

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

FIRST ANG F. PERFECTION

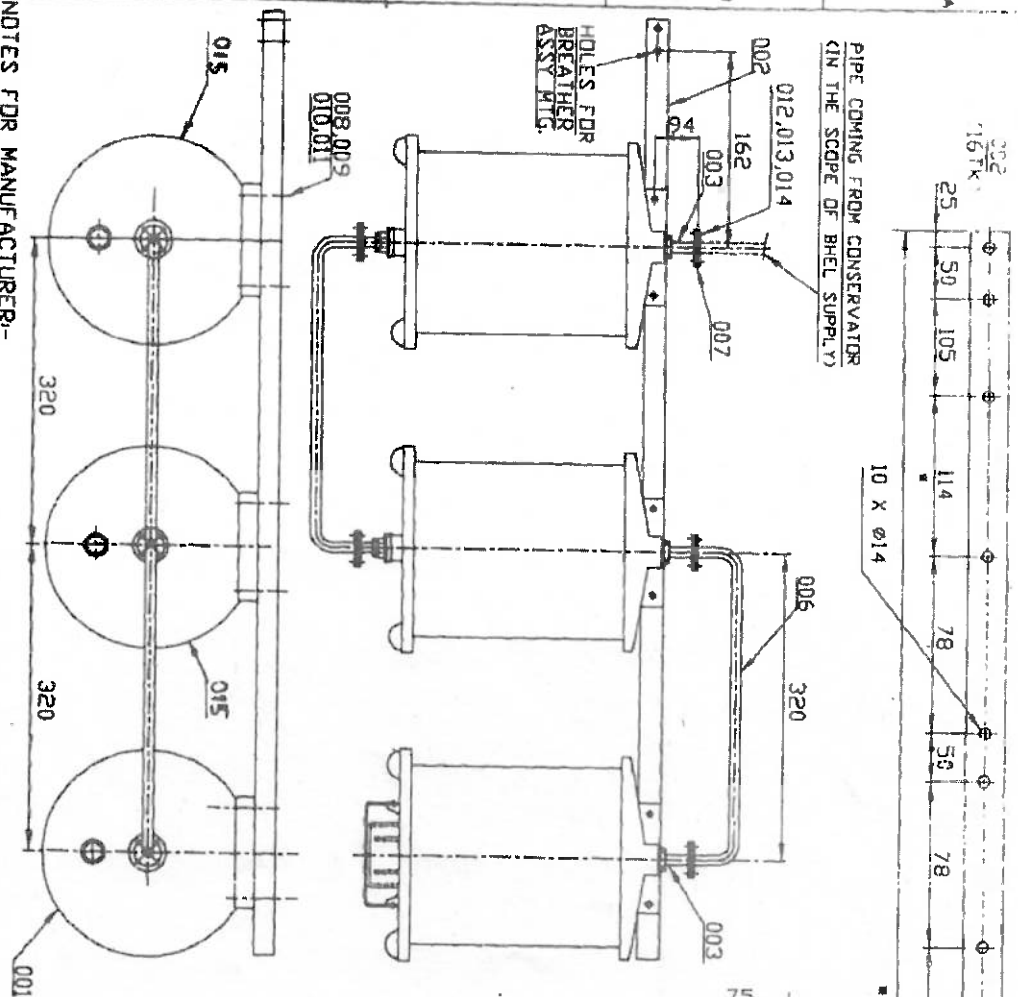
1900 00 564 3 00000

TALL DIMENSIONS ARE IN MM

7

8

PIPE COMING FROM CONSERVATOR
(IN THE SCOPE OF BHEL SUPPLY)



FOR BREATHER MTG

VAR-01

SEE DETAIL-A

DETAIL-A

FOR DELINK BOM REFER COMP. BOM. DRG. SMT. NO. 3499 00 000061

ITEM NO.	DESCRIPTION	QTY	UNIT	REMARKS
001	TO DETAIL 001	1	EA	TO DETAIL 001
002	TO DETAIL 002	1	EA	TO DETAIL 002
003	TO DETAIL 003	1	EA	TO DETAIL 003
004	TO DETAIL 004	1	EA	TO DETAIL 004
005	TO DETAIL 005	1	EA	TO DETAIL 005
006	TO DETAIL 006	1	EA	TO DETAIL 006
007	TO DETAIL 007	1	EA	TO DETAIL 007
008	TO DETAIL 008	1	EA	TO DETAIL 008
009	TO DETAIL 009	1	EA	TO DETAIL 009
010	TO DETAIL 010	1	EA	TO DETAIL 010
011	TO DETAIL 011	1	EA	TO DETAIL 011
012	TO DETAIL 012	1	EA	TO DETAIL 012
013	TO DETAIL 013	1	EA	TO DETAIL 013
014	TO DETAIL 014	1	EA	TO DETAIL 014
015	TO DETAIL 015	1	EA	TO DETAIL 015
016	TO DETAIL 016	1	EA	TO DETAIL 016
017	TO DETAIL 017	1	EA	TO DETAIL 017
018	TO DETAIL 018	1	EA	TO DETAIL 018
019	TO DETAIL 019	1	EA	TO DETAIL 019
020	TO DETAIL 020	1	EA	TO DETAIL 020
021	TO DETAIL 021	1	EA	TO DETAIL 021
022	TO DETAIL 022	1	EA	TO DETAIL 022
023	TO DETAIL 023	1	EA	TO DETAIL 023
024	TO DETAIL 024	1	EA	TO DETAIL 024
025	TO DETAIL 025	1	EA	TO DETAIL 025
026	TO DETAIL 026	1	EA	TO DETAIL 026
027	TO DETAIL 027	1	EA	TO DETAIL 027
028	TO DETAIL 028	1	EA	TO DETAIL 028
029	TO DETAIL 029	1	EA	TO DETAIL 029
030	TO DETAIL 030	1	EA	TO DETAIL 030
031	TO DETAIL 031	1	EA	TO DETAIL 031
032	TO DETAIL 032	1	EA	TO DETAIL 032
033	TO DETAIL 033	1	EA	TO DETAIL 033
034	TO DETAIL 034	1	EA	TO DETAIL 034
035	TO DETAIL 035	1	EA	TO DETAIL 035
036	TO DETAIL 036	1	EA	TO DETAIL 036
037	TO DETAIL 037	1	EA	TO DETAIL 037
038	TO DETAIL 038	1	EA	TO DETAIL 038
039	TO DETAIL 039	1	EA	TO DETAIL 039
040	TO DETAIL 040	1	EA	TO DETAIL 040
041	TO DETAIL 041	1	EA	TO DETAIL 041
042	TO DETAIL 042	1	EA	TO DETAIL 042
043	TO DETAIL 043	1	EA	TO DETAIL 043
044	TO DETAIL 044	1	EA	TO DETAIL 044
045	TO DETAIL 045	1	EA	TO DETAIL 045
046	TO DETAIL 046	1	EA	TO DETAIL 046
047	TO DETAIL 047	1	EA	TO DETAIL 047
048	TO DETAIL 048	1	EA	TO DETAIL 048
049	TO DETAIL 049	1	EA	TO DETAIL 049
050	TO DETAIL 050	1	EA	TO DETAIL 050
051	TO DETAIL 051	1	EA	TO DETAIL 051
052	TO DETAIL 052	1	EA	TO DETAIL 052
053	TO DETAIL 053	1	EA	TO DETAIL 053
054	TO DETAIL 054	1	EA	TO DETAIL 054
055	TO DETAIL 055	1	EA	TO DETAIL 055
056	TO DETAIL 056	1	EA	TO DETAIL 056
057	TO DETAIL 057	1	EA	TO DETAIL 057
058	TO DETAIL 058	1	EA	TO DETAIL 058
059	TO DETAIL 059	1	EA	TO DETAIL 059
060	TO DETAIL 060	1	EA	TO DETAIL 060
061	TO DETAIL 061	1	EA	TO DETAIL 061
062	TO DETAIL 062	1	EA	TO DETAIL 062
063	TO DETAIL 063	1	EA	TO DETAIL 063
064	TO DETAIL 064	1	EA	TO DETAIL 064
065	TO DETAIL 065	1	EA	TO DETAIL 065
066	TO DETAIL 066	1	EA	TO DETAIL 066
067	TO DETAIL 067	1	EA	TO DETAIL 067
068	TO DETAIL 068	1	EA	TO DETAIL 068
069	TO DETAIL 069	1	EA	TO DETAIL 069
070	TO DETAIL 070	1	EA	TO DETAIL 070
071	TO DETAIL 071	1	EA	TO DETAIL 071
072	TO DETAIL 072	1	EA	TO DETAIL 072
073	TO DETAIL 073	1	EA	TO DETAIL 073
074	TO DETAIL 074	1	EA	TO DETAIL 074
075	TO DETAIL 075	1	EA	TO DETAIL 075
076	TO DETAIL 076	1	EA	TO DETAIL 076
077	TO DETAIL 077	1	EA	TO DETAIL 077
078	TO DETAIL 078	1	EA	TO DETAIL 078
079	TO DETAIL 079	1	EA	TO DETAIL 079
080	TO DETAIL 080	1	EA	TO DETAIL 080
081	TO DETAIL 081	1	EA	TO DETAIL 081
082	TO DETAIL 082	1	EA	TO DETAIL 082
083	TO DETAIL 083	1	EA	TO DETAIL 083
084	TO DETAIL 084	1	EA	TO DETAIL 084
085	TO DETAIL 085	1	EA	TO DETAIL 085
086	TO DETAIL 086	1	EA	TO DETAIL 086
087	TO DETAIL 087	1	EA	TO DETAIL 087
088	TO DETAIL 088	1	EA	TO DETAIL 088
089	TO DETAIL 089	1	EA	TO DETAIL 089
090	TO DETAIL 090	1	EA	TO DETAIL 090
091	TO DETAIL 091	1	EA	TO DETAIL 091
092	TO DETAIL 092	1	EA	TO DETAIL 092
093	TO DETAIL 093	1	EA	TO DETAIL 093
094	TO DETAIL 094	1	EA	TO DETAIL 094
095	TO DETAIL 095	1	EA	TO DETAIL 095
096	TO DETAIL 096	1	EA	TO DETAIL 096
097	TO DETAIL 097	1	EA	TO DETAIL 097
098	TO DETAIL 098	1	EA	TO DETAIL 098
099	TO DETAIL 099	1	EA	TO DETAIL 099
100	TO DETAIL 100	1	EA	TO DETAIL 100

NOTES FOR MANUFACTURER-

- 1-3 NOS OF BREATHERS ARE TO BE CONNECTED IN SERIES AS SHOWN WITH SUPPORT
- 2-FOR GENERAL ARRGT. NOTES AND TESTING REFER DRG-3 499 00 00051 AND 3499000067
- 3-BREATHERS ARE READ WITHOUT SILICA-GEL.
- 4-ALL HARDWARES ARE TO BE HOT DIP GALVANISED.
- 5-TOP AND BOTTOM ALUMINIUM PARTS OF BREATHER SHALL BE COATED FROM INSIDE AND OUTSIDE WITH ONE COAT OF SELF ETCH PRIMER FOR FINAL PAINTING ON ALUMINIUM PARTS AND OTHER STEEL PARTS REFER V.D.MID.
- 6-OPENING TO BE DILY BLANKED.
- 7-BREATHER TO BE SUPPLIED IN DISMANTLED CONDITION.

INVENTORY NO. SIGNATURE REF. DRG. NO.

VAR-01
STYLE NO. 001 TO 015
ITEM INCLUDED: BREATHER GANGING ARRANGEMENT
DESCRIPTION OR REMARKS: BREATHER GANGING ARRANGEMENT

REV. 07 DATE 22/10/16
BY: N.K.M. N.K.M.
CHK: N.K.M. N.K.M.
APP: N.K.M. N.K.M.
TITLE OF DRAWING IS CHANGED
NO CHANGED IN BOM.

