

Scope of Supply

Item No	Material Code	Material Description	Drawing No/Rev No	Spec No/Rev No	Quantity (Nos)
10	964533190000	Nut -M16 -2H-0004	3V000420836/01	-	800.00
20	964535200000	DE STUD-M16x110 -B16-V084	3VV08421153/01	TDC:5:164/09	150.00
30	964521330000	HEX CLR BOLT-9/16"x36.5 -B8-5937	3V593709599/05	-	750.00
40	964522100000	FT STUD-M24x240 -B16-0030	3V003020721/02	TDC:5:164/09	60.00
50	964534950000	FT STUD-M16x140 -B16-V092-DGPT	3VV11521125/00	-	20.00
60	964534960000	FT STUD-M16x160 -B16-V116-DGPT	3VV11621125/00	-	10.00
70	964534970000	FT STUD-M22x195 -B16-V147-DGPT	3VV14721125/00	TDC:5:164/09	20.00
80	964535120000	BOLT-M24x70 -B7-V417-DGPT	3VV41721150/00	TDC:5:164/09	10.00
90	964535550000	DE STUD-M22x155 -B16-V180	3VV18021153/00	TDC:5:164/09	10.00
100	964535570000	BOLT-M16x50 -B16-V201	3VV20121152/01	TDC:5:164/09	10.00
110	964562680000	FT STUD-1/2"x80 -B7-N081	3VN08106875/02	TDC:5:164/09	100.00
120	964620590000	FD STUD M42X280-B16-L793	3VL79322456/01	-	50.00
130	964656350000	FT STUD-1/2"-13UNC-2A-80-B8M	3V000123248/01	-	1250.00
140	964656390000	FT STUD-3/4"-10UNC-2A-120-B8M	3V000523248/01	-	200.00
150	964656480000	HEX NUT-1/2"-13UNC-2B-GR.8M	3V000123249/00	-	2500.00
160	964656500000	HEX NUT-3/4"-10UNC-2B-GR.8M	3V000323249/00	-	400.00
170	966000520000	NUT -3/8" -16 UNC-2B	3VHL9125792/00	-	300.00

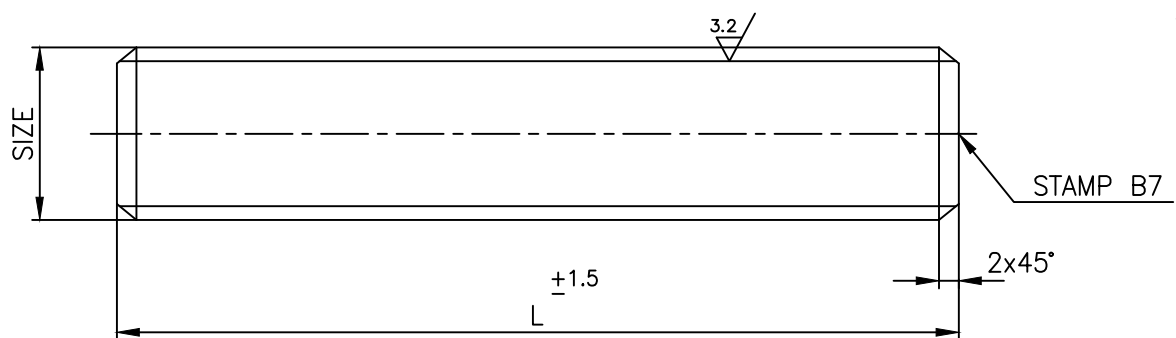
3-V-0000-06875
DRAWING NO.

SL.No	DRAWING No.	MATERIAL	MATL. CODE	SIZE	L	WEIGHT IN Kgs.	SIZE/RATING
01	3-V-N073-06875/02	ASTM A193 B7, HT, CERTIFY	964562670000	1/2"-13UNC-2A	68	0.07	2"-150
02	3-V-N081-06875/02		964562680000	1/2"-13UNC-2A	80	0.08	2"-300
03	3-V-N025-06875/02		964562690000	5/8"-11UNC-2A	86	0.13	3"-150
04	3-V-N001-06875/02		964562700000	5/8"-11UNC-2A	94	0.15	4"-150 6"-150
05	3-V-N009-06875/02		964562710000	5/8"-11UNC-2A	105	0.16	8"-150 3",4"-300
06	3-V-N017-06875/02		964562720000	5/8"-11UNC-2A	118	0.18	6"-300
07	3-V-N057-06875/02		964562730000	3/4"-10UNC-2A	112	0.25	10"-150
08	3-V-N041-06875/02		964562740000	3/4"-10UNC-2A	120	0.27	12"-150
09	3-V-N089-06875/02		964562750000	3/4"-10UNC-2A	133	0.30	8"-300
10	3-V-N065-06875/02		964562760000	1"-8UNC-2A	158	0.63	10"-300
11	3-V-N105-06875/02		964562770000	1.1/8"-8UN-2A	180	0.91	12"-300
12	3-V-N106-06875/02		964562780000	1.1/8"-8UN-2A	140	0.71	12"-300
13	3-V-N224-06875/02		964562290000	1"-8UNC-2A	170	0.71	20"-150
14	3-V-1387-06875/02		964564270000	1"-8UNC-2A	135	0.54	16"-150
15	3-V-N204-06875/02		964564280000	3/4"-10UNC-2A	105	0.25	6"-150

SL.No	DRAWING No.	MATERIAL	MATL. CODE	SIZE	L	WEIGHT IN Kgs.	SIZE/RATING
16	3-V-N206-06875/02	ASTM A193 B7, HT, CERTIFY	964564290000	7/8"-9UNC-2A	115	0.35	10"-150
17	3-V-N207-06875/02		964564300000	7/8"-9UNC-2A	125	0.38	12"-150
18	3-V-N212-06875/02		964564560000	7/8"-9UNC-2A	150	0.45	8"-300
19	3-V-F505-06875/01		964566800000	1.1/4"-8UN-2A	215	1.34	8"-600
20	3-V-F506-06875/01		964566810000	1.1/8"-8UN-2A	220	1.41	10"-600
21	3-V-F507-06875/02		964566820000	1.1/4"-8UN-2A	250	1.74	12"-600
22	3-V-N361-06875/01		964567040000	1.1/4"-8UN-2A	150	0.94	24"-150& 16"-300
23	3-V-N437-06875/01		964567430000	1.3/8"-8UN-2A	190	1.44	20"-300
24	3-V-N847-06875		964536630000	1.1/4"-8UN-2A	195	1.23	28"-150
25	3-V-N848-06875		964536640000	1.3/8"-8UN-2A	210	1.58	30"-150
26	3-V-N827-06875		964536650000	1.1/2"-8UN-2A	220	1.96	32"-150
27	3-V-N846-06875/01		964536660000	1.3/4"-8UN-2A	240	2.9	36"-150
28	3-V-NE97-06875		964653420000	1.1/2"-8UN-2A	260	2.32	26"-300
29	3-V-NK44-06875		964659010000	1.5/8"-8UN-2A	270	2.84	28"-300
30	3-V-NK45-06875		964659050000	2"-8UN-2A	275	4.38	28"-600
31	3-V-P788-06875		964659130000	1.3/8"-8UN-2A	235	1.59	14"-600

NOTE:-

FOR QUALITY REQUIREMENTS REFER LATEST APPLICABLE TDC:5:164



REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	R.P.SINGH
14	12.06.19	CHD & APPD	SSK & KRS	13	08.12.18	CHD & APPD	SSK & KRS
SL.No 31 INCLUDED.				SL.No 29 & 30 INCLUDED.			

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT								
	BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.				DRN	V.BAIRAVAN	SIGN	DATE	NO.OF VAR.
					CHD	S.SATHEESHKUMAR		31.12.09	
					APPD	K.RAJASEKARAN		31.12.09	
	DEPT VL		SCALE	WEIGHT (KG).	REFERENCE INFORMATION				NO. OF ITEMS
	CODE 320		N T S		CAD .3-V-0000-06875-0-0				
	TITLE				CARD CODE	DRAWING NO.			REV
	STUD				U 01	3-V-0000-06875			14

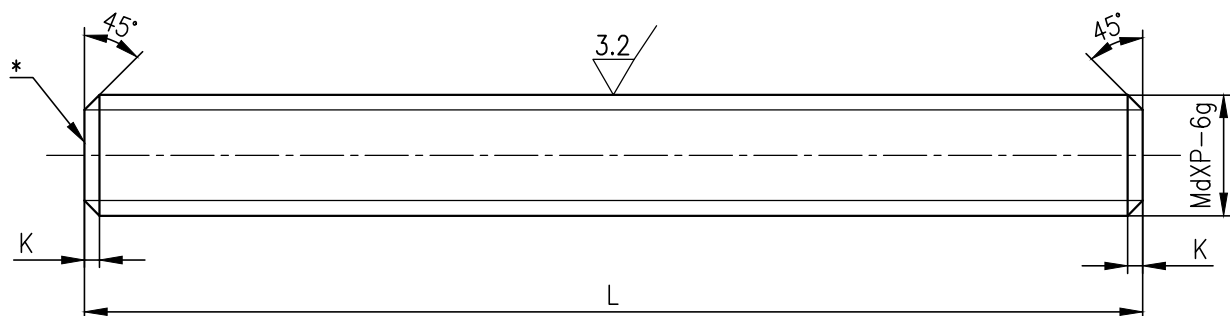
3-V-0000-20721

DRAWING NO.

12.5 / 3.2

SL.NO.	DRAWING NO.	COMP. CODE	MATL. SPECN.	DIMENSIONS				NET WT. (IN KGS.)
				Md	P	L	K	
1.	3-V-0001-20721/02	964521620000	A 193 - B7, CERTIFY	M16	2	140	2	0.20
2.	3-V-0002-20721/02	964521630000		M20	2.5	180	2.5	0.41
3.	3-V-0003-20721/02	964521640000		M22	2.5	170	2.5	0.47
4.	3-V-0004-20721/02	964521650000		M22	2.5	200	2.5	0.60
5.	3-V-0005-20721/02	964521660000		M22	2.5	210	2.5	0.62
6.	3-V-0006-20721/02	964521670000		M22	2.5	220	2.5	0.65
7.	3-V-0007-20721/02	964521680000		M24	3	240	3	0.82
8.	3-V-0008-20721/02	964521690000		M24	3	270	3	0.95
9.	3-V-0009-20721/02	964521700000		M24	3	280	3	0.99
10.	3-V-0010-20721/02	964521710000		M24	3	290	3	1.02
11.	3-V-0011-20721/02	964521720000		M24	3	315	3	1.08
12.	3-V-0012-20721/02	964521730000		M30	3	245	3	1.33
13.	3-V-0013-20721/02	964521740000		M30	3	260	3	1.38
14.	3-V-0014-20721/02	964521750000		M30	3	315	3	1.72
15.	3-V-0015-20721/02	964521760000		M30	3	340	3	1.89
16.	3-V-0016-20721/02	964521770000		M30	3	385	3	2.10
17.	3-V-0017-20721/02	964521780000		M36	3	295	3	2.23
18.	3-V-0018-20721/02	964521790000		M36	3	300	3	2.31
19.	3-V-0019-20721/02	964521800000		M36	3	335	3	2.64
20.	3-V-0020-20721/02	964521810000		M36	3	350	3	2.80
21.	3-V-0021-20721/02	964521820000		M36	3	410	3	3.27
22.	3-V-0022-20721/02	964521830000		M36	3	435	3	3.44
23.	3-V-0023-20721/02	964521840000		M36	3	485	3	3.83
47.	3-V-0047-20721/02	964523210000		M24	3	205	3	0.70
49.	3-V-0049-20721	964660230000		M36	3	370	3	2.95
51.	3-V-3234-20721	964652720000		M33	3.5	155	3.5	0.90
53.	3-V-SIJA-20721	966000220000		M22	2.5	240	2.5	0.705
55.	3-V-SFJA-20721	966000260000		M16	2	158	2	0.245
57.	3-V-SDJA-20721/1	966000690000	M12	1.75	130	1.75	0.11	

SL.NO.	DRAWING NO.	COMP. CODE	MATL. SPECN.	DIMENSIONS				NET WT. (IN KGS.)
				Md	P	L	K	
24.	3-V-0024-20721/02	964522040000	A 193 - B16, CERTIFY	M16	2	140	2	0.20
25.	3-V-0025-20721/02	964522050000		M20	2.5	180	2.5	0.41
26.	3-V-0026-20721/02	964522060000		M22	2.5	170	2.5	0.47
27.	3-V-0027-20721/02	964522070000		M22	2.5	200	2.5	0.60
28.	3-V-0028-20721/02	964522080000		M22	2.5	210	2.5	0.62
29.	3-V-0029-20721/02	964522090000		M22	2.5	220	2.5	0.65
30.	3-V-0030-20721/02	964522100000		M24	3	240	3	0.82
31.	3-V-0031-20721/02	964522110000		M24	3	270	3	0.95
32.	3-V-0032-20721/02	964522120000		M24	3	280	3	0.99
33.	3-V-0033-20721/02	964522130000		M24	3	290	3	1.02
34.	3-V-0034-20721/02	964522140000		M24	3	315	3	1.08
35.	3-V-0035-20721/02	964522150000		M30	3	245	3	1.33
36.	3-V-0036-20721/02	964522160000		M30	3	260	3	1.38
37.	3-V-0037-20721/02	964522170000		M30	3	315	3	1.72
38.	3-V-0038-20721/02	964522180000		M30	3	340	3	1.89
39.	3-V-0039-20721/02	964522190000		M30	3	385	3	2.10
40.	3-V-0040-20721/02	964522200000		M36	3	295	3	2.23
41.	3-V-0041-20721/02	964522210000		M36	3	300	3	2.31
42.	3-V-0042-20721/02	964522220000		M36	3	335	3	2.64
43.	3-V-0043-20721/02	964522230000		M36	3	350	3	2.80
44.	3-V-0044-20721/02	964522240000		M36	3	410	3	3.27
45.	3-V-0045-20721/02	964522250000		M36	3	435	3	3.44
46.	3-V-0046-20721/02	964522260000		M36	3	485	3	3.83
48.	3-V-0048-20721/02	964523220000		M24	3	205	3	0.70
50.	3-V-0050-20721	964660240000		M36	3	370	3	2.95
52.	3-V-3237-20721	964652730000		M33	3.5	155	3.5	0.90
54.	3-V-SIJM-20721	966000210000		M22	2.5	240	2.5	0.705
56.	3-V-SFJM-20721	966000270000		M16	2	158	2	0.245
58.	3-V-SDJM-20721/1	966000680000	M12	1.75	130	1.75	0.11	



NOTES :

