



# PLANT STANDARD

HPBP TIRUCHIRAPPALLI

BPS 41117

Rev. No. 02

PAGE 1 OF 2

## STUD BOLTS FOR TEMPERATURE USE

(For medium of Temperature upto 425°C)

### 1.0 SCOPE

Covers the requirements for Stud Bolts for use in medium of temperature 425°C in the size range M12 to M39x3.

### 2.0 SPECIFICATION AND REFERENCE STANDARDS

Dimensions and preferred sizes	Fig 1 & Table 1 of this standard	
Preferred length size combination	Table 1 of this standard	
Tolerance	Product grade	A
	Indian Standard	IS: 1367 (Part 2)
Thread	Pitch	Table 1 of this standard
	Tolerance	6g
	Indian Standard	IS 4218 (Part 3, 5 & 6)
Material	Steel according to ASTM A193 - B7 Certified in quenched and tempered condition	
Manufacture	Thread rolling up to M24	
Mechanical Properties	As specified in ASTM A193-B7	
Marking	All studs shall be stamped B7 on any one side	
General requirements	Studs shall comply with TDC:5:164 in respect of requirements not covered in this standard except for cadmium plating.	

### 2.1 Referred standards (Only current versions are applicable)

IS 1367 Part 2	Technical supply conditions for threaded steel fasteners
IS 1368	Dimensions for ends of parts with external ISO metric threads
IS 4218 Part 3,5 & 6	ISO metric screw threads
ASTM A193	Specification for alloy steel and stainless steel bolting material for high temperature service
TDC:5:164	TDC for alloy steel studs to specification ASTM SA193 Gr B7 / B7m / B16 oil field equipment

### 3.0 DESIGNATION

A Grade 'A' Stud to this standard of thread size M16 and nominal length 90mm shall be designated as:

### 3.1 On Drawings

i) Material Specification column	A193 - B7
ii) Description Column	STUD BOLT GR A T425 M16x90
iii) Drawing Number Column	BPS 41117
iv) Material Code column:	4111716090

Revisions			Approved		
Brought upto date *			STANDARDS SECTION CONTRACT ENGINEERING AND CO-ORDINATION HPBP, TIRUCHIRAPPALLI		
Rev. No. 02	Amd. No.	Reaffirmed	Prepared	Issued	Dt of 1st Issue
Dt. JUN. 1997	Dt.	Year	STANDARDS	STANDARDS	DEC 1986

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# PLANT STANDARD

HPBP TIRUCHIRAPPALLI

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### 3.2 Ordering Description

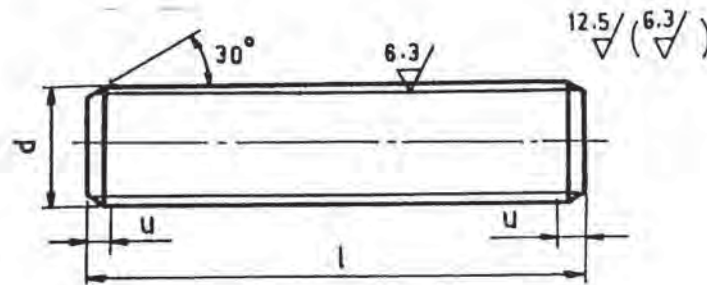
For placing indents, issuing enquiries and on purchase order, Ordering Description given below shall be followed.

Stud M16x90 - BPS: 41117 A - ASTM A193-B7

### 4.0 ADDITIONAL INFORMATION

4.1 Copies of this standard and TDC:5:164 shall be enclosed along with the purchase order

**FIG. 1, DIMENSIONS FOR STUD BOLTS**  
(All dimensions are in millimetres)



'u' according to IS:1368

**TABLE 1 PREFERRED LENGTH - SIZE COMBINATION FOR STUD BOLTS**  
(All dimensions are in millimetres)

Thread Size d	Nominal Length (l)																	
	60	70	80	90	100	110	120	130	140	150	160	170	180	200	225	240	250	280
	Weights																	
M12		62	70.9															
M16				135.9	151.7		183.3	*										357.1
M20				221.9			280.9		303									
M24							390.4			496.9			603.4					
(M27)									591.4				770.8					
M30									722.9		832.4							
(M33)													1208.6					
(M39x3)														1875.7				

**Note:**

1. Preferred lengths are in between the stepped bold lines
2. Weights are given in Kg per 1000 numbers only
3. Sizes in brackets are non-preferred



# PLANT STANDARD

HPBP TIRUCHIRAPALLI

EPS: 41201

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Based on IS: 1366-1982

## SLOTTED CHEESE HEAD SCREWS

### 1.0 SCOPE

Covers the requirements of Slotted Cheese Head Screws in the size range M1.6 to M10.