ADDITIONAL INFORMATION
STATUS OF DRAWING: U
DISTRIBUTION OF PRINTS
THE: 100
REV: 1
DATE: 22/10/16
BY: N.K.M. N.K.M.
CHK: N.K.M. N.K.M.
APP: N.K.M. N.K.M.
TITLE: BREATHER GANGING ARRANGEMENT
WITH BREATHER 15 KG X 3 IN SERIES

TYPE OF PRODUCT: TRANSDUCER/REACTOR
NAME OF CUSTOMER/PROJECT: BHPPL
SCALE: 1:1
VENUE: (As per)

REV. 07
DATE 22/10/16
BY: N.K.M. N.K.M.
CHK: N.K.M. N.K.M.
APP: N.K.M. N.K.M.
TITLE: BREATHER GANGING ARRANGEMENT
WITH BREATHER 15 KG X 3 IN SERIES

, MANAGER(PT)-MRX35600-HEP, MANAGER, HEP-HEAVY ELECTRICALS PLANT (HEP) on 23/09/2026 10:53 am

BILL OF MATERIAL										DEP NO		NO OF IT		TYPE OF PRODUCT		WORK ORDER		DRG NO		CORE CODE		REV		VER			
										406		16		1		TRANSFORMER		STD		34990000061		63351313		07		00	
																BREATHING GANGING ARRG. BREATHING GANGI						SHT NO		1		OF 2	
										IT NO		DESCRIPTION		DRAWING NO/IT		MATCODE		A UT		UNIT		WT		G / S			
										MAT SIZE				DETAILS		VAR		MAT SPEC		C		QTY		ZONE			
										0001		BREATHER ASSY (15KG SILICA GEL)		34990000051		002		BP9096046358						6.000			
										TK		WDT LEN ID OD DIM1															
										0001		TO DETAIL															
										0001		BREATHER SUPPORT				AA1010308084						KG		6.036			
										TK		WDT LEN ID OD DIM1				AA10108											
										16		50 960															
										00005		TO DETAILS		34995100005										0.665			
										0003		PIPE FLANGE ASSY (15NB)				03											
										TK		WDT LEN ID OD DIM1															
										00001		TO DETAIL															
										0004		M.S.TUBE				AA1011052288								0.520			
										TK		WDT LEN ID OD DIM1				AA10152											
										2.65		427 21.8															
										0005		FLANGE (15NB.) MACHINED		44995100018		001								0.520			
										TK		WDT LEN ID OD DIM1				00											
										00002		PIPE FLANGE ASSY (15NB.)		34990000061										1.560			
										0006		TK WDT LEN ID OD DIM1				01											
										00004		GASKET		TR20078G		002		BP9096036786						0.029			
										TK		WDT LEN ID OD DIM1				00		AA59802									
										6		24 95															
										00006		SCREW HEX. A M12 X 45 - 8.8		TR20142S		006		BP9016052550						0.054			
										TK		WDT LEN ID OD DIM1				00		ST605255									
										00006		NUT HEX. A M12 - 8		TR20141N		002		BP9016052461						0.017			
										TK		WDT LEN ID OD DIM1				00		ST605246									
										00006		WASHER MCD. 13 STEEL (HOT DIP)		TR20144W		001		BP9016052933						KG		0.006	
										TK		WDT LEN ID OD DIM1				00		ST605293									
										00006		WASHER SPRING LOCK SCB 12ST				AA7164002072								0.004			
										TK		WDT LEN ID OD DIM1				AA7164002											
										00020		SCREW HEX. A M 10 X 40 - 8.8		TR20133S		013		BP9016051694						KG		0.035	
										TK		WDT LEN ID OD DIM1				00		ST605169									
DISTRIBUTION DETAILS										REV NO. 7		PREP BY		CKD BY		APPD BY		DATE		22 OCT 2016							
TRE TRM TRX										PREP BY		CKD BY		APPD BY		DATE		DRG NO		34990000061		SHT 1		OF 2			
1 3 1										KCI		NGP		JSK		10 JUL 2003		DRG NO		34990000061		SHT 1		OF 2			

DISTRIBUTION DETAILS				REV NO	7	PREP BY	CKD BY	DATE	APPD BY	DATE
TRM	TRM	TRX								
1	3	1				KCI	NGP	JSK	10 JUL 2003	DRG NO 34990000061
										SHT 1 OF 2

BILL OF MATERIAL										DEP NO	NO OF IT	NO OF VAR	TYPE OF PRODUCT		WORK ORDER		DRG NO	CORE CODE	REV				
										406	16	1	TRANSFORMER		STD		34990000061		65351313	07			
										BREATHING GANGING AIRGRT.										BREATHING GANGI		SHT NO 2	OF 2
DU	VAR03	VAR02	VAR01	VAR00	REMARKS		IT NO	DESCRIPTION	DRAWING NO	IT	MAT CODE	AUT UNIT	WT	G / S									
							013	NUT HEX. A M10 (S/STEEL)	TR20138N	006	BP9016052100	KG	0.012										
							TK	WDT	LEN	ID	OD	DIM1											
										00	ST605210												
							014	WASHER MCD 10.5 STL(S/T STEEL)	TR20139W	005	BP9016052151	KG	0.004										
							TK	WDT	LEN	ID	OD	DIM1											
										00													
							015	BRETHING ASSY.(15KG SILICA GEL)	349900000067	002			6.000										
							TK	WDT	LEN	ID	OD	DIM1											
1.56															32.103								

DISTRIBUTION DETAILS						REV NO.	7	PREP BY	CKD BY	DATE	APPD BY	DATE
TRE	TRM	TRX				PREP BY		CKD BY		APPD BY		
1	3	1				KCJ		NGP		JSK		10 JUL 2003
												DRG NO 34990000061
												SHT 2 OF 2

BILL OF MATERIAL										DEP NO 406		NO OF IT 3		TYPE OF PRODUCT STD		WORK ORDER STD		DRG NO 34990000021		CORE CODE 6515191		REV 11		VER 00									
BREATHER(SILICAGEL TYPE)										BREATHER																							
DU										VAR03		VAR02		VAR01		VAR00		REMARKS		IT NO		DESCRIPTION		DRAWING NO		IT MATCODE		ALT UNIT		WT		G / S	
																				00001		001		BREATHER		TR200408		001		BP9096018397		0.700	
																				TK		WDT		LEN		ID		OD		DIM1			

7

DISTRIBUTION DETAILS										REV NO. 11		PREP BY		CKD BY		DATE		APPD BY		DATE			
										PREP BY		CKD BY		APPD BY		DATE		APPD BY		DATE			
										HKM		TRS		MCJ		14 OCT 2002		DRG NO 34990000021		SHT 1 OF 1			
TRX										FTM		TRE		QC		TRM							
1										0		1		0		3							

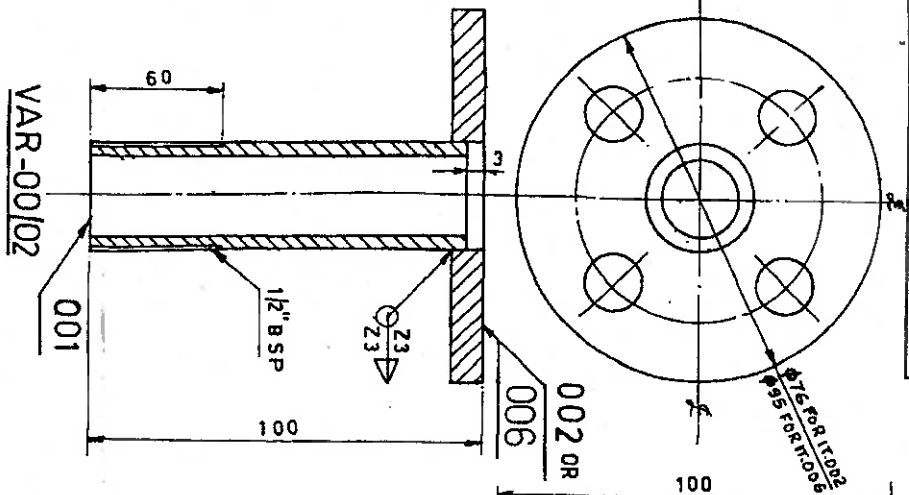
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

50000 15 667 C ON DRG

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

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



VAR.01/03

NOTE TO D/M

NOTE TO SHOP

1. CALL VAR 01/03 ON ASSY DRG./ W.O. AS REQD.
 2. THIS DRG SUPERSEDES DRG. B 6400667 & B 6401148.
 3. VAR.01/01 ARE WITH UNMACHINED STD. FLANGE TO DRG. TR 20015F.
 4. VAR.02/03 ARE WITH MACHINED FLANGE TO DRG. 4499 51 00018.
 5. ZPP TO BE DONE AS PER TR10017P.
1. PAINTING AS PER STD. SHEET TR10005P
SL. NO. 5 UNLESS OTHERWISE STATED.
2. TESTING FOR LEAKPROOFNESS TO BE DONE AT 0.35KG/CM² FOR 15 MINUTES.
3. THIS ALREADY MANUFACTURED AS PER REVISION ARE ALSO ACCEPT.
4. STYLE NO. B790860349715 TRANSFERRED FROM DRG B 6401148
5. ZPP TO BE DONE AS PER TR10017P.

STYLE LIST			
STYLE	ITEM INCLUDED	DESCRIPTION	RECORDED SIG. & DATE
44995034497	001 & 002	FLANGED PIPE	

ITEM NO.	DESCRIPTION	QTY	UNIT	WGT.	NO. OF
001	PIPE & FLANGE ASSY. 15 N.B.	3	499 51 00005	0.2	0.64
006	FLANGE 15 N.B. (MACHINED)	4	499 51 00018	0.01	0.52
005	1/2" PIPE FLANGE ASSY	3	499 51 00005	0.0	0.27
004	1/2" NYLON WASHER	TR 20082W		ST 6003474	0.005
003	6ACK-NUT HEX-15 (1/2" BSP)			BP9016055649	0.020
002	FLANGE	TR 20015 F		AA7242342	0.15
001	21-8 OLD X 2.65 X 97LG MS TUBE 15 NB.			ST 600501	

ADDITIONAL INFORMATION

STATUS OF DRAWING U

DISTRIBUTION OF PRINTS

0 COPY - 1 TRX - 1, JHANSI-2

TRM - 4, PTM - 6.

REV. DATE

05 11.1.94

DRAWING RETRACED

VAR.02,03 ADDED.

BHARAT HEAVY ELECTRICALS LTD.
BHOVAL

TYPE OF PRODUCT
OR
NAME OF CUSTOMER / PROJECT
TRANSFORMER

DEPT. TRE
UNROL
DIN. CMF

SCALE

VAR-01=0.30

VAR-03=0.67

REF. TO ASSY. DRG.

Sd/-

DATE

NO. OF

FLANGED PIPE 15 NB

(1 1/2" 9 S P)

DRAWING NO.

3 499 51 00005

SHEET NO.

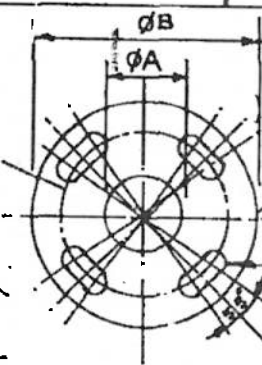
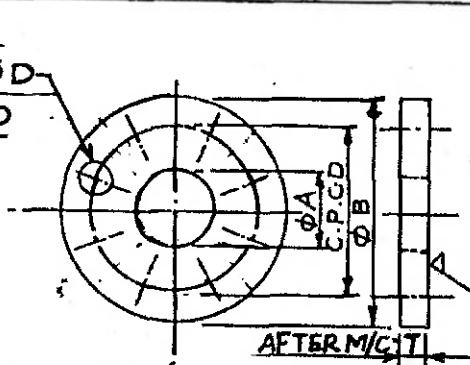
01

SIZE A3

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 INTERESTS OF THE COMPANY

REV. 03	DATE 25-9-94	ALTERED <i>SS</i>	REV. 02	DATE 8-3-91	ALTERED <i>Shrin K. K.</i>	ADDITIONAL INFORMATION	38007-X-504
CHECKED <i>SS</i>			CHECKED <i>SS</i>			STATUS OF DRAWING	U
ITEM 010 & NOTE 4 ADDED. TITLE WAS PIPE FLANGES.			REVISED TO INCLUDE ITS 007 TO 009 DRG Redrawn.			DISTRIBUTION	TRE-1 FBM-6
						OF PRINTS	TRM-4 TCX-1

N-HOLE ϕD
EQUISPACED



006/010

REF TABLE
FOR DIMS.

9 RADIUS (MAKE 4 SLOTS)

ITME NO	NOM BORN SIZE	ØA	ØB	P.C.D C.	N HOLES	Ø D. HOLES	T AFTER M/C	T BEFORE M/C	WT IN KG.
001	15	24	95	65	4	14	10	12	0.52
002	25	36	115	85	4	14	10	12	0.74
003	50	51	150	115	4	18	16	18	2.0
004	80	80	185	145	4	18	16	18	2.7
005	100	100	215	180	4	18	20	22	4.5
006	80	80	185	145	4	SLOT TO DETAIL	16	18	2.7
007	150	153	285	240	8	22	22	25	7.8
008	200	200	340	295	8	22	24	28	11
009	250	253	395	350	12	22	26	28	14.5
010	50	51	150	115	4	SLOT TO DETAIL	16	18	2.0

NOTE

1. FLANGES SHALL BE FLAT & FREE FROM SHARP EDGES & BURRS.
2. FLANGES UP TO 100 mm N.B. CONFORM I.S 3639. FLANGES OF 150, 200, 250 NB. CONFORM I.S 6392 (PRESSURE 1.0N/mm² EXCEPT I/D; MATERIAL & RAISED FACES, FOR TRANSFORMER APPLICATION WHICH IS A LOW PRESSURE EQUIPMENT; FLANGES OF MILD STEEL WITH FLAT FACE HAVE BEEN ADOPTED.
3. IT. 006 IS SUITABLE FOR MOUNTING BUCHHOLZ RELAY, 80 NB.
4. IT. 010 IS SUITABLE FOR MOUNTING BUCHHOLZ RELAY, 50 NB.