- * PUNCH MATERIAL MARK B7 FOR A193 - B7
B16 FOR A193 - B16
- QUALITY REQUIREMENTS SHALL BE AS PER LATEST TDC 5 : 164

REV	DATE	ALTERED	S.MADHURAM
07	01.11.19	CHD & APPD	SSK & KRS

SL. NO. 57 & 58 PITCH 1.75 WAS 2

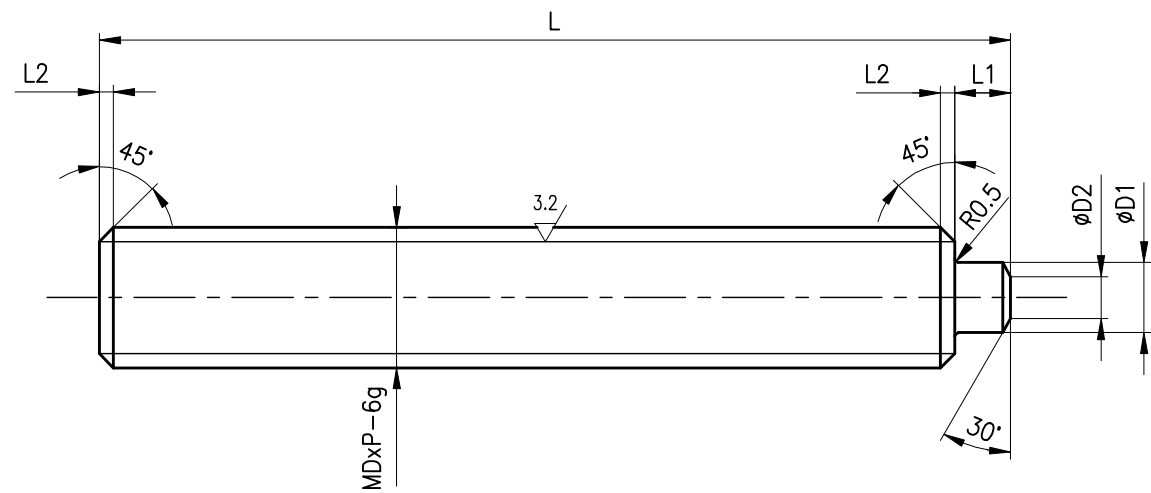
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT								
	BHARAT HEAVY ELECTRICALS LTD. UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI_620014.	DRN	V.BAIRAVAN	SIGN	DATE	NO.OF VAR.			
		CHD	K.RAJASEKARAN		01.02.08				
		APPD	M.RAJAKUMAR		01.02.08				
DEPT VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION						
CODE 320	NTS		PT - 39a						
TITLE		CARD CODE	DRAWING NO.						
	STUD	U 01	3-V-0000-20721						
									REV 07

ALL DIMENSIONS ARE IN MILLIMETRES. FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP / QP.

3-V-0000-21125/2
DRAWING NO.

SL	DRAWING No.	MATL.CODE	MATL.SPECN.	DIMENSIONS						Wt(kg)
				MDxP-6g	ØD1	ØD2	L	L1	L2	
01	3-V-V089-21125	964534750000	A193-B7 CERTIFY	16x2	10	6	130	8	2	0.2
02	3-V-V113-21125	964534770000		16x2	10	6	140	8	2	0.2
03	3-V-V090-21125	964534760000		16x2	10	6	150	8	2	0.3
04	3-V-V114-21125	964534780000		16x2	10	6	160	8	2	0.3
05	3-V-V305-21125	964534860000		20x2.5	14	6	155	11	2.5	0.4
06	3-V-V162-21125	964534820000		20x2.5	14	6	175	11	2.5	0.5
07	3-V-V161-21125	964534810000		20x2.5	14	6	205	11	2.5	0.5
08	3-V-V146-21125	964534800000		22x2.5	16	8	170	11	2.5	0.5
09	3-V-V345-21125	964534870000		22x2.5	16	8	180	11	2.5	0.6
10	3-V-V145-21125	964534790000		22x2.5	16	8	195	11	2.5	0.6
11	3-V-V377-21125	964534890000		22x2.5	16	8	210	11	2.5	0.6
12	3-V-V177-21125	964534830000		22x2.5	16	8	225	11	2.5	0.7
13	3-V-V378-21125	964534900000		22x2.5	16	8	260	11	2.5	0.8
14	3-V-V193-21125	964534840000		24x3	18	10	220	13	3	0.8
15	3-V-V194-21125	964534850000		24x3	18	10	250	13	3	0.9
16	3-V-V393-21125	964534910000		30x3	24	16	245	13	3	1.4
17	3-V-V394-21125	964534920000		30x3	24	16	300	13	3	1.7
36	3-V-WA99-21125	964660470000		30x3	24	16	350	13	3	2.0



REV	DATE	ALTERED VB	REV	DATE	ALTERED VB
2	01.10.09	CHD & APPD SSK&KRS	01	6.02.07	CHD & APPD MRK
ZONE SL. No.36 INCLUDED.			SL.NO.35 INCLUDED		

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

SL	DRAWING No.	MATL.CODE	MATL.SPECN.	DIMENSIONS						Wt(kg)
				MDxP-6g	ØD1	ØD2	L	L1	L2	
18	3-V-V091-21125	964534930000	A193-B16,CERTIFY	16x2	10	6	130	8	2	0.2
19	3-V-V115-21125	964534950000		16x2	10	6	140	8	2	0.2
20	3-V-V092-21125	964534940000		16x2	10	6	150	8	2	0.3
21	3-V-V116-21125	964534960000		16x2	10	6	160	8	2	0.3
22	3-V-V307-21125	964535040000		20x2.5	14	6	155	11	2.5	0.4
23	3-V-V164-21125	964535000000		20x2.5	14	6	175	11	2.5	0.5
24	3-V-V347-21125	964535050000		22x2.5	16	8	180	11	2.5	0.6
25	3-V-V163-21125	964534990000		20x2.5	14	6	205	11	2.5	0.5
26	3-V-V148-21125	964534980000		22x2.5	16	8	170	11	2.5	0.5
27	3-V-V147-21125	964534970000		22x2.5	16	8	195	11	2.5	0.6
28	3-V-V379-21125	964535070000		22x2.5	16	8	210	11	2.5	0.6
29	3-V-V179-21125	964535010000		22x2.5	16	8	225	11	2.5	0.7
30	3-V-V380-21125	964535080000		22x2.5	16	8	260	11	2.5	0.8
31	3-V-V195-21125	964535020000		24x3	18	10	220	13	3	0.8
32	3-V-V196-21125	964535030000		24x3	18	10	250	13	3	0.9
33	3-V-V395-21125	964535090000		30x3	24	16	245	13	3	1.4
34	3-V-V396-21125	964535100000		30x3	24	16	300	13	3	1.7
35	3-V-WA81-21125	964660010000		30x3	24	16	350	13	3	2.0

NOTES:-
 1. * PUNCH MATL MARK B7 FOR A193-B7
 B16 FOR A193-B16
 2. QUALITY REQUIREMENTS SHALL BE AS PER LATEST APPLICABLE QUALITY WORK INSTRUCTION.

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.				DRN	V.BAIRAVAN	SIGN	DATE	NO.OF VAR.	
				CHD	K.RAJASEKARAN		7.02.07		
				APPD	M.RAJAKUMAR		7.02.07		
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION				NO. OF ITEMS	
				CAD REF:-3-V-0000-21125-2-0					
TITLE				CARD CODE	DRAWING NO.				REV
STUD				U 01	3-V-0000-21125				2

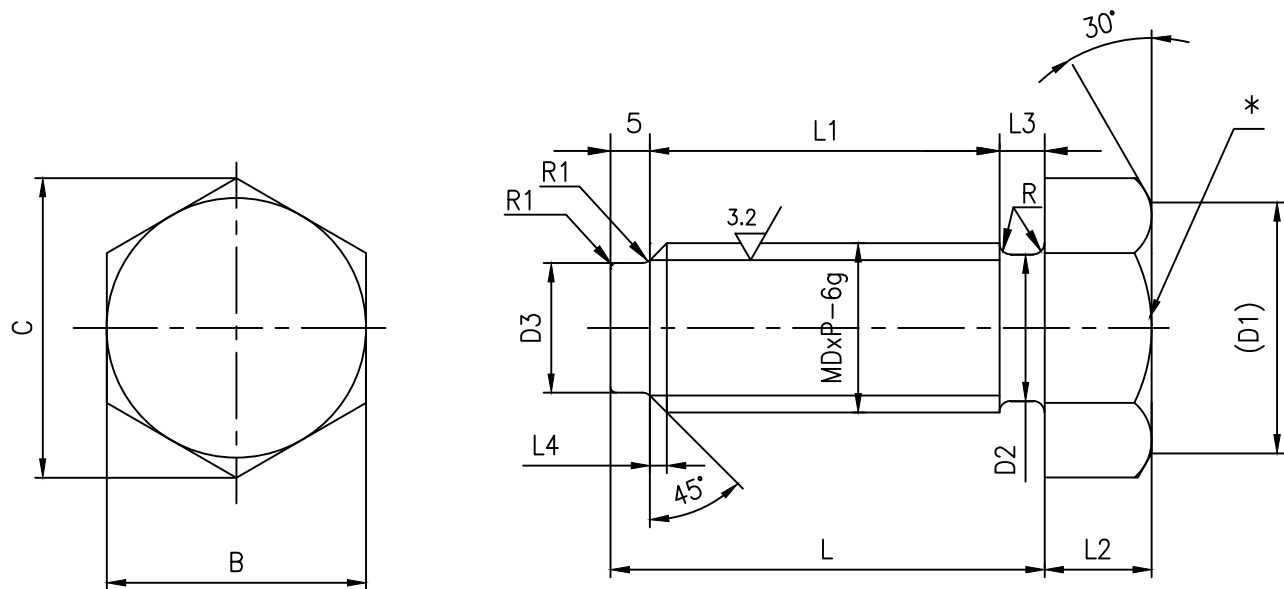


DRAWING NO. 3-V-0000-21150

14000 12.5 / 3.2

SL No.	DRAWING No.	MATL. SPECN.	DIMENSIONS												WT(KG)	
			MDxP-6g	(øD1)	øD2	øD3	L	L1	L2	L3	L4	R	C	B		
01	3-V-V401-21150 964535110000	A193 B7,CERTIFY	16x3	23	13.5	13	50	39	10	6	2	1.5	27.7	24	0.11	
02	3-V-V417-21150 964535120000		24x3	34	20.5	19	70	55	15	10	3	2	41.6	36	0.36	
03	3-V-V449-21150 964535130000		30x3	44	26.5	25	90	75	19	10	3	2	53.1	46	0.7	
04	3-V-V465-21150 964535140000		36x3	53	32.5	31	120	105	23	10	3	2	63.5	55	1.33	
09	3-V-V688-21150/1 964665230000		22X2.5	31	19.5	18	75	64	14	6	2	1.5	37	32	0.27	

SL No.	DRAWING No.	MATL. SPECN.	DIMENSIONS												WT(KG)	
			MDxP-6g	øD1	øD2	øD3	L	L1	L2	L3	L4	R	C	B		
05	3-V-V404-21150 964535150000	A193 B16,CERTIFY	16x3	23	13.5	13	50	39	10	6	2	1.5	27.7	24	0.11	
06	3-V-V420-21150 964535160000		24x3	34	20.5	19	70	55	15	10	3	2	41.6	36	0.36	
07	3-V-V452-21150 964535170000		30x3	44	26.5	25	90	75	19	10	3	2	53.1	46	0.7	
08	3-V-V468-21150 964535180000		36x3	53	32.5	31	120	105	23	10	3	2	63.5	55	1.33	
10	3-V-V566-21150/1 964660570000		22X2.5	31	19.5	18	75	64	14	6	2	1.5	37	32	0.27	
11	3-V-V730-21150 964665510000		36x3	53	32.5	31	170	155	23	10	3	2	63.5	55	1.73	



NOTES:-

1. QUALITY REQUIREMENTS SHALL BE AS PER LATEST TDC 5:184
- * 2. PUNCH MATL.MARK B7 FOR A193-B7
B7 FOR A193-B16

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: REDRAWN WITH REV. 03 ON 03.10.18

DRN	NAME	SIGN	DATE	NO.OF VAR.
VL	V.BAIRAVAN		22.10.15	
CHD	S.SATHEESH		22.10.15	
APPD	K.RAJASEKARAN		22.10.15	

DEPT	SCALE	WEIGHT (KG)	REFERENCE INFORMATION	NO. OF ITEMS
VL	N T S		CAD REF:-T321150	
CODE			DRAWING NO.	REV
320			3-V-0000-21150	03
TITLE		CARD CODE		
BOLT		U 01		

REV	DATE	ALTERED	R.P.SINGH
03	03.10.18	CHD & APPD	SSK & KRS
SL. No. 11 INCLUDED			

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

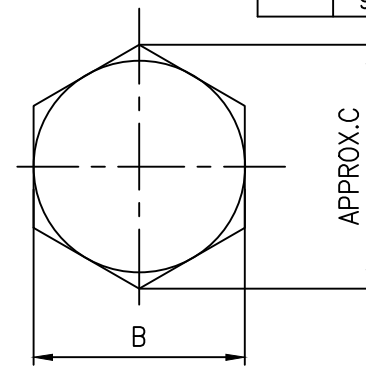
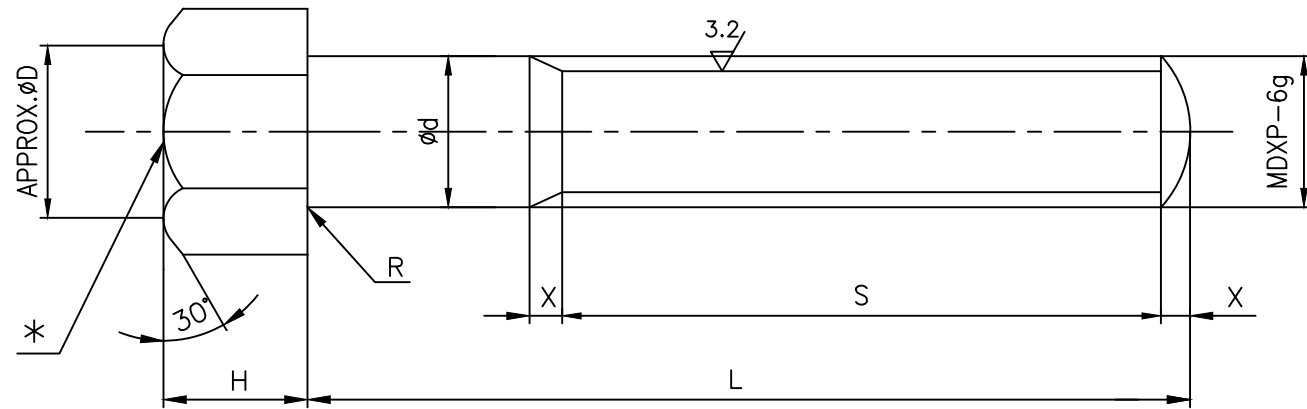
3-V-0000-21152

DRAWING NO.

