATED TO AA 0673603 AND PASSIVATED TO AA 0673604.
3. PLATING THICKNESS 0.013 TO 0.015 MM.

	002	PIN Ø16 X 50	AA 10112	KG.	0.10
	001	PIN Ø20 X 50	AA 10112	KG.	0.12
REMARKS	ITEM NO.	DESCRIPTION	MATL. CODE	UNIT	UNIT WT.
			MATL. SPECN.		QTY.
QNTY 1	28	28	QNTY 1	28	QNTY 2

BHARAT HEAVY ELECTRICALS LTD.
BHOPAL

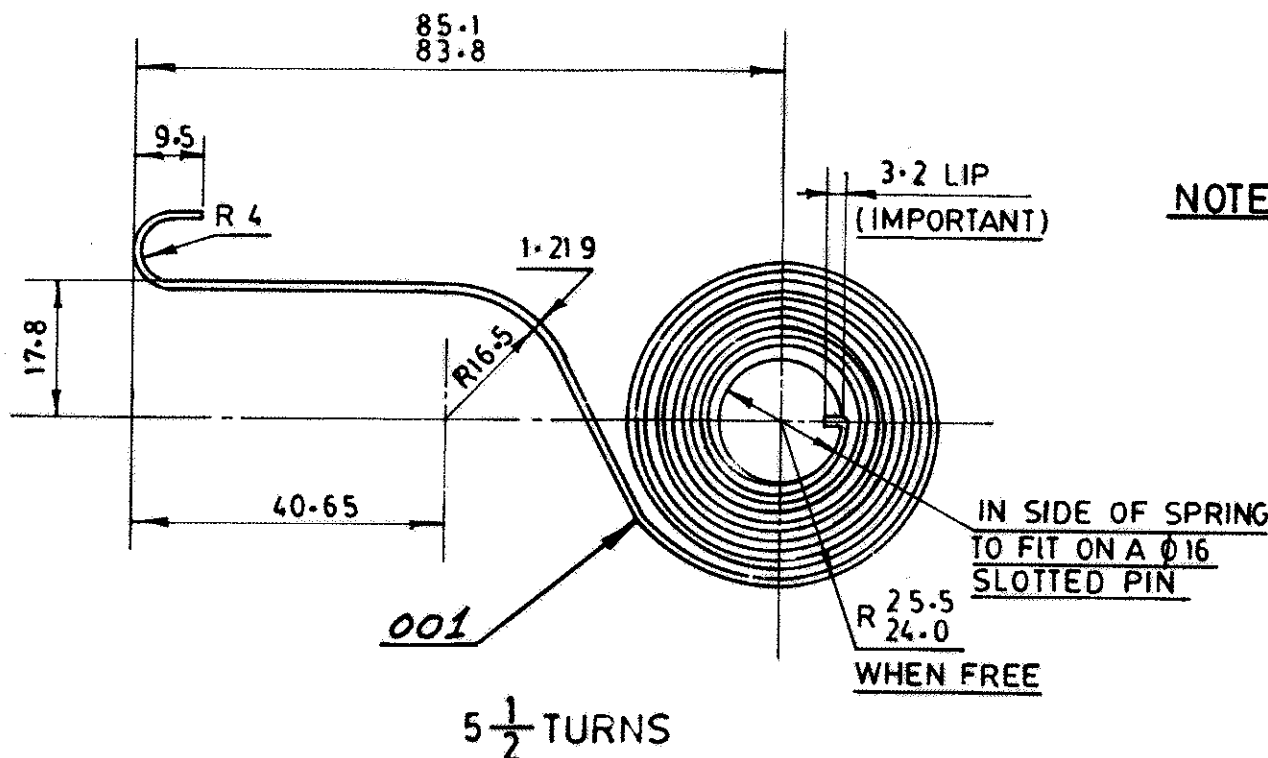
DRN.	NAME	SIGN	DATE
CKD.	BHARAURIA	Sd/-	27.07.89
APPD.	SGD	Sd/-	28.07.89
	RKD/ATR	Sd/-	28.07.89

DEPT. TME	GRADE OF UNTOL.	SCALE	WEIGHT(KG)	REF. TO ASSY. DRG.	ITEM NO.	NO. OF ITEM
CODE 405	DIM. Ø/M/F AA0230208	NTS		14392028003 14392080006	008 008	002
TITLE BRUSH HOLDER SPRING PIN TM 4303 AZ / CZ / BY / DY				DRAWING NO. 44392028002		REV 04
SHT. NO 01		NO. OF SHT. 01				