SEE TABLE FOR DIMS & NOTES	SEE TABLE	FLANGE		AA 10108			
REMARKS	ITEM NO.	DESCRIPTION	STD.	MATL. CODE	UNIT	UNIT WT.	QTY.
28 → CARD TYPE-3	28 → CARD TYPE-1	28 → CARD TYPE-2					

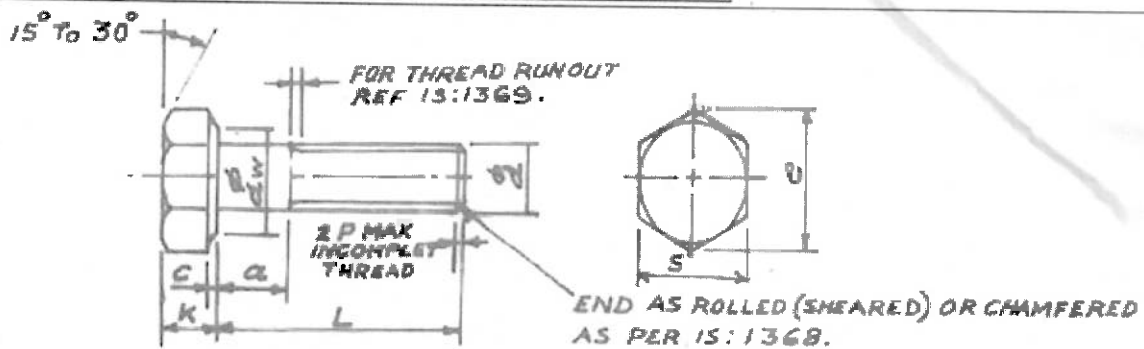
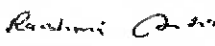
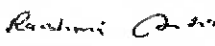
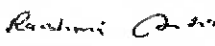


BHARAT HEAVY ELECTRICALS LTD
BHOPAL

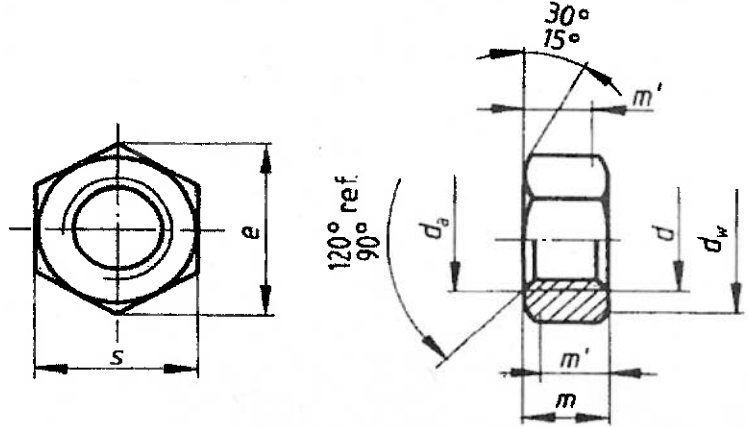
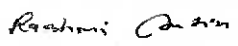
DRN.	NAME	SIGN	DATE
CHD.	Sd./K.C.J.	Sd/-	16-9-89
APPD.	Sd./B.S.B.	Sd/-	18-9-89

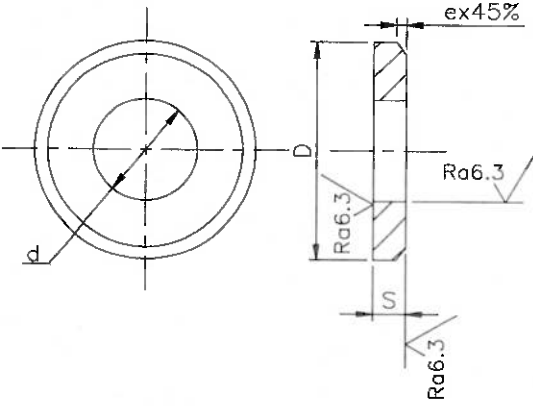
DEPT. TRE	GRADE OF UN.TOL. DIM. C/M/F	SCALE N.T.S.	WEIGHT (Kg)	REF. TO ASSY. DRG.	ITEM NO.	NO. OF ITEMS
CODE 406						
TITLE				CARD CODE	DRAWING NO.	
MACHINED PIPE FLANGES.					44995100018	
				SHEET NO.	NO. OF SHEETS	
				01	01	

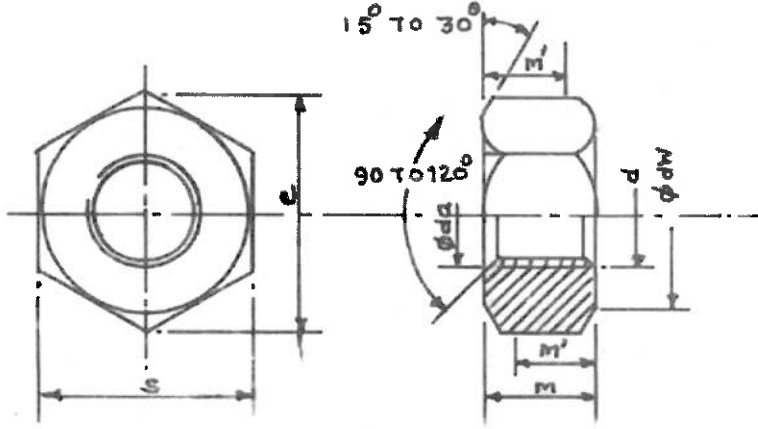
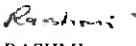
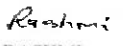
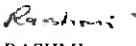
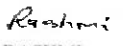
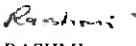
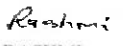
TR20078G PAGE 1 OF 1	COPYRIGHT AND CONFIDENTIAL The Information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED. It must not be used directly or indirectly in any way detrimental to the interest of the Company.	REF. C 600770 Comp. drg. TR20078G	उत्पाद मानक परिणामित्र शाप /अभि.निर्देश Form No. 2038	PRODUCT STANDARD TRANSFORMER SHOP/ENGG INSTRUCTION	TR20078G 1 पृष्ठों में 1 PAGE 1 OF 1																																																																																																																																																																																																																													
		शीर्षक TITLE : GASKETS																																																																																																																																																																																																																																
FIG-1 FIG-2																																																																																																																																																																																																																																		
<table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>IT. NO.</th> <th>FIG.</th> <th>MATERIAL AS PER TRE/215</th> <th>STYLE NO.</th> <th>NOM. BORE SIZE</th> <th>'A' I/D</th> <th>'B' O/D</th> <th>'C' PCD</th> <th>'D' DIA</th> <th>'T'</th> <th>NO. OF HOLES</th> <th>TEMPLATE TOOL NO.</th> <th>REMARK WT.</th> </tr> </thead> <tbody> <tr><td>001</td><td>1</td><td>NITRILE RUBBER</td><td>BP0906005023</td><td>15</td><td>24</td><td>76</td><td>54</td><td>12</td><td>6</td><td>4</td><td>1462278</td><td>0.018</td></tr> <tr><td>002</td><td>1</td><td>NITRILE RUBBER</td><td>BP0906036786</td><td>15</td><td>24</td><td>95</td><td>65</td><td>14</td><td>6</td><td>4</td><td></td><td>0.029</td></tr> <tr><td>003</td><td>1</td><td>NITRILE RUBBER</td><td>-</td><td>20</td><td>30</td><td>100</td><td>75</td><td>14</td><td>6</td><td>4</td><td></td><td>0.032</td></tr> <tr><td>004</td><td>1</td><td>NITRILE RUBBER</td><td>BP0906036794</td><td>25</td><td>36</td><td>115</td><td>85</td><td>14</td><td>6</td><td>4</td><td></td><td>0.042</td></tr> <tr><td>005</td><td>1</td><td>NITRILE RUBBER</td><td>-</td><td>40</td><td>52</td><td>135</td><td>100</td><td>14</td><td>6</td><td>4</td><td></td><td>0.054</td></tr> <tr><td>006</td><td>1</td><td>NITRILE RUBBER</td><td>BP0906035844</td><td>50</td><td>63</td><td>150</td><td>115</td><td>18</td><td>6</td><td>4</td><td></td><td>0.065</td></tr> <tr><td>007</td><td>1</td><td>NITRILE RUBBER</td><td>-</td><td>65</td><td>78</td><td>165</td><td>125</td><td>18</td><td>6</td><td>4</td><td></td><td>0.074</td></tr> <tr><td>008</td><td>1</td><td>NITRILE RUBBER</td><td>BP0906035852</td><td>80</td><td>92</td><td>185</td><td>145</td><td>18</td><td>6</td><td>4</td><td></td><td>0.090</td></tr> <tr><td>009</td><td>1</td><td>NITRILE RUBBER</td><td>BP0906036824</td><td>100</td><td>117</td><td>215</td><td>180</td><td>18</td><td>6</td><td>4</td><td>1464176</td><td>0.11</td></tr> <tr><td>010</td><td>1</td><td>NITRILE RUBBER</td><td>-</td><td>100</td><td>117</td><td>215</td><td>180</td><td>18</td><td>6</td><td>8</td><td>1464176</td><td>0.11</td></tr> <tr><td>011</td><td>1</td><td>NITRILE RUBBER</td><td>BP0906036832</td><td>150</td><td>168</td><td>285</td><td>240</td><td>23</td><td>6</td><td>8</td><td>1464176</td><td>0.18</td></tr> <tr><td>012</td><td>1</td><td>NITRILE RUBBER</td><td>BP0906036840</td><td>200</td><td>222</td><td>340</td><td>295</td><td>23</td><td>6</td><td>8</td><td></td><td>0.23</td></tr> <tr><td>013</td><td>1</td><td>NITRILE RUBBER</td><td>-</td><td>200</td><td>222</td><td>340</td><td>295</td><td>18</td><td>6</td><td>12</td><td></td><td>0.23</td></tr> <tr><td>014</td><td>1</td><td>NITRILE RUBBER</td><td>BP0906045459</td><td>250</td><td>250</td><td>395</td><td>350</td><td>23</td><td>6</td><td>12</td><td></td><td>0.33</td></tr> <tr><td>015</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>016</td><td>1</td><td>NITRILE RUBBER</td><td>BP0906053834</td><td>15</td><td>24</td><td>76</td><td>58</td><td>12</td><td>6</td><td>4</td><td></td><td>BORE FOR OUTLET ELBOW</td></tr> </tbody> </table>						IT. NO.	FIG.	MATERIAL AS PER TRE/215	STYLE NO.	NOM. BORE SIZE	'A' I/D	'B' O/D	'C' PCD	'D' DIA	'T'	NO. OF HOLES	TEMPLATE TOOL NO.	REMARK WT.	001	1	NITRILE RUBBER	BP0906005023	15	24	76	54	12	6	4	1462278	0.018	002	1	NITRILE RUBBER	BP0906036786	15	24	95	65	14	6	4		0.029	003	1	NITRILE RUBBER	-	20	30	100	75	14	6	4		0.032	004	1	NITRILE RUBBER	BP0906036794	25	36	115	85	14	6	4		0.042	005	1	NITRILE RUBBER	-	40	52	135	100	14	6	4		0.054	006	1	NITRILE RUBBER	BP0906035844	50	63	150	115	18	6	4		0.065	007	1	NITRILE RUBBER	-	65	78	165	125	18	6	4		0.074	008	1	NITRILE RUBBER	BP0906035852	80	92	185	145	18	6	4		0.090	009	1	NITRILE RUBBER	BP0906036824	100	117	215	180	18	6	4	1464176	0.11	010	1	NITRILE RUBBER	-	100	117	215	180	18	6	8	1464176	0.11	011	1	NITRILE RUBBER	BP0906036832	150	168	285	240	23	6	8	1464176	0.18	012	1	NITRILE RUBBER	BP0906036840	200	222	340	295	23	6	8		0.23	013	1	NITRILE RUBBER	-	200	222	340	295	18	6	12		0.23	014	1	NITRILE RUBBER	BP0906045459	250	250	395	350	23	6	12		0.33	015													016	1	NITRILE RUBBER	BP0906053834	15	24	76	58	12	6	4		BORE FOR OUTLET ELBOW
IT. NO.	FIG.	MATERIAL AS PER TRE/215	STYLE NO.	NOM. BORE SIZE	'A' I/D	'B' O/D	'C' PCD	'D' DIA	'T'	NO. OF HOLES	TEMPLATE TOOL NO.	REMARK WT.																																																																																																																																																																																																																						
001	1	NITRILE RUBBER	BP0906005023	15	24	76	54	12	6	4	1462278	0.018																																																																																																																																																																																																																						
002	1	NITRILE RUBBER	BP0906036786	15	24	95	65	14	6	4		0.029																																																																																																																																																																																																																						
003	1	NITRILE RUBBER	-	20	30	100	75	14	6	4		0.032																																																																																																																																																																																																																						
004	1	NITRILE RUBBER	BP0906036794	25	36	115	85	14	6	4		0.042																																																																																																																																																																																																																						
005	1	NITRILE RUBBER	-	40	52	135	100	14	6	4		0.054																																																																																																																																																																																																																						
006	1	NITRILE RUBBER	BP0906035844	50	63	150	115	18	6	4		0.065																																																																																																																																																																																																																						
007	1	NITRILE RUBBER	-	65	78	165	125	18	6	4		0.074																																																																																																																																																																																																																						
008	1	NITRILE RUBBER	BP0906035852	80	92	185	145	18	6	4		0.090																																																																																																																																																																																																																						
009	1	NITRILE RUBBER	BP0906036824	100	117	215	180	18	6	4	1464176	0.11																																																																																																																																																																																																																						
010	1	NITRILE RUBBER	-	100	117	215	180	18	6	8	1464176	0.11																																																																																																																																																																																																																						
011	1	NITRILE RUBBER	BP0906036832	150	168	285	240	23	6	8	1464176	0.18																																																																																																																																																																																																																						
012	1	NITRILE RUBBER	BP0906036840	200	222	340	295	23	6	8		0.23																																																																																																																																																																																																																						
013	1	NITRILE RUBBER	-	200	222	340	295	18	6	12		0.23																																																																																																																																																																																																																						
014	1	NITRILE RUBBER	BP0906045459	250	250	395	350	23	6	12		0.33																																																																																																																																																																																																																						
015																																																																																																																																																																																																																																		
016	1	NITRILE RUBBER	BP0906053834	15	24	76	58	12	6	4		BORE FOR OUTLET ELBOW																																																																																																																																																																																																																						
NOTES TO OUTSIDE SUPPLIER: - When stored under cover in a dry place under normal storage conditions, the material shall retain the properties prescribed in this specification for a period of not less than 24 months after the date of manufacture, which shall be subsequent to the date of placing the order. - Material shall be suitably packed to prevent damage from contamination and handling during transit. Each package shall be legibly marked with the following information. BHEL Order no. Batch No. Drawing no. & Item no., if any Manufacturer's/Supplier's Name Trade Mark, if any Size & Quantity supplied.																																																																																																																																																																																																																																		
पुन:Rev. 06 दि. Dt. 04/10/21 पुन:Rev. 05 दि. Dt. 4.12.15		MATERIAL CHANGED KARAN NITESH A.DEOTA		वितरण DISTRIBUTION.																																																																																																																																																																																																																														
SHEET REAFFIRMED RASHMI NITIN AKD		TRE/TRM/FBM/ TCX(TR)/TTX/ TTG/QC/QA /TSD/JHANSI		मं. स्वीकृत किया : SD / BSB APPROVED : SD / SNA तैयार किया PREPD. T.R.SURI जारी किया ISSUED यीआई/मानक TRE/STD. दिनांक DATE 10.03.90																																																																																																																																																																																																																														