12.5/3.2

SL No.	DRAWING No. COMP.CODE	MATL. SPECN.	DIMENSIONS										Wt(kg)
			MDxP-6g	L	S	∅d	∅D	X	H	R	B	C	
01	3-V-V105-21152/1 964535270000	A193-B7,CERTIFY	16x2	60	38	16	23	4	10	0.6	24	27.7	0.12
02	3-V-V145-21152/1 964535310000		22x2.5	70	36	22	31	5	14	0.8	32	37	0.26
03	3-V-V449-21152/1 964535330000		30x3.5	105	66	30	44	7	19	1	46	53.1	0.75
04	3-V-V297-21152/1 964535450000		22x2.5	65	36	22	31	5	14	0.8	32	37	0.25
05	3-V-V465-21152/1 964535600000		36x4	115	56	36	53	8	23	1	55	63.5	1.32
15	3-V-V679-21152 964663590000		36x4	125	70	36	53	8	23	1	55	63.5	1.45

SL No.	DRAWING No. COMP.CODE	MATL. SPECN.	DIMENSIONS										Wt(kg)
			MDxP-6g	L	S	∅d	∅D	X	H	R	B	C	
06	3-V-V108-21152/1 964535280000	A193-B16,CERTIFY	16x2	60	38	16	23	4	10	0.6	24	27.7	0.12
07	3-V-V084-21152/1 964535300000		20x2.5	55	32	20	29	5	13	0.8	30	34.6	0.21
08	3-V-V148-21152/1 964535320000		22x2.5	70	36	22	31	5	14	0.8	32	37	0.26
09	3-V-V452-21152/1 964535340000		30x3.5	105	66	30	44	7	19	1	46	53.1	0.75
10	3-V-V300-21152/1 964535460000		M22x2.5	65	36	22	31	5	14	0.8	32	37	0.25
11	3-V-V180-21152/1 964535560000		M24x3	90	54	24	34	6	15	0.8	36	41.6	0.43
12	3-V-V201-21152/1 964535570000		M16x2	50	38	16	23	4	10	0.6	24	27.7	0.10
13	3-V-V433-21152/1 964535580000		M24x3	75	54	24	34	6	15	0.8	36	41.6	0.37
14	3-V-V468-21152/1 964535590000		M36x4	115	56	36	53	8	23	1	55	63.5	1.32
16	3-V-V756-21152 964665500000		M24x3	70	54	24	34	6	15	0.8	36	41.6	0.35



NOTES:-

- * PUNCH MATL MARK B7 FOR A193-B7
B16 FOR A193-B16
- QUALITY REQUIREMENTS SHALL BE AS PER LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.

REDRAWN WITH REV.3 ON 12.04.08

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No

REV	DATE	ALTERED	R.P.SINGH
05	22.03.19	CHD & APPD	SSK & KRS

SL.NO. 16 INCLUDED.

REV	DATE	ALTERED VB	REV	DATE	ALTERED VB
4	03.03.16	CHD & APPD SSK & KRS	3	12.04.08	CHD & APPD KRS & M.R.K

SL. No.15 INCLUDED.

DRAWING CONVERTED AS SOFT COPY

DCP No.800813

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

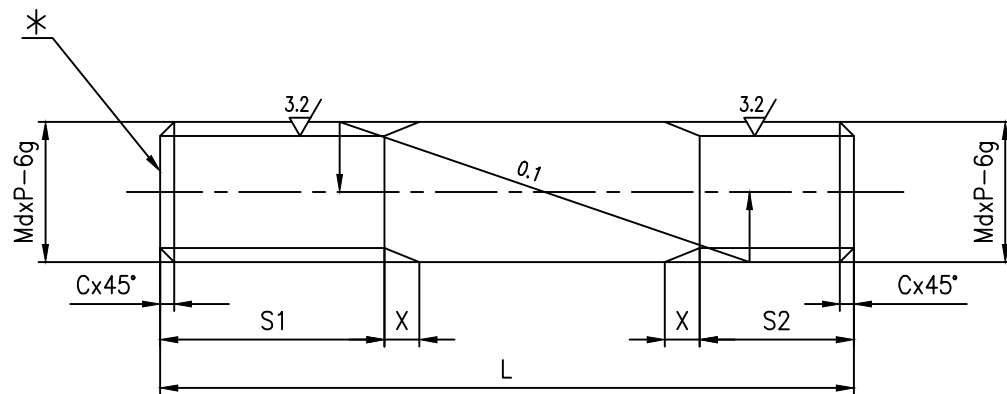
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.					DRN	V.BAIRAVAN	SIGN	DATE	NO.OF VAR.
					CHD	K.RAJASEKARAN		12.04.08	
					APPD	M.RAJAKUMAR		12.04.08	
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATIONS			NO. OF ITEMS		
CODE	320	N.T.S							
TITLE						CARD CODE	DRAWING NO.		RE
BOLT						U 01	3-V-0000-21152		5

3-V-0000-21153/6
DRAWING NO.

12.5/3.2

SL No.	DRAWING No.	COMP. CODE	MATL. SPECN.	MDxP-6g	L	S1	S2	X	C	Wt(kg)
01	3-V-V081-21153/1	964535190000	A 193-B7,CERTIFY	16x2	110	65	21	4	2	0.17
02	3-V-V409-21153	964535210000		20x2.5	105	60	26	5	2.5	0.26
03	3-V-V145-21153/1	964535230000		20x2.5	150	80	26	5	2.5	0.37
04	3-V-V449-21153	964535250000		30x3	170	100	38	6	3	0.94
05	3-V-V201-21153	964535480000		12x1.75	70	45	17	3.5	2	0.06
06	3-V-V233-21153	964535490000		12x1.75	90	50	17	3.5	2	0.08
07	3-V-V433-21153	964535500000		22x2.5	120	80	28	5	2.5	0.36
08	3-V-V177-21153	964535510000		22x2.5	155	80	28	5	2.5	0.46
09	3-V-V377-21153	964535610000		24x3	185	85	32	6	3	0.66
10	3-V-V393-21153	964535620000		30x3	200	100	38	6	3	1.11
11	3-V-V465-21153	964535630000		36x3	210	110	44	6	3	1.68
25	3-V-WA99-21153	964660480000		36x3	220	120	44	6	3	1.76

SL No.	DRAWING No.	COMP. CODE	MATL. SPECN.	MDxP-6g	L	S1	S2	X	C	Wt(kg)
12	3-V-V084-21153/1	964535200000	A 193-B16,CERTIFY	16x2	110	65	21	4	2	0.17
13	3-V-V412-21153/1	964535220000		20x2.5	105	60	26	5	2.5	0.26
14	3-V-V148-21153/1	964535240000		20x2.5	150	80	26	5	2.5	0.37
15	3-V-V452-21153	964535260000		30x3	170	100	38	6	3	0.94
16	3-V-V204-21153	964535520000		12x1.75	70	45	17	3.5	2	0.06
17	3-V-V236-21153	964535530000		12x1.75	90	50	17	3.5	2	0.08
18	3-V-V436-21153	964535540000		22x2.5	120	80	28	5	2.5	0.36
19	3-V-V180-21153	964535550000		22x2.5	155	80	28	5	2.5	0.46
20	3-V-V380-21153	964535640000		24x3	185	85	32	6	3	0.66
21	3-V-V396-21153	964535650000		30x3	200	100	38	6	3	1.11
22	3-V-V468-21153	964535660000		36x3	210	110	44	6	3	1.68
23	3-V-WA81-21153	964660020000		30x3	220	120	38	6	3	1.3
24	3-V-WA98-21153	964660290000	36x3	220	120	44	6	3	1.76	
26	3-V-V680-21153	964663480000	36x3	240	80	60	6	3	1.76	



NOTES:-

- * PUNCH MATL MARK B7 FOR A193-B7
B16 FOR A193-B16
- QUALITY REQUIREMENTS SHALL BE AS PER LATEST APPLICABLE QUALITY WORK INSTRUCTIONS

DRAWING RETRACED WITH REV.2 ON 26.7.2000

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
DEPT VL		BHARAT HEAVY ELECTRICALS LTD.		DRN	V.BAIRAVAN		SIGN	DATE	NO.OF VAR.
CODE 320		UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI 620014.		CHD	K.RAJASEKARAN			26.7.2K	
				APPD	M.RAJAKUMAR			26.7.2K	
TITLE		STUD		SCALE		WEIGHT (KG).		REFERENCE INFORMATION	
				N T S					
				CARD CODE		DRAWING NO.		REV	
				U 01		3-V-0000-21153		6	

REV 6	DATE 04.07.15	ALTERED: CHD & APPD: SSK&KRS	VB	REV 5	DATE 01.10.09	ALTERED: CHD & APPD: SSK&KRS	VB
SL. No.26 INCLUDED				SL. No.25 INCLUDED			

REV 4	DATE 29.10.08	ALTERED: CHD & APPD: KRS&MRK	VB	REV 3	DATE 6.02.07	ALTERED: CHD & APPD: KRS&MRK	VB	REV 2	DATE 26.7.2K	ALTERED: CHD & APPD :MRK	VB
SL. No.24 INCLUDED				SL. No.23 INCLUDED				SL. No.05 TO 11 AND 16 TO 22 INCLUDED. IN SL Nos.03 & 14 DIMENSIONS 150 & 80 WERE 145 & 75 RESPECTIVELY. IN SL No.13 DIMENSION 60 WAS 66. DCN No.TA 1091			

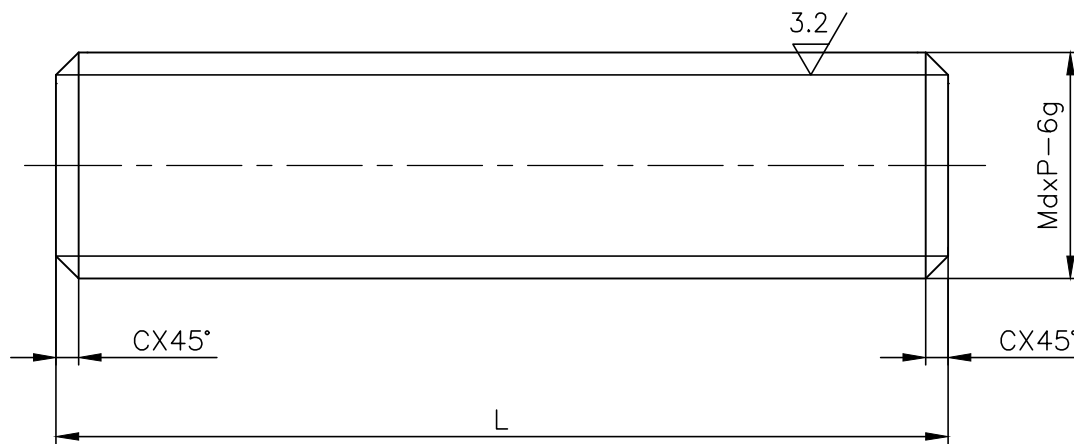
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.



DRAWING NO. 3-V-0000-22456

12.5 / 3.2

SL NO	DRAWING NO	COMPONENT CODE	ALT CODE	MATL.SPECN	DIMENSIONS			WEIGHT IN KGS.
					MdXP	L	C	
01	3-V-L805-22456	96 462 117 0000	93 114 801 0000	A193 B16-QT CERTIFY	M30X3	170	3	0.93
02	3-V-L820-22456	96 462 118 0000	93 114 802 0000		M30X3	180	3	0.98
03	3-V-L751-22456	96 462 119 0000	93 114 843 0000		M36X3	210	3	1.68
04	3-V-L752-22456	96 462 120 0000	93 114 844 0000		M36X3	220	3	1.76
05	3-V-L793-22456/01	96 462 059 0000	93 117 177 0000		M42X4.5	280	3	3.05
06	3-V-L794-22456/01	96 462 121 0000	93 117 193 0000		M42X3	290	3	3.15
07	3-V-L826-22456	96 462 122 0000	93 117 337 0000		M24X3	60	3	0.22
08	3-V-L833-22456	96 462 123 0000	93 117 338 0000		M20X2.5	50	3	0.13
09	3-V-3246-22456/01	96 462 124 0000	93 168 844 0000		M42x3	165	3	1.75



NOTE:

01. PUNCH MATL MARK B16 FOR A193-B16
02. LATEST APPLICABLE QUALITY PROCEDURE SHALL BE FOLLOWED
03. BLACKENING TO BE DONE

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
-	-	-	-	-	-	-	-	-	-

REV	DATE	ALTERED	JALAL	REV	DATE	ALTERED	MSV
06	19.12.15	CHD & APPD	RAJASEKAR	05	01.12.07	CHD & APPD	KSR

COLUMN ALT CODE ADDED
SD CODES ADDED
NOTES ALTERED

IN SL. NO. 09 M42X3 WAS
M42X4.5

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LTD.,
UNIT: HIGH PRESSURE BOILER PLANT.
TIRUCHIRAPALLI-620014.

DRN	NAME	SIGN	DATE	NO.OF VAR.
CHD	P.R.K		31.08.93	
APPD	S.C.S		31.08.93	

DEPT: VVL
CODE: 320
TITLE: STUD

SCALE: N T S
WEIGHT (KG): REF. TABLE
CARD CODE: U 01

REFERENCE INFORMATIONS: DRAWING NO. 3-V-0000-22456
NO. OF ITEMS: 06

3-V-0000-23248
DRAWING NO.