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

DRG. No. 3 4 3 9 2 0 4 1 0 0 2



NOTES:-

- 1 ALTERNATIVELY SPRING TO BE MADE OF AA10304. HEAT TREAT TO BRINELL HARDNESS.
- 2 REMOVE ALL SHARP EDGES & CORNERS. -410/440.
- 3 FINGER PORTION OF SPRING MUST BE FLAT & SQUARE ACROSS THE WIDTH WHEN MOUNTED ON THE $\phi 16$ SLOTTED PIN.
- 4 SPRING SHALL BE CAPABLE OF WITHSTANDING 25000 CYCLES OF UP & DOWN MOVEMENT OF ITS LIP BY 45mm. FROM ITS LOWEST POSITION, WHEN ASSEMBLED IN A BRUSH HOLDER & SET AT A LOAD OF 2.7 - 3.15 KGS, SPRING SHOULD NOT SHOW A VARIATION OF LOAD MORE THAN 0.25 KG.
- 5 SPRING IT-001 TO BE ZINC PLATED TO AA0673603 AND PASSIVATED TO AA0673604, WITH A PLATING THICKNESS OF 0.015 TO 0.020 MM. ALTERNATIVELY SPRINGS TO BE PARKERISED TO AA0673616
- 6 TOLERANCES ON UNTOLERATED DIMS TO BE ± 0.25 MM.
7. ALTERNATIVELY USE STAINLESS STEEL MATERIAL TO AISI-304 HARDNESS OF SPRING TO BE 40-45 RC.

TOOL LIST CONT'D.			TOOL LIST		
			IT.	TOOL	DESCRIPTION
	1406949	WINDING MANDREL O/D 14.5	001	1457931	BENDING TOOL
	1406950	RADIUS FORMING TOOL R16.5 & R 4	001	1457932	MANDREL
	1406951	LOCATOR FOR END CUTTING 9.5		1406948	LIP BENDING TOOL

REV	DATE	ALTD	RBV
06	6.2.01	CKD	M4

MIC REF TM 4303 BY 8 DY WAS
NOT ON. ASSY. REF. 14392080006
WAS NOT ON. *all*

001 ST. 454162 SEE NOTE 7.										001 SPRING 1.219 TKX 19.05 x 638										2																														KG										0.11																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												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REV 05	DATE 19-3-97	ALT <u>Blom</u>
		CRD <u>2001</u> <u>lit</u>

TOOL NOS. 1406948,
1406949, 1406950,
1406951 WERE NOT ON.

(TCM-248-B)

REV.	DATE	ALTD.
04	11-3-95	CRD. <i>[Signature]</i>

NOTE-7 WAS NOT ON.

STATUS OF DRAWING

DISTRIBUTION OF PRINTS

TIME - 1 TXM - 3
TNX - 1 TGM - 3

REV.	DATE	ALTERED	<i>McLaglen</i>
03	24-8-94	CHECKED	<i>[Signature]</i>

NOTE- 6 WAS NOT ON.


REV.	DATE	ALTERED
02	13-10-92	CHECKED


BOM UPDATED

REV	DATE	ALTERED
01	18-7-90	C.K.B.
		CHECKED

IN NOTE 5 ZINC PLATED &
PASSIVATED PROC. SPEC. WERE
NOT ON. PLATING THK. WAS
NOT ON.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT	TM 4601AZ, TM 4603 BZ & TM 4303 BY, DY MG DE LOCO AC EMU
---------------------------------------------------	-----------------------------------------------------------------

 BHARAT HEAVY ELECTRICALS LIMITED JHANSI	DRN.	NAME <i>BHADAURIA</i>	SIGN. <i>[Signature]</i>	DATE <i>8-1-88</i>	73 74
	CHD.	<i>SGD</i>	<i>[Signature]</i>	<i>26-2-88</i>	No.
	APPD	<i>SKB</i>	<i>[Signature]</i>	<i>20.5.88</i>	OF VAR.

DEPT	TIME	GRADE OF UN. TOL.		SCALE	WEIGHT (Kg.)	REF. TO ASSY. DRG.	ITEM	75 77
CODE	405	DIM. 2/M/F		NTS	0.11	0 439 20 40 001 1 439 20 80 006	No. 009	No. OF ITEMS

TITLE	1 3 7	DRAWING No.	22 23 24
<u>BRUSH HOLDER SPRING</u>	CARD CODE	3 439 20 41 002	REV. 06

SHEET No. 01 No. OF SHEETS 01

SES

SIZE A3