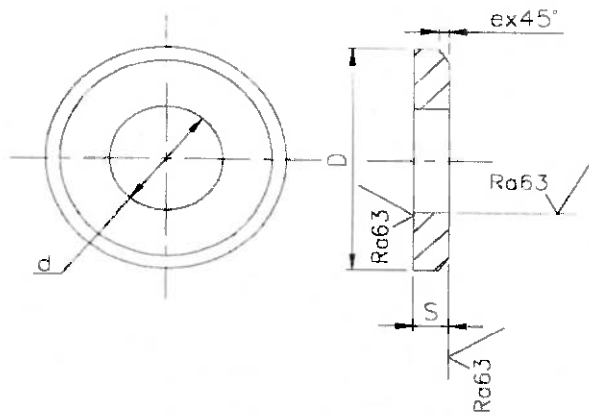
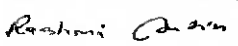
REF.	Comp. dig. PAGE -	 Form No. 2038	उत्पाद मानक परिणामित्र शॉप / अभि. निर्देश	PRODUCT STANDARD TRANSFORMER SHOP/ENGG. INSTRUCTIONS	TR20142S 2 पृष्ठों में 1 PAGE 1 OF 2																																																																																																																																																																																																						
		शीर्षक TITLE: <u>SCREWS HEX HEAD PRODUCT GRADE - A (PROP-8.8)</u> <u>COARSE PITCH STEEL HOT DIP GALVANIZED.</u>																																																																																																																																																																																																									
																																																																																																																																																																																																											
<table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="3">IT. NO.</th> <th rowspan="3">NOM. SIZE d x L</th> <th rowspan="3">STYLE NO.</th> <th colspan="3">HEAD</th> <th colspan="2">WASHER</th> <th rowspan="3">UN-THRAD-ED LG. a MAX</th> <th rowspan="3">WT KG</th> <th rowspan="3">REMARKS</th> </tr> <tr> <th>FLAT S MAX</th> <th>CRNS e</th> <th>TKNS K MAX</th> <th>DIA dw</th> <th>TKNS C MAX</th> </tr> <tr> <th>MIN</th> <th>MIN</th> <th>MIN</th> <th>MIN</th> <th>MIN</th> </tr> </thead> <tbody> <tr><td>001</td><td>M12 x20</td><td>ST605250 BP9016052500</td><td>18 17.73</td><td>20.03</td><td>7.68 7.32</td><td>16.6</td><td>0.6 0.15</td><td>5.25</td><td>0.033</td><td></td></tr> <tr><td>002</td><td>M12 x25</td><td>ST605251 BP9016052518</td><td>18 17.73</td><td>20.03</td><td>7.68 7.32</td><td>16.6</td><td>0.6 0.15</td><td>5.25</td><td>0.037</td><td></td></tr> <tr><td>003</td><td>M12 x30</td><td>ST605252 BP9016052526</td><td>18 17.73</td><td>20.03</td><td>7.68 7.32</td><td>16.6</td><td>0.6 0.15</td><td>5.25</td><td>0.041</td><td></td></tr> <tr><td>004</td><td>M12 x35</td><td>ST605253 BP9016052534</td><td>18 17.73</td><td>20.03</td><td>7.68 7.32</td><td>16.6</td><td>0.6 0.15</td><td>5.25</td><td>0.045</td><td></td></tr> <tr><td>005</td><td>M12 x40</td><td>ST605254 BP9016052542</td><td>18 17.73</td><td>20.03</td><td>7.68 7.32</td><td>16.6</td><td>0.6 0.15</td><td>5.25</td><td>0.049</td><td></td></tr> <tr><td>006</td><td>M12 x45</td><td>ST605255 BP9016052550</td><td>18 17.73</td><td>20.03</td><td>7.68 7.32</td><td>16.6</td><td>0.6 0.15</td><td>5.25</td><td>0.054</td><td></td></tr> <tr><td>007</td><td>M12 x50</td><td>ST605256 BP9016052569</td><td>18 17.73</td><td>20.03</td><td>7.68 7.32</td><td>16.6</td><td>0.6 0.15</td><td>5.25</td><td>0.058</td><td></td></tr> <tr><td>008</td><td>M12 x60</td><td>ST605257 BP9016052577</td><td>18 17.73</td><td>20.03</td><td>7.68 7.32</td><td>16.6</td><td>0.6 0.15</td><td>5.25</td><td>0.067</td><td></td></tr> <tr><td>009</td><td>M16 x30</td><td>ST605258 BP9016052585</td><td>24 23.67</td><td>26.17</td><td>10.29 9.71</td><td>22</td><td>0.8 0.2</td><td>6</td><td>0.078</td><td></td></tr> <tr><td>010</td><td>M16 x40</td><td>ST605259 BP9016052593</td><td>24 23.67</td><td>26.17</td><td>10.29 9.71</td><td>22</td><td>0.8 0.2</td><td>6</td><td>0.092</td><td></td></tr> <tr><td>011</td><td>M16 x45</td><td>ST605260 BP9016052607</td><td>24 23.67</td><td>26.17</td><td>10.29 9.71</td><td>22</td><td>0.8 0.2</td><td>6</td><td>0.100</td><td></td></tr> <tr><td>012</td><td>M16 x50</td><td>ST605261 BP9016052615</td><td>24 23.67</td><td>26.17</td><td>10.29 9.71</td><td>22</td><td>0.8 0.2</td><td>6</td><td>0.108</td><td></td></tr> <tr><td>013</td><td>M16 x90</td><td>ST605262 BP9016052623</td><td>24 23.67</td><td>26.17</td><td>10.29 9.71</td><td>22</td><td>0.8 0.2</td><td>6</td><td>0.171</td><td></td></tr> <tr><td>014</td><td>M20 x40</td><td>ST605263 BP9016052631</td><td>30 29.67</td><td>32.95</td><td>12.85 12.15</td><td>27.7</td><td>0.8 0.2</td><td>7.5</td><td>0.228</td><td></td></tr> <tr><td>015</td><td>M20 x45</td><td>ST605264 BP9016052640</td><td>30 29.67</td><td>32.95</td><td>12.85 12.15</td><td>27.7</td><td>0.8 0.2</td><td>7.5</td><td>0.257</td><td></td></tr> <tr><td>016</td><td>M20 x50</td><td>ST605265 BP9016052658</td><td>30 29.67</td><td>32.95</td><td>12.85 12.15</td><td>27.7</td><td>0.8 0.2</td><td>7.5</td><td>0.276</td><td></td></tr> </tbody> </table>							IT. NO.	NOM. SIZE d x L	STYLE NO.	HEAD			WASHER		UN-THRAD-ED LG. a MAX	WT KG	REMARKS	FLAT S MAX	CRNS e	TKNS K MAX	DIA dw	TKNS C MAX	MIN	MIN	MIN	MIN	MIN	001	M12 x20	ST605250 BP9016052500	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.033		002	M12 x25	ST605251 BP9016052518	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.037		003	M12 x30	ST605252 BP9016052526	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.041		004	M12 x35	ST605253 BP9016052534	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.045		005	M12 x40	ST605254 BP9016052542	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.049		006	M12 x45	ST605255 BP9016052550	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.054		007	M12 x50	ST605256 BP9016052569	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.058		008	M12 x60	ST605257 BP9016052577	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.067		009	M16 x30	ST605258 BP9016052585	24 23.67	26.17	10.29 9.71	22	0.8 0.2	6	0.078		010	M16 x40	ST605259 BP9016052593	24 23.67	26.17	10.29 9.71	22	0.8 0.2	6	0.092		011	M16 x45	ST605260 BP9016052607	24 23.67	26.17	10.29 9.71	22	0.8 0.2	6	0.100		012	M16 x50	ST605261 BP9016052615	24 23.67	26.17	10.29 9.71	22	0.8 0.2	6	0.108		013	M16 x90	ST605262 BP9016052623	24 23.67	26.17	10.29 9.71	22	0.8 0.2	6	0.171		014	M20 x40	ST605263 BP9016052631	30 29.67	32.95	12.85 12.15	27.7	0.8 0.2	7.5	0.228		015	M20 x45	ST605264 BP9016052640	30 29.67	32.95	12.85 12.15	27.7	0.8 0.2	7.5	0.257		016	M20 x50	ST605265 BP9016052658	30 29.67	32.95	12.85 12.15	27.7	0.8 0.2	7.5	0.276	
IT. NO.	NOM. SIZE d x L	STYLE NO.	HEAD			WASHER				UN-THRAD-ED LG. a MAX	WT KG	REMARKS																																																																																																																																																																																															
			FLAT S MAX	CRNS e	TKNS K MAX	DIA dw							TKNS C MAX																																																																																																																																																																																														
			MIN	MIN	MIN	MIN	MIN																																																																																																																																																																																																				
001	M12 x20	ST605250 BP9016052500	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.033																																																																																																																																																																																																		
002	M12 x25	ST605251 BP9016052518	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.037																																																																																																																																																																																																		
003	M12 x30	ST605252 BP9016052526	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.041																																																																																																																																																																																																		
004	M12 x35	ST605253 BP9016052534	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.045																																																																																																																																																																																																		
005	M12 x40	ST605254 BP9016052542	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.049																																																																																																																																																																																																		
006	M12 x45	ST605255 BP9016052550	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.054																																																																																																																																																																																																		
007	M12 x50	ST605256 BP9016052569	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.058																																																																																																																																																																																																		
008	M12 x60	ST605257 BP9016052577	18 17.73	20.03	7.68 7.32	16.6	0.6 0.15	5.25	0.067																																																																																																																																																																																																		
009	M16 x30	ST605258 BP9016052585	24 23.67	26.17	10.29 9.71	22	0.8 0.2	6	0.078																																																																																																																																																																																																		
010	M16 x40	ST605259 BP9016052593	24 23.67	26.17	10.29 9.71	22	0.8 0.2	6	0.092																																																																																																																																																																																																		
011	M16 x45	ST605260 BP9016052607	24 23.67	26.17	10.29 9.71	22	0.8 0.2	6	0.100																																																																																																																																																																																																		
012	M16 x50	ST605261 BP9016052615	24 23.67	26.17	10.29 9.71	22	0.8 0.2	6	0.108																																																																																																																																																																																																		
013	M16 x90	ST605262 BP9016052623	24 23.67	26.17	10.29 9.71	22	0.8 0.2	6	0.171																																																																																																																																																																																																		
014	M20 x40	ST605263 BP9016052631	30 29.67	32.95	12.85 12.15	27.7	0.8 0.2	7.5	0.228																																																																																																																																																																																																		
015	M20 x45	ST605264 BP9016052640	30 29.67	32.95	12.85 12.15	27.7	0.8 0.2	7.5	0.257																																																																																																																																																																																																		
016	M20 x50	ST605265 BP9016052658	30 29.67	32.95	12.85 12.15	27.7	0.8 0.2	7.5	0.276																																																																																																																																																																																																		
TR20142S PAGE 1 OF 2		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;"> पुनः Rev. 04 दि. Dt. 10/06/21 पुनः Rev. 03 दि. Dt. 08/11/14 </td> <td style="width:35%;"> SHEET REAFFIRMED.  RASHMI NITIN NKM SHEET REAFFIRMED. ARVIND S.K.G. A.DEOTA </td> <td style="width:20%;"> वितरण DISTRIBUTION. TRE/TRM/FBM/ TRX/TTG/ QC-TCB/QA-TCB / JHANSI </td> <td style="width:10%;"> सं. </td> <td style="width:20%;"> स्वीकृत किया : APPROVED : तैयार किया PREPD. जारी किया ISSUED टीआईई/मानक TRE/STD. </td> <td style="width:10%;"> दिनांक DATE 20.01.95 </td> </tr> </table>									पुनः Rev. 04 दि. Dt. 10/06/21 पुनः Rev. 03 दि. Dt. 08/11/14	SHEET REAFFIRMED.  RASHMI NITIN NKM SHEET REAFFIRMED. ARVIND S.K.G. A.DEOTA	वितरण DISTRIBUTION. TRE/TRM/FBM/ TRX/TTG/ QC-TCB/QA-TCB / JHANSI	सं.	स्वीकृत किया : APPROVED : तैयार किया PREPD. जारी किया ISSUED टीआईई/मानक TRE/STD.	दिनांक DATE 20.01.95																																																																																																																																																																																											
पुनः Rev. 04 दि. Dt. 10/06/21 पुनः Rev. 03 दि. Dt. 08/11/14	SHEET REAFFIRMED.  RASHMI NITIN NKM SHEET REAFFIRMED. ARVIND S.K.G. A.DEOTA	वितरण DISTRIBUTION. TRE/TRM/FBM/ TRX/TTG/ QC-TCB/QA-TCB / JHANSI	सं.	स्वीकृत किया : APPROVED : तैयार किया PREPD. जारी किया ISSUED टीआईई/मानक TRE/STD.	दिनांक DATE 20.01.95																																																																																																																																																																																																						