12.5 / 3.2

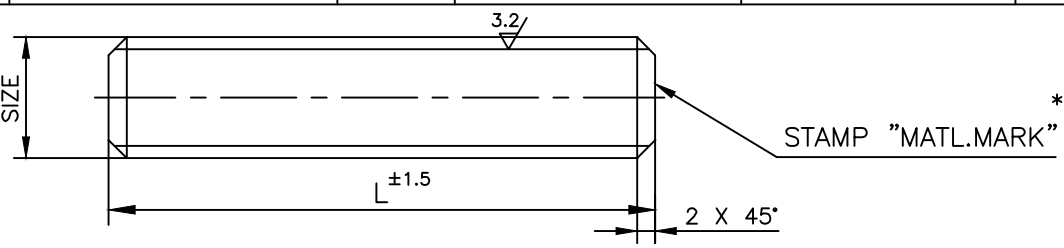
SL.No	DRAWING No.	MATERIAL	MATL. CODE	SIZE	L	WEIGHT IN Kgs.	MATL. MARK*
01	3-V-F522-23248/01	ASTM A193 Gr. B16	96 456 882 0000	7/8"-9UNC-2A	150	0.45	B16
02	3-V-F523-23248/01		96 456 883 0000	3/4"-10UNC-2A	133	0.30	B16
03	3-V-F524-23248/01		96 456 884 0000	1"-8UNC-2A	170	0.71	B16
04	3-V-F525-23248/01		96 456 885 0000	1.1/4"-8UN-2A	215	1.34	B16
05	3-V-F526-23248/01		96 456 886 0000	1.1/8"-8UN-2A	220	1.41	B16
06	3-V-F527-23248/02		96 456 887 0000	1.1/4"-8UN-2A	250	1.74	B16
07	3-V-0001-23248/01	ASTM A193-B8M CL.2, CERTIFY	96 465 635 0000	1/2"-13UNC-2A	80	0.08	B8M
08	3-V-0002-23248/01		96 465 636 0000	5/8"-11UNC-2A	86	0.13	B8M
09	3-V-0003-23248/01		96 465 637 0000	5/8"-11UNC-2A	105	0.16	B8M
10	3-V-0004-23248/01		96 465 638 0000	5/8"-11UNC-2A	118	0.18	B8M
11	3-V-0005-23248/01		96 465 639 0000	3/4"-10UNC-2A	120	0.26	B8M
12	3-V-0006-23248/01		96 465 640 0000	3/4"-10UNC-2A	133	0.29	B8M
13	3-V-0007-23248/01		96 465 641 0000	7/8"-9UNC-2A	150	0.45	B8M
14	3-V-0008-23248/01		96 465 642 0000	1"-8UNC-2A	135	0.53	B8M
15	3-V-0009-23248/01		96 465 643 0000	1"-8UNC-2A	158	0.62	B8M
16	3-V-0010-23248/01		96 465 644 0000	1"-8UNC-2A	170	0.67	B8M
17	3-V-0011-23248/01		96 465 645 0000	1.1/8"-8UN-2A	180	0.90	B8M
18	3-V-0012-23248/01		96 465 646 0000	1.1/4"-8UN-2A	215	1.32	B8M
19	3-V-0013-23248/01		96 465 647 0000	1.1/4"-8UN-2A	250	1.54	B8M
20	3-V-0014-23248/01		96 465 769 0000	7/8"-9UNC-2A	120	0.36	B8M
21	3-V-0016-23248/01		96 465 830 0000	1.1/8"-8UN-2A	140	0.87	B8M
22	3-V-0015-23248		96 465 794 0000	1/2"-13UNC-2A	95	0.09	B8M
23	3-V-F933-23248		96 465 938 0000	1.1/8"-8UN-2A	220	1.41	B8M

SL.No	DRAWING No.	MATERIAL	MATL. CODE	SIZE	L	WEIGHT IN Kgs.	MATL. MARK*
24	3-V-0017-23248	ASTM A193 Gr. B7M	96 465 854 0000	1/2"-13UNC-2A	80	0.08	B7M
25	3-V-0018-23248		96 465 855 0000	5/8"-11UNC-2A	86	0.13	B7M
26	3-V-0019-23248		96 465 856 0000	5/8"-11UNC-2A	105	0.16	B7M
27	3-V-0020-23248		96 465 857 0000	5/8"-11UNC-2A	118	0.18	B7M
28	3-V-0021-23248		96 465 858 0000	3/4"-10UNC-2A	120	0.26	B7M
29	3-V-0022-23248		96 465 859 0000	3/4"-10UNC-2A	133	0.29	B7M
30	3-V-0023-23248		96 465 860 0000	7/8"-9UNC-2A	150	0.45	B7M
31	3-V-0024-23248		96 465 861 0000	1"-8UNC-2A	135	0.53	B7M
32	3-V-0025-23248		96 465 862 0000	1"-8UNC-2A	158	0.62	B7M
33	3-V-0026-23248		96 465 863 0000	1"-8UNC-2A	170	0.67	B7M
34	3-V-0027-23248		96 465 864 0000	1.1/8"-8UN-2A	180	0.90	B7M
35	3-V-0028-23248		96 465 865 0000	1.1/4"-8UN-2A	215	1.32	B7M
36	3-V-0029-23248		96 465 866 0000	1.1/4"-8UN-2A	250	1.54	B7M
37	3-V-0030-23248		96 465 867 0000	7/8"-9UNC-2A	120	0.36	B7M
38	3-V-0031-23248		96 465 868 0000	1.1/8"-8UN-2A	140	0.87	B7M

NOTE

01. FOR QUALITY REQUIREMENTS: REFER LATEST APPLICABLE PROCEDURE.

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
-	-	-	-	-	-	-	-	-	-



REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	R.P.SINGH
08	22.02.21	CHD & APPD	SAMEER & SSK	07	26.06.20	CHD & APPD	SAMEER & SSK

3-V-F933-23248 INCLUDED.

FOR SL. No. 07 TO 21 MATL. SPECIFICATION UPDATED.

3-V-0015-23248 INCLUDED.

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT
REDRAWN WITH REV.5 ON 26.03.18

BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.	DRN	M.SRINIVASAN	SIGN	DATE	NO.OF VAR.
	CHD	K.S.RAMAN		18.05.98	
	APPD	N.NAGARAJAN		18.05.98	

DEPT	SCALE	WEIGHT (KG).	REFERENCE INFORMATION	NO. OF ITEMS
VL	NTS	REF.TABLE	B16 & B7M	
CODE			CAD :C323248	
320				

TITLE
STUD

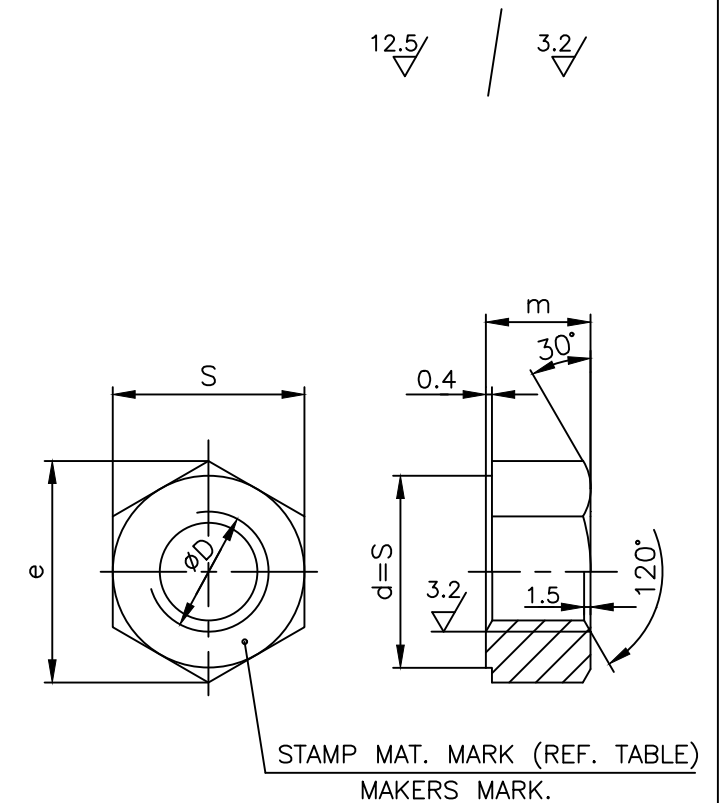
CARD CODE
U 01

DRAWING NO.
3-V-0000-23248

RE
08

DRAWING NO. 3-V-0000-23249

SL. No.	DRAWING No.	COMP. CODE	MATL. SPECN.	S		e		m		øD	MATL. MARK	NET WT. (Kg.)
				MAX.	MIN.	MAX.	MIN.	MAX.	MIN.			
01	3-V-F522-23249/02	96 456 888 0000	ASTM A194 - Gr.7	36.52	35.41	42.16	40.37	22.47	21.16	7/8"-9 UNC -2B	GR.7	0.11
02	3-V-F523-23249/02	96 456 889 0000	ASTM A194 - Gr.7	31.75	30.78	36.65	35.10	19.25	18.03	3/4"-10 UNC -2B	GR.7	0.08
03	3-V-F524-23249/02	96 456 890 0000	ASTM A194 - Gr.7	41.28	40.01	47.65	45.62	25.70	24.28	1"-8 UNC -2B	GR.7	0.17
04	3-V-F525-23249/02	96 456 891 0000	ASTM A194 - Gr.7	50.80	49.23	58.65	56.11	31.78	30.15	1.1/4"-8 UN -2B	GR.7	0.27
05	3-V-F526-23249/02	96 456 892 0000	ASTM A194 - Gr.7	46.02	44.60	53.16	50.85	29.93	27.41	1.1/8"-8 UN -2B	GR.7	0.22
06	3-V-0001-23249	96 465 648 0000	ASTM A194 - Gr.8M	22.22	21.59	25.65	24.61	12.80	11.79	1/2"-13 UNC -2B	GR.8M	0.02
07	3-V-0002-23249	96 465 649 0000	ASTM A194 - Gr.8M	26.97	26.19	31.17	29.85	16.03	14.91	5/8"-11 UNC -2B	GR.8M	0.03
08	3-V-0003-23249	96 465 650 0000	ASTM A194 - Gr.8M	31.75	30.78	36.65	35.10	19.25	18.03	3/4"-10 UNC -2B	GR.8M	0.08
09	3-V-0004-23249	96 465 651 0000	ASTM A194 - Gr.8M	36.52	35.41	42.16	40.37	22.47	21.16	7/8"-9 UNC -2B	GR.8M	0.11
10	3-V-0005-23249	96 465 652 0000	ASTM A194 - Gr.8M	41.28	40.01	47.65	45.62	25.70	24.28	1"-8 UNC -2B	GR.8M	0.17
11	3-V-0006-23249	96 465 653 0000	ASTM A194 - Gr.8M	46.02	44.60	53.16	50.85	29.93	27.41	1.1/8"-8 UN -2B	GR.8M	0.22
12	3-V-0007-23249	96 465 654 0000	ASTM A194 - Gr.8M	50.80	49.23	58.65	56.11	31.78	30.15	1.1/4"-8 UN -2B	GR.8M	0.27
13	3-V-0008-23249	96 465 847 0000	ASTM A194 - Gr.2HM	22.22	21.59	25.65	24.61	12.80	11.79	1/2"-13 UNC -2B	GR.2HM	0.02
14	3-V-0009-23249	96 465 848 0000	ASTM A194 - Gr.2HM	26.97	26.19	31.17	29.85	16.03	14.91	5/8"-11 UNC -2B	GR.2HM	0.03
15	3-V-0010-23249	96 465 849 0000	ASTM A194 - Gr.2HM	31.75	30.78	36.65	35.10	19.25	18.03	3/4"-10 UNC -2B	GR.2HM	0.08
16	3-V-0011-23249	96 465 850 0000	ASTM A194 - Gr.2HM	36.52	35.41	42.16	40.37	22.47	21.16	7/8"-9 UNC -2B	GR.2HM	0.11
17	3-V-0012-23249	96 465 851 0000	ASTM A194 - Gr.2HM	41.28	40.01	47.65	45.62	25.70	24.28	1"-8 UNC -2B	GR.2HM	0.17
18	3-V-0013-23249	96 465 852 0000	ASTM A194 - Gr.2HM	46.02	44.60	53.16	50.85	29.93	27.41	1.1/8"-8 UN -2B	GR.2HM	0.22
19	3-V-0014-23249	96 465 853 0000	ASTM A194 - Gr.2HM	50.80	49.23	58.65	56.11	31.78	30.15	1.1/4"-8 UN -2B	GR.2HM	0.27
20	3-V-0015-23249	96 465 940 0000	ASTM A194 - Gr.8M	55.57	53.8	64.16	61.37	35.0	33.27	1.3/8"-8 UN -2B	GR.8M	0.42



NOTE:

- FOR QUALITY REQUIREMENTS REFER LATEST APPLICABLE QUALITY PROCEDURE.
- SUITABLE OIL PRESERVATIVE SHALL BE APPLIED.

-	-	-	-	-	-	-	-	-	-	-
NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No	

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LTD.,
UNIT: HIGH PRESSURE BOILER PLANT.
TIRUCHIRAPALLI-620014.

DRN	M.SRINIVASAN	SIGN	DATE	22.04.96	NO.OF VAR.
CHD	N.DHANAPAL		23.04.96		
APPD	A.VISWANATHAN		23.04.96		

DEPT VL 365-121

SCALE NTS

WEIGHT (KG) REF. TABLE

REFERENCE INFORMATION CAD: F323249

TITLE **HEX NUT**

CARD CODE U 01

DRAWING NO. 3-V-0000-23249

NO. OF ITEMS 05

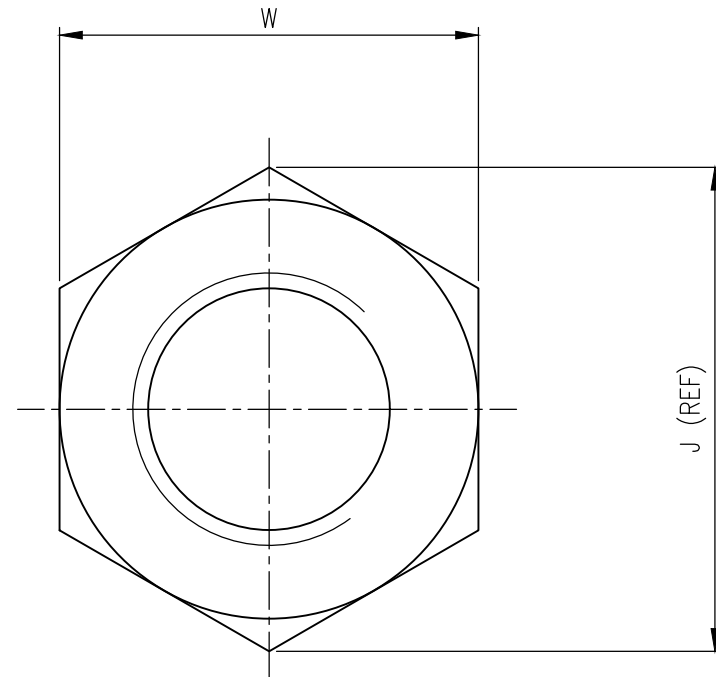
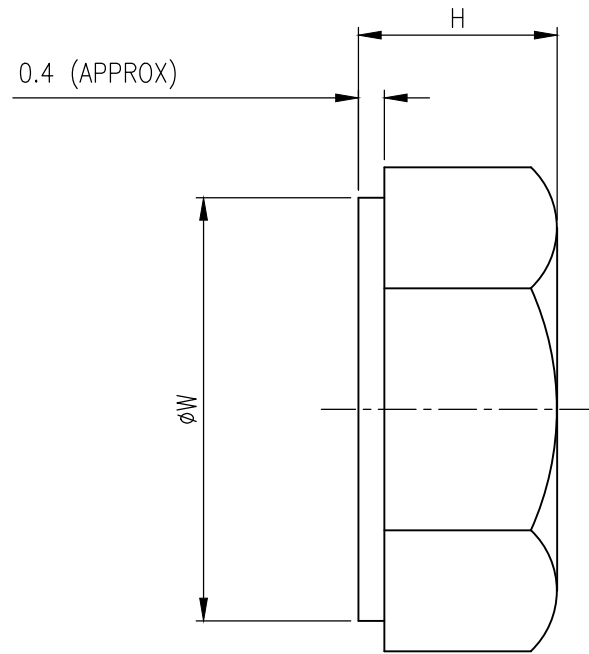
REV	DATE	ALTERED	R.P.SINGH
05	03.03.21	CHD & APPD SAMEER & SSK	

SL. No. 20 INCLUDED.

3-V-0000-25792
DRAWING NO.

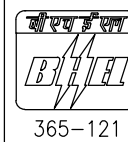
3.2 /

SL.NO.	DRAWING NO.	SIZE	MATERIAL	MATERIAL CODE	W		J		H		WEIGHT IN KGS
					MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	
01	3-V-HL80-25792	5/16"-18 UNC-2B	ASTM A194-Gr.8MA	96 600 051 0000	12.70	12.42	14.66	14.15	6.93	6.55	0.01
02	3-V-HL91-25792	3/8"-16 UNC-2B	ASTM A194-Gr.8MA	96 600 052 0000	17.45	16.99	20.17	19.38	9.58	8.66	0.01
03	3-V-HL90-25792	1/4"-20 UNC-2B	ASTM A194-Gr.8MA	96 600 053 0000	11.13	10.87	12.83	12.40	5.74	5.38	0.01



NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
--------	-------------	-----------	------------	----------------	------------	-------------	---------------	------------	---------

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.,
UNIT: HIGH PRESSURE BOILER PLANT.
TIRUCHIRAPALLI-620014.

DRN	NAME	SIGN	DATE	NO. OF VAR.
CHD	RANA PRATAP		07.10.17	
APPD	K.RAJASEKARAN		07.10.17	

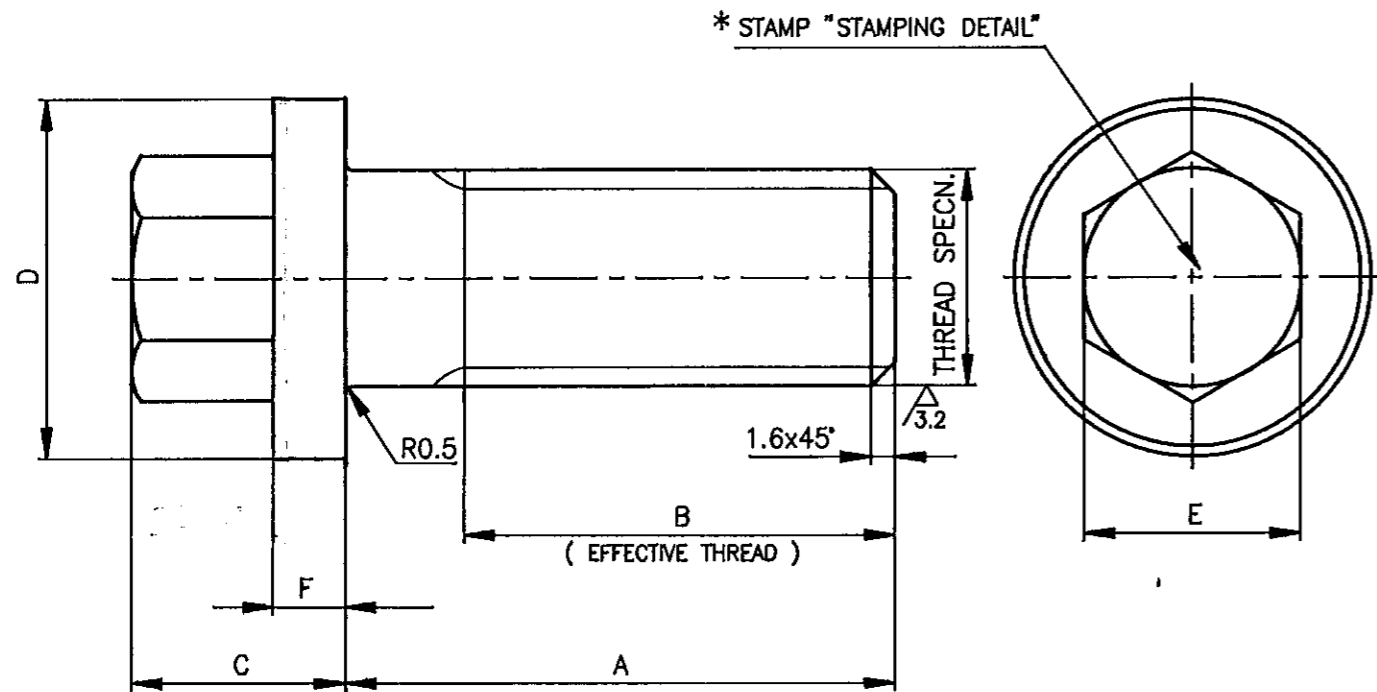
REV	DATE	ALTERED
		CHD & APPD

DEPT	SCALE	WEIGHT (KG)	REFERENCE INFORMATION	NO. OF ITEMS
VL	N T S	REFER TABLE	3-V-0000-09597 CAD.REF.F309808	
CODE 320				
TITLE	HEX NUT	CARD CODE U 01	DRAWING NO. 3-V-0000-25792	REV

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

66960-0000-V-3
DRAWING NO.

SL. No.	DRAWING NUMBER	COMPONENT CODE	MATL. SPECN	THREAD SPECN	A	B	C	D		E		F	STAMPING DETAIL *	WT. (Kg.)
								MAX	MIN	MAX	MIN			
01	3-V-5903-09599/06	96 162 077 0000	SA 193 - B7	0.375" -16 UNC-3A	23.8	19.8	9.5	16.66	16.31	9.60	9.40	3.2	B7	0.004
02	3-V-5933-09599/05	96 452 131 0000	SA 193 - B8										B8	
03	3-V-5904-09599/06	96 162 078 0000	SA 193 - B7	0.500" -13 UNC-3A	28.6	23.8	12.7	21.44	21.03	12.78	12.57	4.8	B7	0.007
04	3-V-5934-09599/05	96 452 132 0000	SA 193 - B8										B8	
05	3-V-5907-09599/06	96 162 079 0000	SA 193 - B7	0.5625" -12UNC-3A	36.5	28.6	14.3	23.83	23.39	14.35	14.15	4.8	B7	0.009
06	3-V-5937-09599/05	96 452 133 0000	SA 193 - B8										B8	
07	3-V-5803-09599/06	96 162 080 0000	SA 193 - B7	0.375" -16 UNC-3A	27.0	22.2	9.5	14.28	13.97	9.60	9.40	3.2	B7	0.003
08	3-V-5949-09599/05	96 452 134 0000	SA 193 - B8										B8	
09	3-V-5632-09599/06	96 452 135 0000	SA 193 - B7	0.375" -16 UNC-3A	19.1	14.3	9.5	14.28	13.97	9.60	9.40	3.2	B7	0.002
10														
11				0.375" -16 UNC-3A	23.8	19.8	9.5	16.66	16.31	9.60	9.40	3.2		0.004
12	3-V-5291-09599/06	96 452 268 0000	SA 193 - B7M										B7M	
13	3-V-5292-09599/06	96 452 269 0000	SA 193 - B7M	0.500" -13 UNC-3A	28.6	23.8	12.7	21.44	21.03	12.78	12.57	4.8	B7M	0.007
14	3-V-5818-09599/06	96 456 547 0000	SA 193 - B7M										B7M	



NOTES:

- 01. ALL SA193 B7 & B7M BOLTS SHALL BE PHOSPHATED.
- 02. BREAK ALL SHARP CORNERS.

RETRACED WITH REV. 05 ON 29.03.95

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
--------	-------------	-----------	------------	----------------	------------	-------------	---------------	------------	---------

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.	DRN	R. MOHAN	SIGN	R. Mohan	DATE	24.03.95	NO. OF VAR.
	CHD	K. RAVICHANDRAN	SIGN	[Signature]	DATE	6.4.95	
	APPD	N. NAGARAJAN	SIGN	[Signature]	DATE	7.4.95	

DEPT VL	SCALE	WEIGHT (KG)	REFERENCE INFORMATION	NO. OF ITEMS
CODE 320	NTS	REF. TABLE	CAD: F309599	

TITLE	CARD CODE	DRAWING NO.	REV
HEX. HEAD BOLT	U 01	3-V-0000-09599	06

REV	DATE	ALTERED	REV	DATE	ALTERED
06	09.05.01	CHAMFER 0.8x45° REMOVED. NOTE 02 ADDED	05	29.03.95	PHOSPHATING DETAIL INCLUDED. FOR SL. No. 14, NEW COMP. CODE 96.456.547.0000. GIVEN.

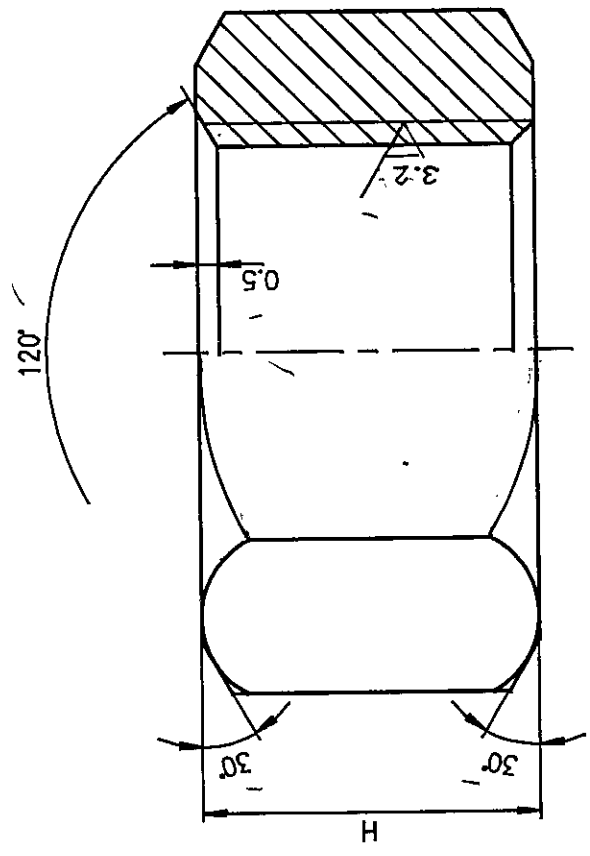
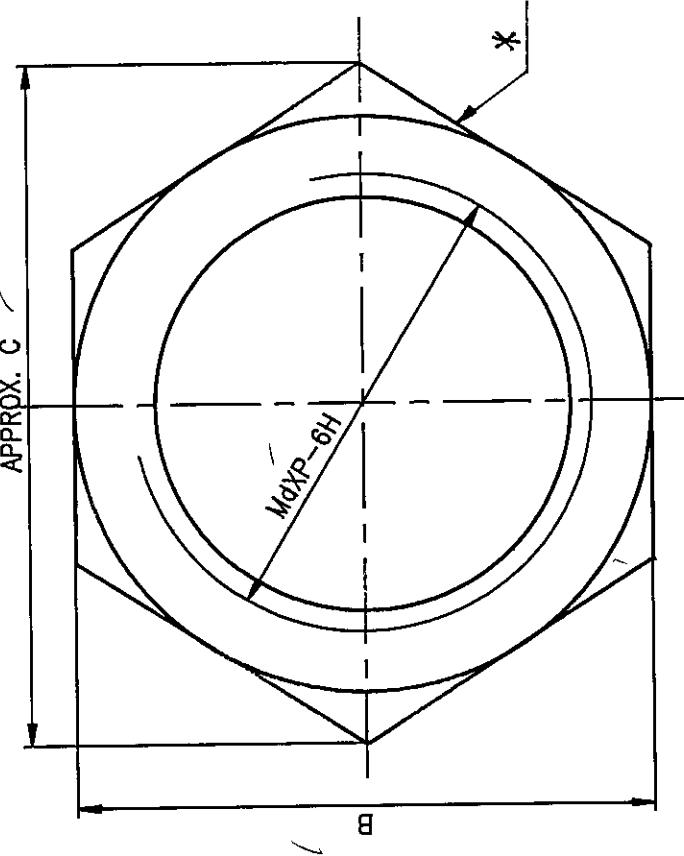
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

ALL DIMENSIONS ARE IN MILLIMETRES. FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP / QP.

10/ 9280Z-0000-A-3
DRAWING ON 01/11/2003

12.5 / 3.2
A / A

SL. NO	DRAWING NO.	MATL. CODE	MATL. SPECN.	MdXP-6H	B	C	H	NET WT.(kg.)	REMARKS
01	3-V-0001-20836/01	964533160000	ASTM A194-2H, CERTIFY	M22X2.5	32	37	18	0.07	
02	3-V-0002-20836/01	964533170000		M30X3	46	53.1	24	0.21	
03	3-V-0003-20836/01	964533180000		M42X3	65	75	42	0.29	
04	3-V-0004-20836/01	964533190000		M16X2	24	26.8	16.4	0.03	
05	3-V-0005-20836/01	964533200000		M20X2.5	30	33	19.4	0.06	
06	3-V-0006-20836/01	964533210000		M24X3	36	39.6	22.9	0.11	
07	3-V-0007-20836/01	964533220000		M36X3	55	60.8	35	0.37	



NOTES:

- * PUNCH MARK SHALL BE '2H'
- ALL NUTS SHOULD BE GALVANISED TO A THICKNESS OF 5 TO 10 MICRONS

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

REV	DATE	ALTERED	BY
01	15.02.96	CHD & APPD	SSM/aa

NOTE 2 MODIFIED
DCN NO. TAO594

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (KG)	GROSS WT (KG)	DRAWING NO.	ITEM NO
TYPE OF PRODUCT									
OR NAME OF CUSTOMER/PROJECT									
BHARAT HEAVY ELECTRICALS LTD. UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI_520014.									
DEPT	VL	SCALE	WEIGHT (KG)	REFERENCE INFORMATION					
CODE	320	N T S		CAD; C3 20836					
TITLE			DRAWING NO.						
NUT			3-V-0000-20836						
REV			REV						
01			01						





Product: CARBON & ALLOY STEEL FASTENERS (STUDS, BOLTS & NUTS) FOR VALVES, OIL FIELD EQUIPMENT (OFE) AND OTHER APPLICATIONS

Revision Record: 00: 17.01.90: First issue. Rev: 01:21.06.90 Editorial corrections. Rev 02:21.04.91 TC for studs/bolts added. Rev 03: 04.04.96: Annexure I amended. CI 3.3.3 & 5.3 modified. Rev 04:20.10.96: NDT, Acid pickling added & re-written. Rev 05: 28.04.98: CI 3 modified to include MPI, certificate modified & CI 7.4 deleted. Rev 06:15.06.99: Title, CI 1 to 5 & 7.1 modified. CI 7.2 changed to CI 7.3. CI 7.3 changed to 7.4 and modified. CI 7.2 Galvanizing added. Test certificate sample format modified.
Rev 07: 15/06/2017: TDC: 5:166 for CS & AS Nuts has been merged with this TDC. Totally revised in line with changed requirements and Xylan coating requirements added.
Rev 08: 14/09/2019: CI 1.0, 2.0, 3.0, 4.0, 5.0 modified in line with API 6A 21st Ed 2018 Errata 1 and for better clarity.
Rev.09: 19/02/2021: Latest version of the referred Standards/Specifications indicated throughout TDC; Cl.2.0 iid added; Cl.4.1 added; Annexure-1 modified;

1.0 MATERIAL SPECIFICATIONS:

All the codes, standards, specifications, drawings & procedures, etc., referred in this TDC shall be of latest revision as on the date of Purchase Order, unless specified otherwise.