REF.	Comp. dtg. PAGE.	 उत्पाद मानक परिणामित्र शॉप / अभि. निर्देश	PRODUCT STANDARD TRANSFORMER		TR20142S					
			Form No. 2038		SHOP/ENGG. INSTRUCTIONS		2 पृष्ठों में 2	PAGE 2 OF 2		
शीर्षक TITLE: SCREWS HEX HEAD PRODUCT GRADE - A (PROP-8.8) COARSE PITCH STEEL HOT DIP GALVANIZED.										
IT. NO.	NOM. SIZE	STYLE NO.	HEAD			WASHER		UN-THRAD-ED LG. a MAX	WT KG	REMARKS
	d x L		FLAT S MAX	CRNS e	TKNS K MAX	DIA dw	TKNS C MAX			
			MIN	MIN	MIN	MIN	MIN			
017	M20 x75	ST605266 BP9016052666	30 29.67	32.95	12.85 12.15	27.7	0.8 0.2	7.5	0.320	
018	M24 x55	ST605267 BP9016052674	36 35.38	39.55	15.35 14.65	33.2	0.8 0.2	9	0.300	
019	M16 x 55	ST605807 BP9016058079	24 23.67	26.17	10.29 9.71	22	0.8 0.2	6	0.116	
020	M16 x 60	ST605808 BP9016058087	24 23.67	26.17	10.29 9.71	22	0.8 0.2	6	0.124	
021	M16 x 65	ST605809 BP9016058095	24 23.67	26.17	10.29 9.71	22	0.8 0.2	6	0.132	
022	M20 x 65	ST605810 BP9016058109	30 29.67	32.95	12.85 12.15	27.7	0.8 0.2	7.5	0.302	
023	M20 x 80	ST605811 BP9016058117	30 29.67	32.95	12.85 12.15	27.7	0.8 0.2	7.5	0.328	
024										
025										
1. MATERIAL :- SCREWS SHALL BE MADE OF ALLOY STEEL OR STAINLESS STEEL WITH MINIMUM TENSILE STRENGTH FOR FINISHED SCREW AS 800 N/mm ² (81.5 Kgf/mm ²) SUCH THAT FINISHED SCREWS CORRESPOND TO PROPERTY CLASS 8.8 AS PER IS : 1367 (PT-III) FOR ALLOY STEEL OR A1-80 AS PER IS: 1367 (PT-14) FOR STAINLESS STEEL.										
2. GALVANIZING :- ALLOY STEEL TO BE HOT DIP GALVANIZED AS PER STD SHEET TR10194G. FOR STAINLESS STEEL GALVANIZED IS NOT REQD.										
3. DIMENSIONS, TOLERANCES :- TO IS : 1364 (Pt-2)-1983/ & GENERAL REQUIREMENTS REAFFIRMED 1989.										
4. THREADS :- PITCH - COARSE TO IS: 4218 (Pt-2). TOLERANCES QUALITY - MEDIUM. TOLERANCES CLASS - 6g.										
5. IDENTIFICATION MARKING :- AS STATED IN CLAUSE 2.2 OF IS:1367 (Pt-18) FOR STEEL OR A1-80 AS PER TABLE 1 OF IS : 1367 (PART - 14) FOR S/STEEL.										
6. TEST CERTIFICATE :- TC FOR CHEMICAL & MECHANICAL PROPERTY AS CALLED IN IS:1367 (Pt-3), AND FOR HOT DIP GALVANIZING SHALL BE FURNISHED.										
पुनः Rev. 04 दि. Dt. 10/06 21 RASHMI NITIN NKM			वितरण DISTRIBUTION. TRE/TRM/FBM/ TRX/TTG/ QC-TCB/QA-TCB / JHANSI			सं. स्वीकृत किया : APPROVED :		तैयार किया PREPD. जारी किया ISSUED टीआरई/मानक TRE/STD.		दिनांक DATE 20.01.95
पुनः Rev. 03 दि. Dt. 08/11 14 ARVIND S.K.G. A.DEOTA										

REF.	COMP. drg.	 Form No. 2038	उत्पाद मानक परिणामित्र शाप/अभि.निर्देश		PRODUCT STANDARD TRANSFORMER SHOP / ENGG. INSTRUCTION		TR20141N 1 पृष्ठों में 1 PAGE 1 OF 1																																																																					
			शीर्षक TITLE - NUTS, HEXAGON, PRODUCT GR. A, COARSE PITCH, STL. S / STL / HOT DIP GALVANIZED PROPERTY CLASS-8																																																																									
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 was detrimental to the interest of the Company																																																																												
		<table border="1"> <thead> <tr> <th>ITEM NO.</th> <th>NOM. d SIZE</th> <th>STYLE NO.</th> <th>FLATS S MAX. MIN.</th> <th>CORNERS e MIN.</th> <th>TK. m MAX. MIN.</th> <th>WRENCHING HEIGHT m' MIN.</th> <th>dw MIN.</th> <th>da MAX. MIN.</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr> <td>001</td> <td>M10</td> <td></td> <td>16 15.73</td> <td>17.77</td> <td>8.4 8.04</td> <td>6.43</td> <td>14.6</td> <td>10.0 10.80</td> <td></td> </tr> <tr> <td>002</td> <td>M12</td> <td>ST605246 BP9016052461</td> <td>18.0 17.73</td> <td>20.03</td> <td>10.8 10.37</td> <td>8.30</td> <td>16.6</td> <td>12 13</td> <td></td> </tr> <tr> <td>003</td> <td>M16</td> <td>ST605247 BP9016052470</td> <td>24.0 23.67</td> <td>26.75</td> <td>14.8 14.10</td> <td>11.28</td> <td>22.5</td> <td>16.0 17.3</td> <td></td> </tr> <tr> <td>004</td> <td>M20</td> <td>ST605248 BP9016052488</td> <td>30.0 29.16</td> <td>32.95</td> <td>19.0 16.90</td> <td>13.3</td> <td>27.7</td> <td>21.6 20</td> <td></td> </tr> <tr> <td>005</td> <td>M24</td> <td>ST605249 BP9016052496</td> <td>36 35</td> <td>39.55</td> <td>22.3 20.2</td> <td>16.2</td> <td>33.2</td> <td>25.9 24</td> <td></td> </tr> <tr> <td>006</td> <td>M30</td> <td>ST605826 BP9016058265</td> <td>46 45</td> <td>50.85</td> <td>25.6 24.3</td> <td>19.4</td> <td>42.8</td> <td>32.4 30</td> <td></td> </tr> </tbody> </table>							ITEM NO.	NOM. d SIZE	STYLE NO.	FLATS S MAX. MIN.	CORNERS e MIN.	TK. m MAX. MIN.	WRENCHING HEIGHT m' MIN.	dw MIN.	da MAX. MIN.	REMARKS	001	M10		16 15.73	17.77	8.4 8.04	6.43	14.6	10.0 10.80		002	M12	ST605246 BP9016052461	18.0 17.73	20.03	10.8 10.37	8.30	16.6	12 13		003	M16	ST605247 BP9016052470	24.0 23.67	26.75	14.8 14.10	11.28	22.5	16.0 17.3		004	M20	ST605248 BP9016052488	30.0 29.16	32.95	19.0 16.90	13.3	27.7	21.6 20		005	M24	ST605249 BP9016052496	36 35	39.55	22.3 20.2	16.2	33.2	25.9 24		006	M30	ST605826 BP9016058265	46 45	50.85	25.6 24.3	19.4	42.8
ITEM NO.	NOM. d SIZE	STYLE NO.	FLATS S MAX. MIN.	CORNERS e MIN.	TK. m MAX. MIN.	WRENCHING HEIGHT m' MIN.	dw MIN.	da MAX. MIN.	REMARKS																																																																			
001	M10		16 15.73	17.77	8.4 8.04	6.43	14.6	10.0 10.80																																																																				
002	M12	ST605246 BP9016052461	18.0 17.73	20.03	10.8 10.37	8.30	16.6	12 13																																																																				
003	M16	ST605247 BP9016052470	24.0 23.67	26.75	14.8 14.10	11.28	22.5	16.0 17.3																																																																				
004	M20	ST605248 BP9016052488	30.0 29.16	32.95	19.0 16.90	13.3	27.7	21.6 20																																																																				
005	M24	ST605249 BP9016052496	36 35	39.55	22.3 20.2	16.2	33.2	25.9 24																																																																				
006	M30	ST605826 BP9016058265	46 45	50.85	25.6 24.3	19.4	42.8	32.4 30																																																																				
TR20141N		PAGE 1 OF 1		1. MATERIAL: ALLOY STEEL OR STAINLESS STEEL OF GRADE AS UNDER FINISHED NUTS SHOULD CONFIRM TO PROOF LOAD STRESS TO PROPERTY CLASS-8 AS PER IS: 1367(Pt-VI) FOR ALLOY STEEL AND A1-80 AS PER SEC.2 OF IS: 1367(Pt-14) FOR STAINLESS STEEL. 2. GALVANIZING: ALLOY STEEL TO BE HOT DIP GALVANIZED AS PER STD SHEET TR-10194G. FOR STAINLESS STEEL GALVANIZING IS NOT REQD. 3. DIMENSIONS, TOLERANCES: TO IS: 1364 (Pt-3)-1983/ REAFFIRMED-1991. 4. THREADS: PITCH-COARSE TO IS: 4218 (Pt-2) TOLERANCE QUALITY-MEDIUM TOLERANCE CLASS-6H 5. IDENTIFICATION MARKING: AS STATED IN CLAUSE-3 OF IS: 1367 PART-18 FOR STEEL OR A1-80 AS PER SEC-2 OF IS: 1367(Pt-14) FOR STAINLESS STEEL. 6. TEST CERTIFICATE: TC FOR CHEMICAL & MECHANICAL PROPERTIES AS CALLED IN IS: 1367(Pt-VI) & FOR HOT DIP GALVANIZING SHALL BE FURNISHED.																																																																								
पुन:Rev. 05 दि. Dt. 17/11/21 पुन:Rev. 04 दि. Dt. 25/02/16	SHEET REAFFIRMED.  RASHMI NITIN NKM		वितरण DISTRIBUTION. सं.		स्वीकृत किया : APPROVED : Sd /-																																																																							
IT. 006 ADDED. NITIN NKM A.DEOTA		TRE/TRM/FTM/ TRX/TTG/QC-TCB/ QA-TCB/ JHANSI/ QC-TRM		तैयार किया PREPD. Sd /-		जारी किया ISSUED देआई/मानक TRE/STD.		दिनांक DATE 20.01.95																																																																				