Studs/Bolts - Alloy Steel	:	ASME SA 193-19 /ASTM A 193-20 Gr B7, B7M & B16.
Nuts - Carbon Steel	:	ASME SA 194-19 /ASTM A 194-20A Gr 2H & 2HM
Alloy Steel	:	ASME SA 194-19 /ASTM A 194-20A Gr 4 & 7
Additional Requirements	:	As listed below (Supplementary to the above material specifications)
Size and Quantity	:	As per Purchase Order (PO) & Applicable Drawing

2.0 GENERAL REQUIREMENTS:

- i. This TDC is applicable for Valves, OFE (API 6A 21st Ed 2018 Errata 3 Addendum 1 & API 16C 2nd Ed 2015 Addendum 1 Errata 4) and other applications including NACE MR0175 / ISO 15156:2015 Parts 1, 2 & 3. The products shall be manufactured to the relevant requirements specified in the applicable drawings, specifications, PO & this TDC.
- ii. Studs / Bolts / Nuts used for OFE application:
 - a. Studs / Bolts / Nuts shall be qualified and manufactured in accordance with BSL 1 of API 20E. The qualification & requalification records as per API 20E Ed 2017 Addendum 2 shall be maintained by the Supplier. The supplier shall prepare Manufacturing Process Specification(MPS) to include as a minimum allowable levels for all Studs/Bolts/Nuts manufacturing parameters including process control variables and heat treatment parameters as per API 20E Ed 2017 Addendum 2 and this TDC.
 - b. Raw material shall be fully wrought. Reduction ratio based on starting material diameter shall be a minimum of 4:1. The steel shall conform to the respective material specifications. Intentional addition of Boron is not allowed. All elements intentionally added to the heat shall be reported in the Test Certificate.
 - c. Furnace calibration shall be in accordance with API 6A 21st Ed 2018 Annex M; SAE AMS 2750 Rev.F; or SAE AMS H6875 Rev.C. For induction or direct resistant heat treatment, calibration shall be in accordance with manufacturer's written procedure. For forging furnaces, calibration shall be in accordance with manufacturer's written procedure
 - d. Heat lot:
 - Batch furnace: bolting or raw material of a single heat and diameter, heat treated together as a single austenitizing, quenching, tempering, and stress-relieving charge.
 - Continuous furnace: bolting or raw material of a single heat and diameter heat treated without interruption in a continuous charge
- iii. Nuts shall be hot/cold forged or manufactured from hot rolled/cold drawn bars. If made from



Product: CARBON & ALLOY STEEL FASTENERS (STUDS, BOLTS & NUTS) FOR VALVES, OIL FIELD EQUIPMENT (OFE) AND OTHER APPLICATIONS

hexagonal bars, 100% MT is to be done on bars as per ASTM E709-15 to ensure freedom from surface/sub-surface defects.

- iv. Hot rolled & cold drawn bars, if used (for studs/bolts or nuts), shall be machined at least 2 mm (minimum) in radius (i.e. 4 mm in diameter) to remove the seams completely. After machining, at least 10% of the bars shall be tested by MPI as per ASTM E709-15 to ensure freedom from surface/sub-surface defects.
- v. Heat treatment of finished studs/bolts shall be carried as per the material specification requirements for corresponding grades. For heat treatment of finished components, salt bath or controlled atmosphere furnace shall be used. After heat treatment, the threads shall be thoroughly cleaned to remove all deposits. If acid pickling is done for cleaning, it shall be as per Cl. 6 (v) of this TDC.
- vi. Cadmium Plating (Cl 6 (i) of this TDC), Electroplating (Cl 6 (ii) of this TDC) and/or Xylan Coating (Cl 6 (iii) of this TDC) shall be done on the fasteners if specified in Drawing/PO. For all other cases, rust preventive coating (Cl 6 (iv) of this TDC) shall be done.

3.0 CHEMICAL, MECHANICAL PROPERTIES & NDE:

- i. Mill certificate from steel manufacturer for conformance to chemistry heat-wise shall be submitted. Additionally, product analysis shall be done on one sample/heat by the stud/bolt/nut manufacturer. Methods and practices for chemical analysis shall be in accordance with ASTM A 751-20.
- ii. The microstructure and macrostructure shall conform to the requirements of the respective material specifications.
- iii. **Tensile Testing for Studs/Bolts:** One tensile test/heat/size/ HT batch shall be carried out in the finished heat treated condition as per SA / A 193 and shall meet the material specification requirements for corresponding grades.
- iv. **Hardness Testing for Studs/Bolts:**

Hardness testing, including specimen preparation, shall be performed in accordance with ASTM A 370-20 including Annex A3, except that testing shall also be in conformance with ASTM E10-18 or ASTM E18-20.

- a) **For ASME SA 193-19 / ASTM A 193-20 Gr B7 & B16:** Hardness check shall be carried out on finished stud/ bolt as per ASME SA 193-19 / ASTM A 193-20, at least on 10% of the finished studs/bolts.
Gr B7: Hardness: 25 to 34 HRC or 253 to 319 HBW.
Gr B16: Hardness: 25 to 35 HRC or 253 to 321 HBW.
- b) **For ASME SA 193-19 / ASTM A 193-20 Gr B7M:**
Hardness check on 100% of studs/bolts as per SA193.
Gr B7M: Hardness: 94 to 99 HRB or 201 to 235 HBW.

v. **Mechanical Testing for Nuts:**

- a) **For ASME SA 194-19 / ASTM A 194-20A Gr 2H, Gr 4, & Gr 7:**
Hardness check on finished nuts shall be as per ASME SA 194-19 / ASTM A 194-20A (including quantum of testing).
Gr 4: Hardness: 24 to 35 HRC or 248 to 327 HBW.
Gr 2H & Gr 7: Hardness: 24 to 34 HRC or 248 to 319 HBW.
- b) **For ASME SA 194-19 / ASTM A 194-20A Gr 2HM:**
Hardness check on 100% of finished nuts shall be carried out as per ASME SA 194-19 /



Product: CARBON & ALLOY STEEL FASTENERS (STUDS, BOLTS & NUTS) FOR VALVES, OIL FIELD EQUIPMENT (OFE) AND OTHER APPLICATIONS

ASTM A 194-20A.

Gr 2HM: Hardness: 159 to 235 HBW.

- c) **Proof load test shall be done as per ASME SA 194-19 / ASTM A 194-20A for all grades of nuts** and shall meet the requirements of corresponding grades of the material specification.
- d) After final heat treatment, sample nuts shall be heat treated as per Table 1 and meet the corresponding hardness requirements.

Table 1.

Grade	Temperature (°C)	Soaking Time (Hr)	Cooling	Minimum Hardness (HBW) at room temperature
2H	540	24	Slow Cool	179
2HM	540	24	Slow Cool	159
4, 7	590	24	Slow Cool	201

- e) **Cone Stripping Test:** This test shall be performed as per ASME SA 194-19 / ASTM A 194-20A in case of visible surface discontinuities. On such cases Proof load shall be as per ASME SA 194-19 / ASTM A 194-20A.
- vi. **NDE:**
Magnetic particle inspection shall be carried out as per ASTM E709-15 in at least 10% of the finished studs/bolts of all grades. Cracks, linear indications (length \geq 3 times its width) are unacceptable.

4.0 SAMPLING INSPECTION:

All inspection shall be in accordance with relevant drawing or BPS (Boiler Plant Standard), PO, this TDC and ASME SA 193-19 / ASTM A 193-20 for studs/bolts and ASME SA 194-20 / ASTM A 194-20A for nuts. The threads shall be checked with calibrated ring gauges for studs/bolts & plug gauges for nuts in the final heat treated condition for black variety and *prior to* final plated/coated condition for the cadmium plated/electroplated/ xylan coated items.


Visual, dimensional checks and their acceptance shall be as per applicable drawing and ASME SA 193-19 / ASTM A 193-20 for studs/bolts & ASME SA 194-20 / ASTM A 194-20A for nuts.

4.1 Gauging Requirements for Xylan along with Zinc Coated Fasteners

- i. **Studs**
- No under sizing is allowed
 - Prior to Xylan and Zinc Coating, Class 2A Gauge to be used for inspection
 - After coating, No Gauge inspection is required
- ii. **Nut**
- Under sizing is allowed to maximum of 0.2mm in the internal diameter of threads
 - Prior to under sizing, Class 2B Gauge to be used for inspection
 - After under sizing, a gauge having an allowance as per Class 2B along with 0.2mm under sizing allowance to be made and inspected thereof
- iii. **Assembly of Stud and Nut**
- Free run of nut over stud to be ensured
 - No play is allowed
 - After free run of nut over stud, Xylan coating should not get peeled off.

5.0 MARKING & PACKING:

- Punch/emboss each finished component with applicable material grade (B7/ B7M/ B16 for studs/bolts; 2H/2HM/4/7 for nuts) and supplier's emblem. Studs/bolts of grade B7M and nuts of Gr 2HM shall have a line under the grade symbol.
- Punch/emboss serial number also in B7M studs/bolts and Gr 2HM nuts in addition to the above, to correlate with hardness. Protect the threaded ends with plastic end caps. Pack in wooden

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	DOC No: TDC:5:164 Rev: 09 Effective Date: 19/02/2021 Page: 4 of 7
Product: CARBON & ALLOY STEEL FASTENERS (STUDS, BOLTS & NUTS) FOR VALVES, OIL FIELD EQUIPMENT (OFE) AND OTHER APPLICATIONS		

box/ gunny bag of convenient size for easy handling and transportation. Mark quantity in each box/gunny bag.

- iii. In addition to the above, studs / Bolts / Nuts for OFE applications shall marked with unique heat lot identification and followed by "20E1". Each piece 1 in. nominal diameter and larger shall be marked. For studs / Bolts / Nuts less than 1 in. nominal diameter, the studs / Bolts / Nuts shall be securely containerized to maintain heat lot identification and traceability. Multiple heat lots shall not be mixed in a single container. Containers used in the processing, storing, and shipping of studs / Bolts / Nuts not individually marked shall be clearly labeled with all marking information required by the relevant material specifications and API 20E *Ed 2017 Addendum 2*.

6.0 SPECIAL REQUIREMENTS:

i. CADMIUM PLATING:

- Clean the fasteners to make them free from rust, grease, oil, scale, etc., before plating. When pickling is considered essential, it shall be done as per Cl 6 (v) of this TDC.
- Apply Cadmium Plating to the specified thickness on specified areas. Thickness shall be measured on 5% of the PO quantity of fasteners.
- After plating, bake the parts at 175°C to 205°C for a minimum period of 3 hours. The elapsed time between plating and baking shall not exceed 8 hours.
- Apply a Chromate Conversion coating after plating and baking.

ii. ELECTROPLATING OF ZINC CHROMATE:

- Clean the fasteners to make them free from rust, grease, oil, scale, etc., by suitable organic solvents/ hand tool methods before electroplating. Then, pickling shall be done as per Cl 6 (v) of this TDC.
- The fasteners shall then be electroplated as per the method and to the minimum coating thickness specified in the applicable drawing. Thickness shall be measured on 5% of the PO quantity of fasteners.
- All electroplated parts (regardless of strength level) shall be baked within 2 hours after plating at 375 °F–425 °F (191 °C–218 °C) for 8 hours minimum at temperature

iii. XYLAN COATING:

- Clean the fasteners by blast cleaning to Sa2.5 to make them free from rust, grease, oil, scales, etc., before xylan coating.
- The fasteners shall then be xylan coated as per the requirements and to the minimum coating thickness specified in the applicable drawing.
- Tests for Xylan Coating:**

The following test shall be carried out on Xylan coated fasteners and results to be reported in the Test certificate (in addition to the Test Certificate for the fastener material and other inspections requirements):

i) Thickness measurement:

Dry film thickness of Xylan coating to be measured using a magnetic induction or Eddy current type electronic gauge and the reading shall meet the drawing/PO requirement for thickness of coating of Xylan 1070. The thickness measurements shall be made in accordance with ASTM D7091-20. Thickness shall be measured on 5% of the PO quantity of fasteners.

ii) Cure Test:

This test method is for ensuring the completeness of cure of Xylan 1070 coating by evaluating the resistance of the cured coating to a solvent known to attack uncured film. The testing method shall be as per Whitford test method 115B (as recommended by the Xylan coating supplier).

Acceptance criteria: No white precipitate or stain shall be available after the test.

iii) Adhesion Test using Cross-hatch and Cello Tape:



Product: CARBON & ALLOY STEEL FASTENERS (STUDS, BOLTS & NUTS) FOR VALVES, OIL FIELD EQUIPMENT (OFE) AND OTHER APPLICATIONS

Test as per ASTM D3359-17 Method B for measuring Adhesion by Tape Test.
Acceptance Criteria: No loss of adhesion (5B Classification).

iv) Salt Spray Test:

Xylan coated fasteners should pass a minimum requirement of 500 hours of salt spray test as per ASTM B117-19. Certificate of compliance for meeting the salt spray test requirements shall be provided.

iv. RUST PREVENTIVE FLUIDS/COATING REQUIREMENTS:

- a) Clean the fasteners to make them free from rust, grease, oil, scale, etc., by hand tool/ manual cleaning method.
- b) Apply one coat of rust preventive fluid, of any of the following brands of the suppliers (Table 2), to obtain dry film thickness of 20 microns minimum:

Table 2. Rust Preventive Fluid/Coatings Brands

SI No	Brand/Chemical	Supplier Name and Address
1	BONITA-RPF	M/s Bonita Chemicals, 64, Industrial Estate, Nunhai, Agra-282 006
2	CHAMPION-RPF	M/s Guardian Chemicals, 8, Rajaji Ind st, West Lake Area, Nungambakkam, Madras-600 034
3	ECONOL RPF (non-drying type)	M/s Process Aids, Bangalore
4	TECTYL 506	M/s Plastipeel Chemicals and Plastics (P) Ltd, Thane-400 604
5	TRPF	M/s Sundaram Paints Pvt. Ltd., Thanjavur-613 004
6	TRPF	M/s Solar Paints, Pudukkotai.
7	WICOR-P	M/s Western India Paint and Color Co P. Ltd, Madras-600 017

Use of any other brand/chemical shall be done with the prior approval of BHEL.

v. ACID PICKLING:

- a) Wherever pickling done, it shall be done using Hydrochloric acid of 5-10% concentration for a period of 5 to 10 minutes at room temperature with suitable inhibitor.
- b) After pickling thorough rinsing shall be carried out with water to remove acid residues & further DM water rinsing. After thorough rinsing with DM water, the rinsing shall not show any red color (free acidity) when tested with methyl orange indicator.