REF.	COMP. drg.	 Form No. 2038	उत्पाद मानक परिणामित्र शाप/अभि.निर्देश		PRODUCT STANDARD TRANSFORMER SHOP / ENGG. INSTRUCTION		TR20144W 1 पृष्ठों में 1 PAGE 1 OF 1																																																																																																										
			TITLE : WASHER MCD STEEL HOT DIP GALVANIZED OR S / STEEL																																																																																																														
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.				<table border="1"> <thead> <tr> <th rowspan="2">ITEM NO.</th> <th rowspan="2">SIZE NOM d H12</th> <th rowspan="2">STYLE NO.</th> <th colspan="2">OUTSIDE DIAMETER D</th> <th colspan="2">THICKNESS S</th> <th rowspan="2">e NOM</th> <th rowspan="2">FOR BOLT OR SCREW SIZE</th> <th rowspan="2">APPROX WEIGHT KG</th> <th rowspan="2">REMARKS</th> </tr> <tr> <th>BASIC</th> <th>TOL</th> <th>BASIC</th> <th>TOL</th> </tr> </thead> <tbody> <tr> <td>001</td> <td>13</td> <td>BP9016052933</td> <td>24</td> <td>+0 -0.5</td> <td>2.5</td> <td>±0.3</td> <td>0.6</td> <td>M 12</td> <td>.006</td> <td></td> </tr> <tr> <td>002</td> <td>17</td> <td>BP9016052941</td> <td>30</td> <td>+0 -0.5</td> <td>3.0</td> <td>±0.3</td> <td>0.6</td> <td>M 16</td> <td>0.011</td> <td></td> </tr> <tr> <td>003</td> <td>21</td> <td>BP9016052950</td> <td>37</td> <td>+0 -0.8</td> <td>3.0</td> <td>±0.3</td> <td>1.0</td> <td>M 20</td> <td>0.016</td> <td></td> </tr> <tr> <td>004</td> <td>25</td> <td>BP9016052968</td> <td>44</td> <td>+0 -0.8</td> <td>4.0</td> <td>±0.3</td> <td>1.0</td> <td>M 24</td> <td>0.032</td> <td></td> </tr> <tr> <td>005</td> <td>10.5</td> <td></td> <td>21</td> <td>+0 -0.5</td> <td>2.0</td> <td>±0.2</td> <td>0.6</td> <td>M 10</td> <td>0.004</td> <td></td> </tr> <tr> <td>006</td> <td>18</td> <td>BP9016054111</td> <td>36</td> <td>+0 -0.8</td> <td>4.0</td> <td>±0.3</td> <td>1.0</td> <td>M 16</td> <td>0.023</td> <td>FOR HEADER & A-FRAME ASSY.</td> </tr> <tr> <td>007</td> <td>31</td> <td>BP9056057138</td> <td>56</td> <td>+0 -1.0</td> <td>4.0</td> <td>±0.3</td> <td>1.0</td> <td>M 30</td> <td>0.053</td> <td>FOR CORE BUILDING STAGE</td> </tr> <tr> <td>008</td> <td>37</td> <td></td> <td>66</td> <td>+0 -1.0</td> <td>5.0</td> <td>±0.6</td> <td>1.6</td> <td>M 36</td> <td>0.089</td> <td></td> </tr> </tbody> </table>							ITEM NO.	SIZE NOM d H12	STYLE NO.	OUTSIDE DIAMETER D		THICKNESS S		e NOM	FOR BOLT OR SCREW SIZE	APPROX WEIGHT KG	REMARKS	BASIC	TOL	BASIC	TOL	001	13	BP9016052933	24	+0 -0.5	2.5	±0.3	0.6	M 12	.006		002	17	BP9016052941	30	+0 -0.5	3.0	±0.3	0.6	M 16	0.011		003	21	BP9016052950	37	+0 -0.8	3.0	±0.3	1.0	M 20	0.016		004	25	BP9016052968	44	+0 -0.8	4.0	±0.3	1.0	M 24	0.032		005	10.5		21	+0 -0.5	2.0	±0.2	0.6	M 10	0.004		006	18	BP9016054111	36	+0 -0.8	4.0	±0.3	1.0	M 16	0.023	FOR HEADER & A-FRAME ASSY.	007	31	BP9056057138	56	+0 -1.0	4.0	±0.3	1.0	M 30	0.053	FOR CORE BUILDING STAGE	008	37		66	+0 -1.0	5.0	±0.6	1.6	M 36	0.089	
				ITEM NO.	SIZE NOM d H12	STYLE NO.	OUTSIDE DIAMETER D		THICKNESS S					e NOM	FOR BOLT OR SCREW SIZE	APPROX WEIGHT KG	REMARKS																																																																																																
							BASIC	TOL	BASIC	TOL																																																																																																							
				001	13	BP9016052933	24	+0 -0.5	2.5	±0.3	0.6	M 12	.006																																																																																																				
				002	17	BP9016052941	30	+0 -0.5	3.0	±0.3	0.6	M 16	0.011																																																																																																				
				003	21	BP9016052950	37	+0 -0.8	3.0	±0.3	1.0	M 20	0.016																																																																																																				
				004	25	BP9016052968	44	+0 -0.8	4.0	±0.3	1.0	M 24	0.032																																																																																																				
				005	10.5		21	+0 -0.5	2.0	±0.2	0.6	M 10	0.004																																																																																																				
				006	18	BP9016054111	36	+0 -0.8	4.0	±0.3	1.0	M 16	0.023	FOR HEADER & A-FRAME ASSY.																																																																																																			
				007	31	BP9056057138	56	+0 -1.0	4.0	±0.3	1.0	M 30	0.053	FOR CORE BUILDING STAGE																																																																																																			
008	37		66	+0 -1.0	5.0	±0.6	1.6	M 36	0.089																																																																																																								
NOTES :-																																																																																																																	
1. MATERIALS:- MILD STEEL AS STATED IN IS:2016 OR STAINLESS STEEL GR. A2-70 AS PER TABLE - 4 OF IS:1367 (PT-14)																																																																																																																	
2. GALVANIZING:- MILD STEEL TO BE HOT DIP GALVANIZED AS PER STD. SHT. TR10194G. FOR S / STEEL GALVANIZED IS NOT REQD.																																																																																																																	
3. DIMENSIONS, TOLERANCE:- & GENERAL REQUIRMENTS. TO IS:2016-67 (TABLE-1) REAFFIRMED 1991																																																																																																																	
4. TEST CERTIFICATE:- T.C. FOR CHEMICAL, MECHANICAL PROPERTIES & HOT DIP GALVANIZING SHALL BE FURNISHED.																																																																																																																	
5. FINISH :- CLEAN BRIGHT AND FREE FROM BURRS & SHARP EDGES.																																																																																																																	
पुन. Rev. 08 दि. Dt. 17/11/21 RASHMI NITIN NKM		SHEET REAFFIRMED. NITIN A.DEOTA		वितरण DISTRIBUTION. सं. TRE/TRM/FTM/ TRX/TTG/ QC-TCB/QA-TCB/ JHANSI		स्वीकृत किया : APPROVED : sd / - SKJ, SNA sd/ BSB																																																																																																											
पुन. Rev. 07 दि. Dt. 27/07/15				तैयार किया PREPD. T.R. SURI		जारी किया ISSUED टीआरई/मानक TRE/STD. दिनांक DATE 20.01.95																																																																																																											

REF.	Comp. drg.	 Form No. 2038	उत्पाद मानक परिणामित्र शाप/अभि.निर्देश	PRODUCT STANDARD TRANSFORMER SHOP / ENGG. INSTRUCTIONS	TR20138N 1 पृष्ठों में 1 PAGE 1 OF 1																			
		शीर्षक TITLE: NUTS, HEXAGON, PRODUCT GRA COARSE PITCH STAINLESS STEEL.																						
																								
TABLE OF DIMENSIONS																								
ITEM NO.	NOM d SIZE	STYLE NO.	FLATS S MAX. MIN.	CORNBRS e MIN.	TK. M MAX. MIN.	WRENCHING HEIGHT 'M' MIN.	dw MIN.	da MAX. MIN.	WEIG-IIT	REMARK														
001	M3	ST605205	5.50 5.32	6.01	2.40 2.15	1.72	4.60	3.45 3.00	0.001															
002	M4	ST605206	7.00 6.78	7.66	3.20 2.90	2.32	5.90	4.60 4.00	0.001															
003	M5	ST605207	8.00 7.78	8.79	4.70 4.40	3.52	6.90	5.75 5.00	0.002															
004	M6	ST605208	10.00 9.78	11.05	5.20 4.90	3.92	8.90	6.75 6.00	0.003															
005	M8	ST605209	13.00 12.73	14.38	6.80 6.44	5.15	11.60	8.75 8.00	0.005															
006	M10	ST605210	16.00 15.73	17.77	8.40 8.04	6.43	14.60	10.80 10.00	0.012															
1. MATERIAL : (i) FOR SIZES M6 & ABOVE : AUSTENITIC STAINLESS STEEL GRADE - A2 PROPERTY CLASS 70 AS PER TABLE - 4 OF IS: 1367 (PT.14) REAFFIRMED 1996. (ii) FOR SIZES M5 & BELOW : AUSTENITIC STAINLESS STEEL GRADE - A2 PROPERTY CLASS 50 AS PER TABLE - 4 OF IS: 1367 (PT.14) REAFFIRMED 1996.																								
2. DIMENSIONS, TOLERANCES : TO IS: 1364 (PT-3) - 1983 / REAFFIRMED 1991 & GENERAL REQUIREMENTS.																								
3. THREADS : PITCH - COARSE TO IS : 4218 (PT.-2) TOLERANCE QUALITY - MEDIUM TOLERANCE CLASS - 6H.																								
4. IDENTIFICATION MARKING : AS PER CL.3 OF IS: 1367 (PT.-14).																								
5. TEST CERTIFICATE : T.C. FOR CHEMICAL & MECHANICAL PROPERTIES SHALL BE FURNISHED AS CALLED IN IS:1367 (PT-14)																								
6. FINISH : CLEAN BRIGHT & FREE FROM BURRS.																								
TR20138N PAGE 1 OF 1		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"> पुन:Rev. 05 दि. DL 07 01/26 </td> <td style="width: 35%;"> SHEET REAFFIRMED.  RASHMI KARAN NKM </td> <td style="width: 15%;"> वितरण DISTRIBUTION. TRE/TRM/FTM TRX/TTG/ QA-TCB/QC-TCB/ QC-FTM JHANSI </td> <td style="width: 10%;"> मं </td> <td style="width: 25%;"> स्वीकृत किया : APPROVED : तैयार किया PREPD. H.K. MARATHE </td> <td style="width: 15%;"> जारी किया ISSUED योगार्द्ध/मानक TRE/STD. </td> <td style="width: 10%;"> दिनांक DATE 11.3.94 </td> </tr> <tr> <td> पुन:Rev. 04 दि. DL 02 07/20 </td> <td> SHEET REAFFIRMED & DIGITIZED.  RASHMI NITIN NKM </td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>									पुन:Rev. 05 दि. DL 07 01/26	SHEET REAFFIRMED.  RASHMI KARAN NKM	वितरण DISTRIBUTION. TRE/TRM/FTM TRX/TTG/ QA-TCB/QC-TCB/ QC-FTM JHANSI	मं	स्वीकृत किया : APPROVED : तैयार किया PREPD. H.K. MARATHE	जारी किया ISSUED योगार्द्ध/मानक TRE/STD.	दिनांक DATE 11.3.94	पुन:Rev. 04 दि. DL 02 07/20	SHEET REAFFIRMED & DIGITIZED.  RASHMI NITIN NKM					
पुन:Rev. 05 दि. DL 07 01/26	SHEET REAFFIRMED.  RASHMI KARAN NKM	वितरण DISTRIBUTION. TRE/TRM/FTM TRX/TTG/ QA-TCB/QC-TCB/ QC-FTM JHANSI	मं	स्वीकृत किया : APPROVED : तैयार किया PREPD. H.K. MARATHE	जारी किया ISSUED योगार्द्ध/मानक TRE/STD.	दिनांक DATE 11.3.94																		
पुन:Rev. 04 दि. DL 02 07/20	SHEET REAFFIRMED & DIGITIZED.  RASHMI NITIN NKM																							

REF. AA7161001 COMP. drg.	 उत्पाद मानक परिणामित्र शाप/अभि.निर्देश	PRODUCT STANDARD TRANSFORMER		TR20139W																																																																							
		Form No. 2038 SHOP / ENGG. INSTRUCTION		1 पृष्ठों में 1 PAGE 1 OF 1																																																																							
TITLE : WASHER, MACHINED STAINLESS STEEL																																																																											
																																																																											
<table border="1"> <thead> <tr> <th rowspan="2">ITEM NO.</th> <th rowspan="2">SIZE NOM d H12</th> <th rowspan="2">STYLE NO.</th> <th colspan="2">OUTSIDE DIAMETER D</th> <th colspan="2">THICKNESS S</th> <th rowspan="2">e NOM</th> <th rowspan="2">FOR BOLT OR SCREW SIZE</th> <th rowspan="2">WEIGHT KG</th> <th rowspan="2">REMARKS</th> </tr> <tr> <th>BASIC</th> <th>TOL</th> <th>BASIC</th> <th>TOL</th> </tr> </thead> <tbody> <tr> <td>001</td> <td>4.3</td> <td>BP9016052119 ST605211</td> <td>9</td> <td>+0 -0.3</td> <td>0.8</td> <td>+0.1</td> <td>0.3</td> <td>M4</td> <td>.00029</td> <td></td> </tr> <tr> <td>002</td> <td>5.3</td> <td>BP9016052127 ST605212</td> <td>10</td> <td>+0 -0.3</td> <td>1.0</td> <td>+0.1</td> <td>0.4</td> <td>M5</td> <td>.00042</td> <td></td> </tr> <tr> <td>003</td> <td>6.4</td> <td>BP9016052135 ST605213</td> <td>12.5</td> <td>+0 -0.4</td> <td>1.6</td> <td>+0.2</td> <td>0.6</td> <td>M6</td> <td>.00103</td> <td></td> </tr> <tr> <td>004</td> <td>8.4</td> <td>BP9016052143 ST605214</td> <td>17</td> <td>+0 -0.4</td> <td>1.6</td> <td>+0.2</td> <td>0.6</td> <td>M8</td> <td>.00207</td> <td></td> </tr> <tr> <td>005</td> <td>10.5</td> <td>BP9016052151 ST605215</td> <td>21</td> <td>+0 -0.5</td> <td>2.0</td> <td>+0.2</td> <td>0.6</td> <td>M10</td> <td>.00398</td> <td></td> </tr> </tbody> </table>						ITEM NO.	SIZE NOM d H12	STYLE NO.	OUTSIDE DIAMETER D		THICKNESS S		e NOM	FOR BOLT OR SCREW SIZE	WEIGHT KG	REMARKS	BASIC	TOL	BASIC	TOL	001	4.3	BP9016052119 ST605211	9	+0 -0.3	0.8	+0.1	0.3	M4	.00029		002	5.3	BP9016052127 ST605212	10	+0 -0.3	1.0	+0.1	0.4	M5	.00042		003	6.4	BP9016052135 ST605213	12.5	+0 -0.4	1.6	+0.2	0.6	M6	.00103		004	8.4	BP9016052143 ST605214	17	+0 -0.4	1.6	+0.2	0.6	M8	.00207		005	10.5	BP9016052151 ST605215	21	+0 -0.5	2.0	+0.2	0.6	M10	.00398	
ITEM NO.	SIZE NOM d H12	STYLE NO.	OUTSIDE DIAMETER D		THICKNESS S				e NOM	FOR BOLT OR SCREW SIZE	WEIGHT KG	REMARKS																																																															
			BASIC	TOL	BASIC	TOL																																																																					
001	4.3	BP9016052119 ST605211	9	+0 -0.3	0.8	+0.1	0.3	M4	.00029																																																																		
002	5.3	BP9016052127 ST605212	10	+0 -0.3	1.0	+0.1	0.4	M5	.00042																																																																		
003	6.4	BP9016052135 ST605213	12.5	+0 -0.4	1.6	+0.2	0.6	M6	.00103																																																																		
004	8.4	BP9016052143 ST605214	17	+0 -0.4	1.6	+0.2	0.6	M8	.00207																																																																		
005	10.5	BP9016052151 ST605215	21	+0 -0.5	2.0	+0.2	0.6	M10	.00398																																																																		
1. MATERIAL: AUSTENITIC STAINLES STEEL Gr.A2 PROPERTY CLASS 50 AS PER TABLE 4 OF IS; 1367 (Pt14) (REAFFIRMED 1996)																																																																											
2. DIMENSIONS, TOLERANCES: TO IS: 2016-67 (TABLE-1) REAFFIRMED 1991 & GENERAL REQUIRMENTS																																																																											
3. TEST CERTIFICATES: T.C. FOR CHEMICAL, MECHANICAL PROPERTIES SHALL BE FURNISHED AS CALLED IN IS 1367 (PT14).																																																																											
4. FINISH: CLEAN BRIGHT AND FREE FROM BURRS.																																																																											
TR20139W PAGE 1 OF 1	पुन:Rev. 05 दि. Dt. 17/11/21	SHEET REAFFIRMED.  RASHMI NITIN NKM		वितरण DISTRIBUTION.	सं.	स्वीकृत किया : APPROVED : sd / - BSB, SNA																																																																					
	पुन:Rev. 04 दि. Dt. 27/07/15	SHEET REAFFIRMED. NITIN A.DEOTA		TRE/TRM/FTM/ TRX/TTG/ QC-TCB/QA-TCB/ JHANSI		तैयार किया PREPD. जाग्री किया ISSUED sd / - JLM टीआरई/मानक TRE/STD.																																																																					
दिनांक DATE 08.03.94																																																																											



CORPORATE PURCHASING SPECIFICATION

AA10108

Rev No.11

PREFACE SHEET

STRUCTURAL STEEL-STANDARD QUALITY (PLATES, SECTIONS, STRIPS, FLATS & BARS)

FOR INTERNAL USE ONLY

REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS

Equivalent/Comparable Standards:

- | | | |
|-------------|---|---------------------------------------|
| 1. INDIAN | : | IS : 2062 – 2011, Gr: E250, Quality A |
| 2. AMERICAN | : | ASTM A131M – 2013 |
| 3. JAPANESE | : | JIS G3106 – 2008 |
| 4. EUROPEAN | : | EN 10025 – 2:2004 Gr. S275JR |

Suggested/Probable Suppliers and Grades:

- | | | |
|--------------|---|------------------------|
| 1. M/S TISCO | : | TISTEN 42 |
| 2. M/S SAIL | : | i) MA 300 HY |
| | | ii) Lloyds, Gr :A |
| | | iii) IS : 2062, Gr : A |

User Plants and Replaced Plant Specifications/References:

- | | | |
|--------------------|---|-----------|
| 1. HEP, BHOPAL | : | PS 10108 |
| 2. TP, JHANSI | : | PS 10108 |
| 3. HEEP, HARDWAR | : | 0500.001 |
| 4. HPEP, HYDERABAD | : | HY0210299 |
| 5. HPBP, TIRUCHY | : | |

Revisions:

As per Cl. No. 38.1 of MOM of MRC-S&GPS

APPROVED:INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC(S&GPS)

Rev No.11

Amd No.

Reaffirmed

Prepared

Issued

Dt. of 1st Issue

Dt:22-02-2014

Dt:

Year:

HPEP, Hyderabad

Corp.R&D

July, 1976

This page intentionally left blank



CORPORATE PURCHASING SPECIFICATION

AA10108

Rev No. 11

PAGE 1 of 2

STRUCTURAL STEEL-STANDARD QUALITY (PLATES, SECTIONS, STRIPS, FLATS & BARS)

(ORDERING DESCRIPTION)

1.0 GENERAL:

This specification governs the quality requirements of structural steel plates, strips, flats, bars and sections such as angles, beams, channels and tees etc. of IS: 2062 – 2011, Gr: E250, Quality A

2.0 APPLICATION:

For general engineering purpose.

3.0 CONDITION OF DELIVERY:

Plates, Bars & Sections: Hot rolled in straight lengths without twists & Bends

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

Material shall comply with the requirements of IS: 2062 – 2011, Gr: E250, Quality A

Material offered to EN 10025-2:2004 Gr. S275JR is also acceptable. The tolerance on dimensions for plates shall comply with EN 10029.

5.0 DIMENSIONS AND TOLERANCES:

5.1 DIMENSIONS:

5.1.1 Sizes

Material shall be supplied to the dimensions specified on BHEL Order.

5.1.2 Length

Unless otherwise specified, hot rolled bars and sections shall be supplied in 3 to 6 metres length.

5.2 Tolerances:

5.2.1 The tolerances on hot rolled material shall comply with IS: 1852. However, no plate shall be under the specified thickness at any point.

Revisions:

As per Cl. No. 38.1 of MOM of MRC-S&GPS

APPROVED:

INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC(S&GPS)

Rev No.11

Amd No.

Reaffirmed

Prepared

Issued

Dt. of 1st Issue

Dt:22-02-2014

Dt:

Year:

HPEP, Hyderabad

Corp.R&D

July, 1976

AA10108

Rev No. 11

PAGE 2 of 2

CORPORATE PURCHASING SPECIFICATION



5.2.2 Straight for hot rolled bars:

Unless otherwise specified, the permissible deviation in straightness shall not exceed 5 mm in any 1000 mm length.

6.0 HARDNESS (BRINELL):

When tested in accordance with IS: 1500, the material shall show a brinell hardness in the range of 120-156 HB.

Note: Hardness test shall be conducted only when tensile test cannot be performed.

7.0 TEST CERTIFICATES:

Unless otherwise specified, three copies of test certificates shall be supplied.

In addition, the supplier shall ensure to enclose one copy of the test certificate along with their dispatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information.

AA10108 Rev.11 / IS:2062 Grade: E250 Quality A / EN 10025-2 Gr. S275JR,

BHEL order no., Melt no. Size, Results of chemical analysis and Mechanical tests, Supplier's name, Identification no. TC no., Signature of competent authority etc.

8.0 PACKING AND MARKING:

Plates shall be transported suitably to avoid damage during transit.

For plates below 10 mm thick, each pile (preferably of 16 plates) and each plate 10 mm thick & over shall be marked with melt no. AA10108, BHEL order no., Supplier's name, Identification no., Size & weight on any one corner and encircled with paint preferably of white colour.

9.0 REFERRED STANDARDS (Latest publications including amendments):

1) IS: 1500

2) IS: 1852

3) EN 10029



CORPORATE PURCHASING SPECIFICATION

AA10152

Rev No.07

PREFACE SHEET

STEEL TUBES – ELECTRIC RESISTANCE WELDED / SUBMERGED ARC WELDED

FOR INTERNAL USE ONLY

REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS

Equivalent / Comparable Standards:

- 1) INDIAN : IS 1239 (Part 1) – 2004, Gr.: ERW

Suggested / Probable Suppliers and Grades:

Refer plant vendors list.

User Plants and Replaced Plant Specifications / References:

- 1) HEP, BHOPAL : PS10152 - Ungalvanized Tubes.
2) HEEP, HARDWAR : PS10153 - Galvanized Tubes.
3) HPEP, HYDERABAD : HY0120299, HY0210299
4) HPBP, TIRUCHY :

Revisions:

Corrected the Clause 11.4 in line with IS 1239 (Part 1)

APPROVED:

INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC(S&GPS)

Rev No.07

Amd No.

Reaffirmed

Prepared

Issued

Dt. of 1st Issue

Dt:05-01-2015

Dt:

Year:2020

HEP, Bhopal

Corp.R&D

July, 1976

This page intentionally left blank



PAGE 1 of 4

1.0 GENERAL:

2.0 APPLICATION:

3.0 CONDITION OF DELIVERY:

Unless otherwise specified, tubes shall be supplied in ungalvanized condition.

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

IS: 1239(part 1) – 2004: Steel Tubes, Tubular and other Wrought Steel Fittings
Gr: ERW.

5.0 DIMENSIONS AND TOLERANCES:

5.1 Sizes:

BHEL order shall clearly state the maximum outside diameter, and wall thickness of the tube.