7.0 CERTIFICATION:

The manufacturer shall provide Test Certificates (TC) duly countersigned by the Authorized Inspecting Authority nominated by BHEL in P.O. (if specified) along with raw material TC from Steel Maker. *The applicable versions of the referred Codes, Standards and Specifications shall be reported in the Test Certificates and NDE reports.* Manufacturer's TC shall contain the following details as per the sample format attached as Annexure-1 to this TDC:

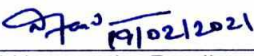
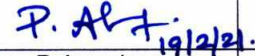
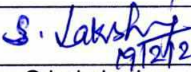
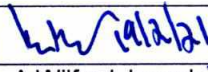
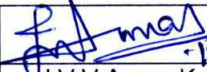
- i. BHEL PO No & PO Date
- ii. Technical Delivery Condition (TDC) No & its Revision No, Drawing & its revision no
- iii. Melt/Heat No, Serial No (if applicable)
- iv. Raw Material TC Number and Date
- v. Chemical and Mechanical properties for Studs/Bolts and Nuts *including the location and orientation of test specimens*
- vi. Heat treatment details (temperature, time, cooling medium, etc.)
- vii. *NDE reports with NDE Personnel qualification records, all relevant NDE operating parameters and NDE Results with reference and acceptance criteria*
- viii. Type of Surface coating & its coating thickness – Cadmium Plating, Chromate conversion coating, Electroplating, Xylan Coating, Rust preventive coating, etc.
- ix. Test methods and results on Xylan Coating
- x. Baking details for cadmium plating, electroplating & Xylan coating
- xi. Manufacturers' identification mark
- xii. Certify soundness & confirmation to PO requirements.



BHEL – Tiruchirappalli - 620014, India.
Quality Assurance Department
TECHNICAL DELIVERY CONDITIONS

DOC No: TDC:5:164 Rev: 09
Effective Date: 19/02/2021
Page: 6 of 7

Product: CARBON & ALLOY STEEL FASTENERS (STUDS, BOLTS & NUTS) FOR VALVES, OIL FIELD EQUIPMENT (OFE) AND OTHER APPLICATIONS

 19/02/2021	 19/2/21	 19/2/21	 19/02/2021	 19/02/2021
N Nagamuthu Pandian	P Arun kumar	S Lakshmi	A Wilfred Joseph	J V V Aruna Kumar
Manager/QA	DM / Valves Engg	DGM/QA	AGM / Valves/MM	SDGM / QA
Prepared By	Reviewed By			Approved By



Product: CARBON & ALLOY STEEL FASTENERS (STUDS, BOLTS & NUTS) FOR VALVES, OIL FIELD EQUIPMENT (OFE) AND OTHER APPLICATIONS

Annexure-1. Test certificate for Studs/Bolts & Nuts– Sample format

TC No:	Date:
Customer :	PO No./ Amd :
TDC No./Rev.:	DC No. :
Product :	Drg. No./Rev :
Description : (Spec, dia, pitch, length)	Thread Spec. :
Quantity :	
Requirement :	<u>Records/ Observation</u>
Size of bar - Before machining :	
- After machining :	
Type of furnace used for hardening :	

TDC Clause no.	Raw Material mill TC No: Melt/Heat Number:	TC Date: Reduction Ratio:
2.0 & 3.0	a) Heat Treatment Details: Hardening Temperature: °C; Soaking time: Cooling Medium: Tempering Temperature: °C; Soaking time: Cooling Medium: b) Additional Tempering for Nuts (after final tempering): Temperature: °C; Soaking time: Cooling Medium:	
3.0	a) Product analysis for chemistry	
	Report No & Date:	
	Spec	C Mn P S Si Cr Mo V Ni Others
	Min.	
	Max.	
	Actual	
	b) Tensile test after H & T and final drying (Finished heat treated condition) – For Studs/Bolts	
		UTS (MPa) YS (MPa) %Elongation %Red in Area
	Reqd/Spec Value	
	Test result	
	Spec Value Test result Remarks	
	c) Hardness Test Result (for Studs/Bolts, Nuts):	
	d) Hardness Test Result (for Nuts after 24 hrs of tempering):	
	e) Proof load (kN) for nuts & result	
	f) Result of Cone Stripping test for nuts	
	g) NDE Result for Studs/Bolts:	
4.0	Visual and dimensional checking as per applicable drawing for studs/bolts & nuts:	
5.0	Punching details (identification): End cap for threaded portion:	
6.0	a) Type of coating: Cadmium Plating /Chromate Conversion / Electroplating/ Xylan /Rust preventive coating (Tick applicable coating) Coating thickness/DFT:	
	b) Tests for Xylan Coating	Results
	c) Pickling Acid: Concentration: Drying after pickling. Temperature: °C; Soaking time:	

This is to certify that the above results are correct and the parts meet specification and PO requirements.

Signature with date Supplier: In-charge of Quality	Signature with date BHEL / Authorized Inspection Agency
---	--

Note: Additional Sheets may be attached, if required.



BHARAT HEAVY ELECTRICALS LTD

VALVES PURCHASE

Trichy - 620 014. India

CONFIRMATION TO TERMS AND CONDITIONS

Enquiry Reference: ENSTA02357

<u>TERMS & CONDITION</u>	<u>VENDOR CONFIRMATION</u>
<p>a. Vendor Quotation Reference No. and Date</p>	
<p>b. Pre-Qualification Requirement</p> <p>Vendor to furnish records of previous supplies of same or similar category items to any Central / State Govt Organization / PSU / Public Listed Company: To fulfil this criteria vendor shall submit previous records not more than 5 years old from date of part 1 bid opening.</p>	
<p>c. Vendor should give confirmation to BHEL's Technical Specification. To fulfil this criteria vendor shall submit the specification duly sealed and signed.</p> <p>Any deviations from the specification are to be furnished separately as "Schedule of Deviation".</p> <p>If there is no deviation vendor should indicate "No Deviation".</p>	
<p>d. The offer has to be submitted as a Two-part bid (Techno-commercial & Price bid)</p>	
<p>e. The tender will be finalized on item wise basis</p>	
<p>f. Terms of Payment:</p> <p><u>Indigenous Supplier (Non-MSE):</u> 100% direct EFT Payment after 60 days from the date of receipt and acceptance of materials at BHEL stores / against site acknowledgement.</p> <p><u>Indigenous Supplier (MSE):</u> Payment will be as per MSMED Act, 2006. (Udyam Registration Certificate to be enclosed along with the offer)</p>	
<p>g. Liquidated Damage: Liquidated damages shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value.</p>	
<p>h. Delivery Terms:</p> <p>Prices shall be quoted on "FIRM PRICE" basis only.</p> <p><u>For Indigenous Supplies:</u> FOR BHEL Trichy</p>	
<p>i. Validity of Offer: Prices should be valid for 60 days from the date of part-1 bid opening of this tender. The delay in responding to BHEL technical clarification beyond four days will be subsequently added to the validity period, Revised Price Bids will not be encouraged.</p>	
<p>j. Delivery period:</p> <p>Delivery period should be 8 weeks from the date of purchase order.</p> <p>If supplier offers more than the required delivery period BHEL will operate 0.5% loading factor for evaluation of their offer for every week delay subject to a maximum of 2%. Any other delivery period after loading to maximum will be rejected.</p>	
<p>k. Risk Purchase:</p> <p>Risk purchase penalties as per clause 5 of general terms and conditions is applicable for this enquiry. Non acceptance to risk purchase clause the offer is liable for rejection.</p>	



BHARAT HEAVY ELECTRICALS LTD

VALVES PURCHASE

Trichy - 620 014. India

CONFIRMATION TO TERMS AND CONDITIONS

Enquiry Reference: ENSTA02357

<u>TERMS & CONDITION</u>	<u>VENDOR CONFIRMATION</u>
l. Guarantee Clause: The vendor shall give a guarantee for the performance of his supplies for a period of eighteen months from the date of dispatch or twelve months from the date of commissioning whichever is earlier.	
m. Performance Bank Guarantee: Performance Bank Guarantee is not applicable for this enquiry	
n. Counter-offering Counter-offering is not applicable for this enquiry	
o. Integrity Pact Integrity pact is not applicable for this enquiry	



Maharatna Company

BHARAT HEAVY ELECTRICALS LTD

VALVES PURCHASE

Trichy - 620 014, India

GENERAL TERMS AND CONDITIONS

Enquiry Reference: **ENSTA02357**

1. QUOTATIONS:

a. BID system:

- i. Two part bid: The offers are invited in Two part bid system (Part I will be Techno-commercial bid and part II will be Price Bid). Techno-commercially suitable vendors alone will be intimated for price bid opening.

b. Submission of offer:

- i. Offer called through e-Procurement mode: The bidder shall submit the bid online in BHEL e-Procurement portal at <https://eprocarebhel.co.in/>

The bidder would be required to register on the above e-procurement portal for submitting their bids. Offers through email and hardcopy are not acceptable.

- c. **Regulations**: Offers should be free from correction and erasures. Corrections if any must be attested. All amounts shall be indicated both in words as well as figures. In case of a difference between the amount quoted in words and figures, the amount quoted in words shall prevail.
- d. **PVC**: Price Variation clause not acceptable. Prices should be firm.
- e. **Catalogue**: Manufacturer's name, Trade Mark or Patent No. if any should be specified. Illustrative leaflets giving technical particulars are required along with quotation.
- f. **Samples**: Samples should be submitted separately, if specially requested in tender, before the due date of the enquiry. They should be clearly marked with the enquiry reference and date on the enclosing cover to facilitate identification.
- g. **GST Number**: GST registration number, HSN number (Item wise) with applicable taxes should be mentioned in the offer. If the vendor is not GST registered the offer is liable for rejection.
- h. **Deviation**. Any deviations from the specification are to be furnished separately as "Schedule of Deviation". If there is no deviation, vendor should indicate "No Deviation" in the offer.
- i. **Confirmation**: Confirmation for compliance is to be given in the offer for all the techno commercial conditions specified in the tender.

2. COMMERCIAL TERMS & CONDITIONS:

a. Terms of Payment:

For Indigenous Suppliers:

If the materials are receivable at BHEL Stores, Trichy:

Payment term is 100% direct Payment after 60 days from the date of receipt and acceptance of materials.

Any deviation in the above payment terms, any other conditions in payment terms or any other payment terms will not be accepted and offers will not be considered.

For New Suppliers: For new suppliers not registered with BHEL, Trichy for the product, payment shall be made 60 days after receipt and acceptance of materials.

- b. **Liquidated Damage**: Liquidated damages shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value.

Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value)

Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers. Hence applicable GST shall also be recoverable from suppliers on LD amount. Debit note will be issued by BHEL for this amount, indicating the respective supply invoice number.

c. Delivery Terms:

For Indigenous Suppliers: FOR BHEL Trichy inclusive of freight and insurance

- d. **Validity of Offer**: Prices should be fixed and should be valid for period as mentioned in the "Confirmation to the Terms and Conditions" attached.
- e. **Delivery period**: Delivery schedule will be as mentioned in the "Confirmation to the Terms and Conditions" attached. If supplier offers more than the required delivery period BHEL will operate 0.5% loading factor for evaluation of their offer for every week delay.



BHARAT HEAVY ELECTRICALS LTD

VALVES PURCHASE

Trichy - 620 014, India

GENERAL TERMS AND CONDITIONS

Enquiry Reference: **ENSTA02357**

- f. **Guarantee period:** The vendor shall give a guarantee for the performance of his supplies for a period of **eighteen months** from the date of dispatch or **twelve months** from the date of commissioning whichever is earlier.
- g. **Miscellaneous:** Any conditions which might have been quoted by the seller and are in contravention to the terms of PO and which have not been specifically accepted by Purchaser will not be applicable to the contract/PO.
- h. **Performance Bank Guarantee:** If tender calls for Performance Bank Guarantee, vendor should provide a performance bank guarantee (PBG) in BHEL format for 10% of the total Purchase order value valid for warranty/guarantee period with an additional claim period of 2 months. PBG should be issued from list of consortium banks.
- i. **Counter Offering:** If counter offering is applicable for the enquiry, the L1 rates will be counter-offered to other eligible vendors as per below points
 - In case there are only two qualified offers for any item, the L1 rate will be counter-offered to the L2 vendor.
 - In case of more than two qualified offers for any item, the L1 rates will be counter-offered to maximum (n-1) vendors (where 'n' is the no. of techno-commercially qualified vendors) or the no. of vendors required (as mentioned in the "Confirmation to the Terms and Conditions" attached), whichever is lower.
 - In case a lower ranked vendor does not accept the counter-offered rates, the rates may be offered to next higher ranked vendor.
 - The manner of splitting of the enquiry quantity across L1 and counter-offer accepted vendors will be as per the ratios mentioned in the "Confirmation to the Terms and Conditions" attached.

3. COMPLIANCE / ACCEPTANCE REQUIRED FOR FOLLOWING POINTS TO ENSURE INPUT TAX CREDIT

- a. Response to Tenders for Indigenous supplier/Vendor will be entertained only if the vendor has a valid GST registration No (GSTIN) which should be clearly mentioned in the offer. If the Vendor is exempted from GST registration, a declaration with due supporting documents need to be furnished for considering the offer. Vendor under composition scheme should declare that he is a composition Vendor supported by the screen shot taken from GST portal. The dealer has to submit necessary documents if there is any change in status under GST.
- b. Supplier shall mention their GSTIN in all their invoices (incl. credit Notes, Debit Notes) and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no etc., then the Invoice No. which is linked/uploaded in GSTN network shall be clearly indicated), Billed to party (with GSTIN) & Shipped to party details, item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, Place of Supply etc.
- c. Invoices will be processed only upon completion of statutory requirement and further subject to following:
 - i. Vendor declaring such invoice in Form GST ANX-1
 - ii. Receipt of Goods or Services and Tax invoice by BHEL
- d. All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code).
- e. As the continuous uploading of tax invoices in GSTN portal (in GST ANX-1) is available for all (i.e. both Small & Large) tax payers under proposed new GST Return System, all invoice raised on BHEL may be uploaded immediately in GST portal on despatch of material /rendering of services. The supplier shall ensure availability of Invoice in GST portal before submission of invoice to BHEL. Invoices will be admitted by BHEL only if the invoices are available in GSTN portal (in BHEL's GST ANX-2).
- f. A declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL.
- g. All documents like Test Certificate, LR copy, any other document mentioned in PO, shall be sent along with the vehicle/consignment. For all consignments received within the calendar month, input credit will be availed within that month in line with monthly returns filing cycle. In case of any discrepancy in the document or non-submission of documents mentioned in the PO, then BHEL will not be able to accept or account the material, in such case availing of tax credit will be deferred to next month or so.
- h. In case of discrepancy in the data uploaded by the supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note or debit note (details also to be uploaded in GSTN portal) for the shortages or rejections in the supplies or additional claims, within the calendar month informed by BHEL.



BHARAT HEAVY ELECTRICALS LTD

VALVES PURCHASE

Trichy - 620 014, India

GENERAL TERMS AND CONDITIONS

Enquiry Reference: **ENSTA02357**

- i. In cases where invoice details have been uploaded by the vendor but failed to remit the GST amount to GST Department (Form PMT-08 or Form GST RET-01 to be submitted) within stipulated time, then GST paid on the invoices pertaining to the month for which GST return not filed by the vendor will be recovered from the vendor along with the applicable interest (currently 24% p.a) and all subsequent bills of the vendor will not be processed till filing of the GST return by the vendor.
- j. Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers/contractors. Hence applicable GST shall also be recoverable from suppliers/contractors on LD amount. For this, debit note will be issued by BHEL indicating the respective supply invoice number.
- k. In case any changes in taxes and duties as per Gov. Notification (including GST), the same shall be applicable from time to time.
- l. Duplicate copy of the Invoice meant for the transporter should accompany the material as stipulated under CE Rules 52A and 172C OR 57CE.
- m. TDS on GST shall be applicable as per the GST Act.
- n. In case GST credit is denied to BHEL due to non-receipt or delayed receipt of goods and/ or tax invoice or expiry of timeline prescribed in GST law for availing such ITC, or any other reasons not attributable to BHEL, GST amount claimed in the invoice shall be disallowed to the vendor.
- o. Where any GST liability arising on BHEL under Reverse Charge (RCM), the vendor has to submit the invoices to BHEL well within the timeline prescribed in GST Law, to enable BHEL to discharge the GST liability. If there is a delay in submission of invoice by the vendor resulting in delayed payment of GST by BHEL along with Interest, then such Interest payable or paid shall be recovered from the vendor.
- p. GST TDS will be deducted as per Section 51 of CGST Act 2017 and in line with Notification 50/2018 – Central Tax dated 13.09.2018. GST TDS certificate which will be generated in GST portal subsequent to vendor accepting the TDS deduction in the GST portal, will be issued to the vendor.

4. SPECIAL PROVISIONS FOR MICRO AND SMALL ENTERPRISES (MSE):

- a. 25% of the tendered quantity is earmarked for MSE suppliers in this tender.
- b. If L1 vendor (or) Counter offer accepted vendor/s is from a Micro / Small enterprise which put together covers 25% of the total tendered quantum, the 25% earmarking provision is not applicable.
- c. Out of the 25% tendered quantity reserved for MSE suppliers, 6.25% shall be earmarked for procurement from MSE owned by SC / ST entrepreneurs. In the event of failure of such Micro and Small enterprises to participate in the tender process or meet the tender requirements and the L1 price, the 6.25% sub-target for procurement ear-marked MSE owned by SC / ST entrepreneurs shall be met with other MSE enterprise/s.
- d. 3% reservation for women owned MSEs within the above mentioned 25% reservation. In the event of failure of such Micro and Small enterprises to participate in the tender process or meet the tender requirements and the L1 price, the 3% sub-target for procurement ear-marked MSE owned by women entrepreneurs shall be met with other MSE enterprise/s. The definition for MSEs owned by Women Entrepreneurs is clarified as:
 - i. In case of proprietary MSE, proprietor shall be woman.
 - ii. In case of partnership MSE, the women partners shall be holding at least 51% share in the unit.
 - iii. In case of private limited companies, at least 51% share shall be held by the women promoters.
- e. In case MSE vendor participating in the tender quotes within the price band of LI +15%, they will be allowed to supply the portion of the requirement subject to acceptance of LI price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately, provided the available quantum can be split.
- f. In a tender where both MSE and Non-MSE Vendors have participated and non-MSE Vendor has become the lowest bidder and the quantum envisaged in the tender cannot be split, then the MSE vendor will be given preference for ordering the available quantum provided the MSE vendor quoted price is within L1 + 15%, and if the MSE vendor accepts the L1 rate.
- g. MSE suppliers can avail the intended benefits only if,

The vendor submits along with offer, a copy of the Udyam Registration Certificate.

(or)

The vendor has already submitted the above documents for the financial year of the date of part-1 bid opening and the MSE status has been updated in BHEL Trichy's records.

Non submission of such documents will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the supplier submits these documents.



BHARAT HEAVY ELECTRICALS LTD

VALVES PURCHASE

Trichy - 620 014, India

GENERAL TERMS AND CONDITIONS

Enquiry Reference: **ENSTA02357**

- h. Definitions of MSEs owned by SC/ST is under:
- In case of proprietorship firm, proprietor must be SC/ST.
 - In case of partnership firm, the SC/ST partners must be holding at least 51% shares in the unit.
 - In case of private limited companies, at least 51% share must be held by SC/ST promoters.
 - The caste/Tribe/Community certificate issued by the following authorities in the prescribed form for SCs/STs can be considered.
- i. Authorized to Issue SC/ST certificate:
- District Magistrate/Additional District Magistrate/Collector/Deputy commissioner/Additional Deputy Commissioner/Deputy collector/1st class stipendiary magistrate/Sub divisional Magistrate/Taluka Magistrate/Executive magistrate/Extra Assistant commissioner.
 - Chief Presidency magistrate/Additional chief presidency magistrate/Presidency magistrate.
 - Revenue Officer not below the rank of tehsildar.
 - Sub-Divisional officer of the area where the individual and / or his family normally resides.
- j. To avail the benefits of MSE under SC/ST category, the related documents as stated above should be submitted along with tender documents.
- k. Payment for MSE vendors will be as per MSMED Act, 2006.

5. RISK PURCHASE PENALTIES

- a. In case of delay in delivery beyond PO delivery /mutually agreed delivery, or vendor fails /refuses to complete the PO as per terms, or insufficient facilities at vendor's works to execute a PO, BHEL has the right to get the items ordered elsewhere at the risk and cost of the vendor with notice to the vendor and the additional expenditure / difference in cost, if any, including consequential cost shall be recovered from the defaulted vendor. Also, in such case of withdrawal of orders, BHEL shall recover the additional expenditure / difference from vendor by adjusting against amount due to vendor and/or by invoking the BG and/or by any other suitable means as decided by BHEL. In addition, BHEL may recover from the defaulter vendor any loss to BHEL arising due to withdrawal of orders in such case, and action shall be taken as per latest revision of BHEL Guidelines for Suspension of Business dealings with Suppliers / Contractors.
- b. BHEL has the right to divert/cancel the order if the vendor has not procured minimum 50% of the quantity of raw materials within 60 days from PO date. Purchase order placed on steel mills and with proper payment voucher/proof will be considered for not cancelling the PO by BHEL. The submission of data by vendor for DB clearance by BHEL/QC shall be the proof of procurement. This is to avoid delay in project schedule due to delay in raw material procurement by vendors. In case the vendor fails to procure at least 50% of the quantity of raw materials within 60 days from PO date, BHEL has the right to get the items ordered elsewhere at the risk and cost of the defaulting Vendor and the additional expenditure / difference in cost, if any, including consequential cost shall be recovered from the defaulting Vendor and action shall be taken as per latest revision of BHEL Guidelines for Suspension of Business dealings with Suppliers / Contractors and SEARP.
- c. The defaulted vendor shall be liable for any loss, which BHEL may sustain by reason of such risk purchases in addition to liquidated damages as mentioned under LD clause.
- d. Vendors pending payments shall be withheld to cover the liabilities of BHEL towards risk purchase, if any.
- e. Reasons like power cut, labour issues, machine break down, etc. which are controllable by the sub-contractor shall not be accepted as reason for delay for delivery extension purposes.
- f. If PO delivery needs to be extended for reason attributable to BHEL, vendor may request BHEL in writing for delivery extension with justifications within 15 days from date of PO closure and before invoice.
- g. Process of calculating the risk and cost amount is as follows:
Risk & Cost Amount= $[(A-B) + (A \times H/100)]$
Where,
A= Value of Balance scope of Work/ Supply (*) as per rates of new contract
B= Value of Balance scope of Work/ Supply (*) as per rates of old contract being paid to the contractor/ supplier at the time of termination of contract i.e. inclusive of PVC & ORC, if any.
H = Overhead Factor to be taken as 5
In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).
*(Balance scope of work/ supply)



BHARAT HEAVY ELECTRICALS LTD

VALVES PURCHASE

Trichy - 620 014, India

GENERAL TERMS AND CONDITIONS

Enquiry Reference: **ENSTA02357**

Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for "Termination of Contract", shall be taken as balance scope of Work/ Supply for calculating risk & cost amount. Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities. Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities. Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose. Substitute/ extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions. In-case portion of work is being withdrawn, contract quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work/supply' for calculating Risk & Cost amount.

- h. Vendors are cautioned that, withdrawal after price bid opening or after contract signing or PO/LOI acceptance will be construed as tampering with BHEL's tender process. Suitable action for suspension of further business with the vendor may be taken as per BHEL corporate procedures.
- i. Abridged version of extant 'Guidelines for suspension of business dealings with suppliers/ contractors' has now been uploaded on www.bhel.com on "supplier registration page" at the following link: http://www.bhel.com/vender_registration/vender.php (Guidelines for suspension of business dealings with suppliers/ contractors).

6. GENERAL CONDITIONS

- a. The manner of finalization will be as mentioned in the "Confirmation to the Terms and Conditions" attached. Separate orders will be released for each project and documents should be supplied for each order separately.
- b. BHEL reserves the right to reduce the tender quantity and to NOT to order for some or all material based on the changes in project.
- c. BHEL shall have the right to visit vendor works during the execution of contract along with end customer for verifying status, inspection and testing of the material.
- d. BHEL reserves the right to negotiate or re-float the tender in case the quoted prices are not acceptable.
- e. Supplier shall arrange packing to avoid lose or damages during Road Transport, Site handling & Storage.
- f. BHEL reserves the right to reject the offer of a particular bidder due to unsatisfactory past performance in the execution of a contract at any of BHEL projects / units.
- g. The Drawings and Technical documents given in this enquiry are the sole property of BHEL. This should not be misused in any form.
- h. Purchase Order, PO Item serial number, Material code, Quantity should be clearly marked on the packing
- i. Confirmation for compliance is to be given in the offer for all the conditions specified above and to the respective Purchase Specification.
- j. The bidder along with its associate/collaborators/sub-contractors/sub-vendors/consultants/service providers shall strictly adhere to BHEL fraud prevention policy (refer www.bhel.com) and shall immediately bring to the notice of the BHEL management about any fraud or suspected fraud as soon as it comes to their notice.
- k. For this procurement, Public Procurement (Preference to Make in India), Order 2017 dated 15.06.2017, 28.05.2018, 29.05.2019 and 04.06.2020, issued by DPIIT, Ministry of Commerce and Industry. If any subsequent Orders issued by the respective Nodal Ministry shall be applicable even if issued after issue of this NIT but before finalization of contract / PO / WO against this NIT. In the event of any Nodal Ministry prescribing higher or lower percentage of purchase and / or local content in respect of this procurement, same shall be applicable. Default purchase preference shall be 20% to local suppliers with default minimum local content of 50%.

7. DOCUMENTATION:

- a. **With Consignment:** Duplicate for transporter copy, Original Invoice, Packing List, Delivery Challan, O&M manual (if applicable) Material Test Certificate, Test Certificates, Compliance Certificate, Guarantee/Warranty Certificate and other documents mentioned in PO/TDC/Drawing.
- b. **To Purchase:**



Maharatna Company

BHARAT HEAVY ELECTRICALS LTD

VALVES PURCHASE

Trichy - 620 014, India

GENERAL TERMS AND CONDITIONS

Enquiry Reference: **ENSTA02357**

- i. FOR BHEL TRICHY case- Original Invoice, Duplicate for transporter copy, Packing list, LWB and Delivery challan, GST declaration as mentioned in point 3c.
- ii. FOR Site case- Original Invoice, Original LWB, Original Packing List, Original IBR documents, Original despatch clearance Certificate and Inspection report, Test certificates as per PO, Original Site Acknowledgment etc.
- c. **Identification:** Material code, Purchase Order, PO item serial number, Unique serial number if any should be provided in all despatch documents, materials and packing clearly.

8. **TENDER EVALUATION:**

a. **Techno-commercial Bid.**

- i. All vendors should submit General arrangement drawing, datasheet and C&I diagram (if any) of the offered product
- ii. Point by point technical confirmation of all pages of our technical specifications and commercial conditions are required with your sign and seal along with techno commercial offer.
- iii. Offers from supplier not having technical capability or not agreed for commercial terms, will be rejected.

b. **Price Bid.**

- i. Bidders qualified for part I will be intimated for participating in priced bid opening.
- ii. L1 bidder will be decided based on landed cost for the equipment to BHEL.

Indigenous Vendors

Total Landed cost/rate for each item = FOR Rate in INR (A) + Applicable Taxes (B) + Loading non-acceptance of commercial terms (C) – Applicable input tax credit (D)

A - Indigenous vendors submit offers on Free on Road (FOR), Stores, HPBP BHEL Trichy in INR.

B - Applicable GST and any other charges quoted by indigenous vendors will be added to the base price.

C - Loading for non-acceptance of payment terms, delivery schedule & liquidated damages (LD) will be added to the F.O.R. value for arriving the landed rate.

D - However, input tax credit shall be availed for GST, hence the same is excluded for arriving at the landed cost.

iii. In case of tie for the L1 positions,

- a. In the course of evaluation, if more than one bidder happens to occupy L1 status, effective L1 will be decided by soliciting discounts from respective L1 bidders.
- b. In case more than one bidder happens to occupy the L1 status even after soliciting discounts, the L1 bidder shall be decided by a toss/draw of lots, in the presence of the respective L1 bidders(s) or their representative(s).
- c. Ranking will be done accordingly, BHEL's decision in such situation shall be final and binding.

Note:

All clarifications / issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below

(1)
S Suresh
Deputy Manager
Valves Purchase
24 Building, 3rd Floor,
BHEL, Trichy-620014
+91 431 2578668
suresh.s@bhel.in

(2)
Ajay Kumar Gupta
AGM
Valves Purchase
24 Building, 3rd Floor,
BHEL, Trichy-620014
+91 431 2578156
ajaykumar.gupta@bhel.in