5.2 Tolerances:

5.2.1 Thickness:

Light tubes	+ not limited
	- 8 percent

Medium and Heavy tubes	+ not limited
	- 10 percent

Revisions:

Corrected the Clause 11.4 in line with IS 1239 (Part 1)

APPROVED:

INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC(S&GPS)

Rev No.07

Amd No.

Reaffirmed

Dt:05-01-2015

Dt:

Year:2020

Prepared

HEP, Bhopal

Issued

Corp.R&D

Dt. of 1st Issue

July, 1976

AA10152

Rev No. 07

PAGE 2 of 4

CORPORATE PURCHASING SPECIFICATION



5.2.2 Weight:

Single tube (light series)	+ 10 percent – 8 percent
Single tube (medium and heavy series)	± 10 percent
For quantities per load of 10 tonnes, min (light series)	+ 7.5 percent – 5 percent
For quantities per load of 10 tonnes, min (medium and heavy series)	± 7.5 percent

5.2.3 Internal Weld Fin:

Height of the internal weld fin shall not be greater than 60 percent of the specified thickness.

5.2.4 Length:

5.2.4.1 Random Length:

Tubes shall be supplied in random lengths of 4 to 7 meters, unless otherwise specified and in the line with IS: 1239, Part 1.

5.2.4.2 Exact Length:

When exact lengths are called for, the tolerances shall be + 6 mm, – 0 mm of the specified length.

6.0 MANUFACTURE:

Tubes shall be made from tested quality steel manufactured by any approved process and shall be fully killed.

Tubes shall not be manually welded.

7.0 FREEDOM FOR DEFECTS:

Tubes shall be cleanly finished and reasonably free from injurious defects. They shall be reasonably straight. The ends shall be cut cleanly and reasonably square with the axis of the tube.

8.0 CHEMICAL COMPOSITION:

The melt analysis of steel shall be as follows:

Element	Percent max.	Permissible variation over specified limit, ± max
Carbon	0.20	0.02
Manganese	1.30	0.04
Sulphur	0.040	0.005
Phosphorus	0.040	0.005

9.0 GALVANIZING:

When galvanized tubes are ordered, the Zinc coating on the tubes shall be in accordance with IS: 4736



CORPORATE PURCHASING SPECIFICATION

AA10152

Rev No.07

PAGE 3 of 4

10.0 TEST SAMPLES:

All tubes bearing the same designation and manufactured under a single process shall be grouped together to constitute a lot. Each lot shall be sampled separately in accordance with IS: 4711

11.0 MECHANICAL PROPERTIES:

11.1 Tensile:

The tensile strength of strips cut from selected tubes, when tested in accordance with IS: 1608 shall be as follows:

Tensile strength : 320 N/mm², min.

Elongations on $5.65\sqrt{S_0}$ gauge length:

Up to and including 25 mm NB : 12 percent, min.

Over 25 mm up to including 150 mm NB : 20 percent, min.

Note:

1. For welded tubes, the strip tensile test specimen shall not contain the weld.
2. For galvanized tubes, zinc coating may be removed by stripping prior to tensile test.

11.2 Bend Test (On tubes up to and including 50mm nominal bore):

When tested in accordance with IS: 2329, the tubes shall be capable of withstanding the bend test without showing any signs of fracture or failure.

Tubes shall be bent with the weld at 90° to the plane of bending. The tubes shall not be filled for this test.

Ungalvanized tubes shall be capable of being bent cold without cracking, through 180° around a former having a radius at the bottom of groove in the plane of bending equal to at least six times the outside diameter of the tube.

Galvanized tubes shall be capable of being bent cold without cracking of the steel, through 90° round a former having a radius at the bottom of the groove equal to at least eight times the outside diameter of the tube.

11.3 Flattening Test (On tubes above 50mm nominal bore):

Rings not less than 40mm in length, cut from the end of each selected tubes shall be flattened between parallel plates with the weld at 90° (point of maximum bending) in accordance with IS: 2328. No opening shall occur by fracture in the weld until the distance between the plates is less than 75 percent of the original outside diameter of the tube and no cracks or breaks on the metal elsewhere than in the weld shall occur until the distance between the plates is less than 60 percent of the original outside diameter.

Test rings may have the inner and outer edges rounded.

11.4 Hydraulic Test / Eddy Current Test:

Each tube shall withstand a test pressure of 5 N/mm² without showing leakage defects of any kind. The pressure shall be applied and maintained for a minimum period of 3 seconds for proof and inspection.

Note: Eddy current test may be done in place of Hydrostatic test as per the procedure in Annexure – B of IS: 1239, Part-1.

AA10152

Rev No. 07

PAGE 4 of 4

CORPORATE PURCHASING SPECIFICATION



12.0 TEST CERTIFICATES:

Three copies of test certificates shall be supplied, unless otherwise stated on the order.

In addition, to the above, the supplier shall ensure to enclose one copy of the test certificate along with their dispatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information:

AA10152: Rev. No.07: Steel Tubes – ERW/SAW

BHEL order No:

Supplier's Reference:

Name

Identification No.

Melt No.

Results of Tests:

Results of Chemical, Mechanical tests and Hydraulic/Eddy Current test.

13.0 PROTECTIVE COATING:

The tubes shall be protected with a rust preventive coating of varnish, externally throughout the length.

14.0 PACKING AND MARKING:

Each tube shall be plugged at both ends by means of tight fitting end caps.

The tubes shall be suitably packed in bundles/packages to prevent corrosion and damage during transit.

Each bundle/package shall bear the following information:

AA10152: Steel Tubes – ERW/SAW

BHEL Order No.

Consignment/Identification No.

Outside Diameter and Wall Thickness.

Supplier's Name

15.0 REFERRED STANDARDS (Latest Publications Including Amendments):

1) IS: 1608

2) IS: 2328

3) IS: 2329

4) IS: 4736

5) IS: 4711

TR20040B PAGE 1 OF 1		REF. TR20040 (B203) B 42 C600211 B 42-1 C600762 B 42-3 C601005				PRODUCT STANDARD TRANSFORMER		TR20040B																																																							
				BREATHERS (SILICA GEL TYPE)		PAGE 1 OF 1																																																									
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.		<table border="1"> <thead> <tr> <th>SL NO</th> <th>STYLE. NO.</th> <th>DRG.NO.</th> <th>A</th> <th>B</th> <th>GEL QTY. KG</th> <th>WT. WITHOUT GEL. KG</th> <th>RECOMMENDED FOR OIL QTY. IN LITERS</th> <th>APPLICATION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>BP9096046340 ST-604639</td> <td>34990000021</td> <td>240</td> <td>103</td> <td>0.65</td> <td>0.7</td> <td>UPTO 1000</td> <td>OLTC DIVERTOR TANK INSTRUMENT TRANSF. CABLE BOXES E.T.C.</td> </tr> <tr> <td>2</td> <td>BP9096046340 ST-604634</td> <td>34990000051</td> <td>300</td> <td>280</td> <td>10</td> <td>6</td> <td>1001-20000</td> <td>POWER TRANSF. & SPARE COILS</td> </tr> <tr> <td>3</td> <td>BP9096046358 ST-604636</td> <td>34990000051</td> <td>500</td> <td>280</td> <td>15</td> <td>6.5</td> <td>20001-30000</td> <td>POWER TRANSF.</td> </tr> <tr> <td>4</td> <td>SEE NOTE-1</td> <td></td> <td></td> <td></td> <td>20</td> <td></td> <td>30001-40000</td> <td>POWER TRANSF.</td> </tr> <tr> <td>5</td> <td>SEE NOTE-2</td> <td></td> <td></td> <td></td> <td>32</td> <td></td> <td>40001-80000</td> <td>POWER TRANSF.</td> </tr> </tbody> </table>								SL NO	STYLE. NO.	DRG.NO.	A	B	GEL QTY. KG	WT. WITHOUT GEL. KG	RECOMMENDED FOR OIL QTY. IN LITERS	APPLICATION	1	BP9096046340 ST-604639	34990000021	240	103	0.65	0.7	UPTO 1000	OLTC DIVERTOR TANK INSTRUMENT TRANSF. CABLE BOXES E.T.C.	2	BP9096046340 ST-604634	34990000051	300	280	10	6	1001-20000	POWER TRANSF. & SPARE COILS	3	BP9096046358 ST-604636	34990000051	500	280	15	6.5	20001-30000	POWER TRANSF.	4	SEE NOTE-1				20		30001-40000	POWER TRANSF.	5	SEE NOTE-2				32		40001-80000	POWER TRANSF.
SL NO	STYLE. NO.	DRG.NO.	A	B	GEL QTY. KG	WT. WITHOUT GEL. KG	RECOMMENDED FOR OIL QTY. IN LITERS	APPLICATION																																																							
1	BP9096046340 ST-604639	34990000021	240	103	0.65	0.7	UPTO 1000	OLTC DIVERTOR TANK INSTRUMENT TRANSF. CABLE BOXES E.T.C.																																																							
2	BP9096046340 ST-604634	34990000051	300	280	10	6	1001-20000	POWER TRANSF. & SPARE COILS																																																							
3	BP9096046358 ST-604636	34990000051	500	280	15	6.5	20001-30000	POWER TRANSF.																																																							
4	SEE NOTE-1				20		30001-40000	POWER TRANSF.																																																							
5	SEE NOTE-2				32		40001-80000	POWER TRANSF.																																																							
REVISIONS DATE 17/11/21 DATE 03.07.17		REV 08 REV 07		SHEET REAFFIRMED RASHMI NITIN NKM ST601839, ST604634 & ST604635 DE-STYLED. RASHMI NITIN AKD		DISTRIBUTION. TRE/TRM/FBM-15 TCX(TR)/TTX-10 TTG/QC/QA-1 TSD/JHANSI-6		APPROVED BY. MCJ, SNA PREPARED BY. TRS ISSUED TRE / STD DATE 23.10.84		TR 20040B PAGE 1 OF 1																																																					

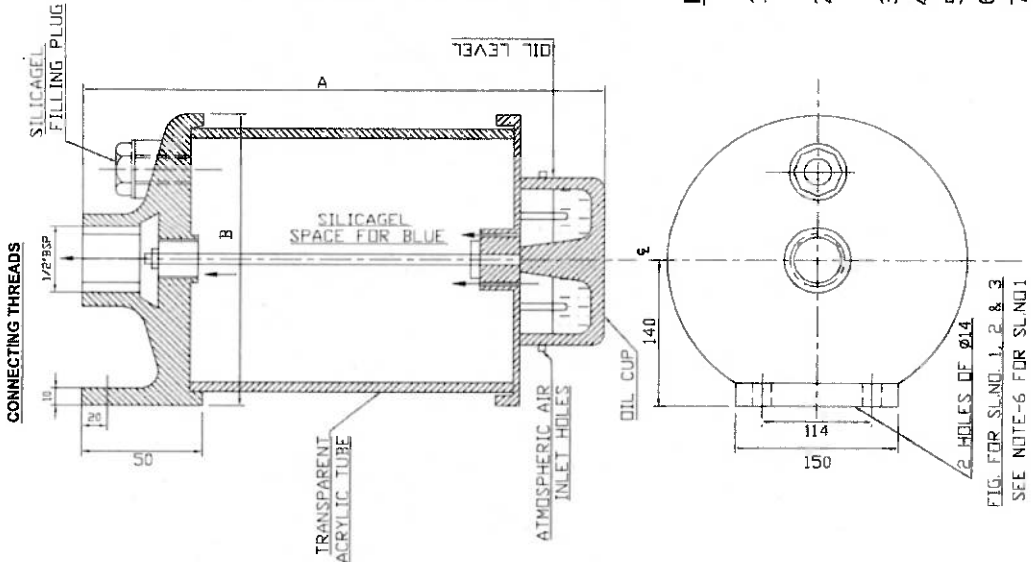


FIG. FOR SLNO. 1, 2 & 3
SEE NOTE-6 FOR SLNO 1

NOTES :-

- FOR TRANSFORMERS WITH OIL QUANTITY 30001-40000 LITERS USE TWO BREATHERS TO ST604634 WITH GANGING.
- FOR TRANSFORMERS WITH OIL QUANTITY 40001-80000 LITRES USE TWO BREATHERS TO ST604635 WITH GANGING.
- DETAILS OF GANGING ARE GIVEN IN DRG. 24995100006.
- WHILE CALLING BREATHERS ON MID CALL STYLE NO. AND GEL QTY. SEPARATELY.
- BREATHERS TO SL. NO. 1 IS WITHOUT SIDE MTG. FLANGE.
- BREATHERS SERIES ARRGT. UPTO 40000 LTS REFER DRG. 349900000060, BP9096055934.
- BREATHERS SERIES ARRGT. ABOVE 40000 LTS REFER DRG. 349900000061, BP9096055926.