### 2.0 SPECIFICATION AND REFERENCE STANDARDS

Dimensions and Preferred sizes	Table 1 of this standard	
Preferred length-size combination	Table 2 of this standard	
Tolerance	Product grade	A
	Indian Standard	IS: 1367 (Part 2)
Thread	Pitch	Coarse
	Tolerance	6g
	Indian Standard	IS: 4218 (Part 3, 5 & 6)
Material	Steel	
Mechanical properties	Property class	4.8
	Indian Standard	IS: 1367 (Part 3)
Sampling and Acceptability	Indian Standard	IS: 2614
General requirements	Screws shall comply with IS: 1366 in respect of requirements not covered in this standard	

### 2.1 Referred Standards (Only the relevant parts of current versions are applicable)

IS: 1366 Specification for slotted cheese head screws

IS: 1367 Technical supply conditions for threaded steel fasteners

IS: 2614 Methods for sampling of fasteners

IS: 4218 ISO Metric screw threads

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REVISIONS

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ENGINEERING AND DEVELOPMENT CENTRE  
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# PLANT STANDARD

HPBP TIRUCHIRAPALLI

BPS: 41201

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## 3.0 DESIGNATION

A Grade A Slotted Cheese Head Screw to this standard of thread size M6 and nominal length 30mm shall be designated as:

### 3.1 On Drawings:

- i) Material Specification column: IS: 1366
- ii) Description column : SCRU SLT CHS GR A 4.8 M6x30
- iii) Drawing Number column : 4120106030
- iv) Material Code column : 4120106030

### 3.2 Ordering Description

For placing indents, issuing enquiries and on purchase order, the Ordering Description given below shall be followed.

Cheese Head Screw M6x30 IS: 1366-4.8

## 4.0 ADDITIONAL INFORMATION

- 4.1 Property class 6.6 is also acceptable
- 4.2 For Cadmium plated slotted cheese head screws, refer BPS: 41241.

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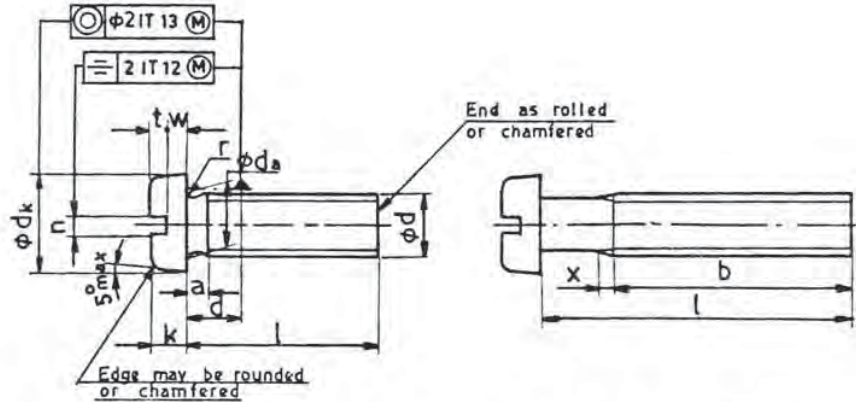


PLA

HPB

TABLE 1 DIMENSIONS OF HEAD SCREWS

(All dimensions are in mm)



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Thread size	d	M1.6	M2	M3	M4	M5	M6	M8	M10
b	Max	25.7	25.8	26	39.4	39.6	40	40.5	41
	Min	25	25	25	38	38	38	38	38
dk	Max	3	3.8	5.5	7	8.5	10	13	16
	Min	2.86	3.62	5.32	6.78	8.28	9.78	12.73	15.73
da	Max	2	2.6	3.6	4.7	5.7	6.8	9.2	11.2
	Min	1	1.3	2	2.6	3.3	3.9	5	6
k	Max	0.86	1.16	1.86	2.46	3.12	3.6	4.7	5.7
	Min	0.6	0.7	1	1.51	1.51	1.91	2.31	2.5
n	Max	0.46	0.56	0.86	1.26	1.26	1.66	2.06	2.5
	Min	0.1	0.1	0.1	0.2	0.2	0.25	0.4	0.4
r	Min	0.1	0.1	0.1	0.2	0.2	0.25	0.4	0.4
t	Min	0.4	0.55	0.8	1.1	1.3	1.6	2	2.4
w	Min	0.35	0.45	0.8	1.1	1.3	1.6	2	2.4

**Note:**

1. Shank dia  $\approx$  pitch dia = Major dia permissible.
2. a and x according to IS: 1369 'Dimensions for screw thread run outs and undercuts'.
3. Thread end when chamfered shall be according to IS: 1368 'Dimensions for ends of bolts and screws'.

TAPER POINT OR SLOTTED PH- SIZE COMBINATION HESE HEAD SCREWS

(All dimensions are in millimetres)

Nominal length 'l'			Thread size d							
Nom	Max	Min	M1.6	M2	M3	M4	M5	M6	M8	M10
2	2.2	1.8								
2.5	2.7	2.3								
3	3.2	2.8								
4	4.3	3.7								
5	5.3	4.7								
6	6.3	5.7								
8	8.3	7.7								
10	10.3	9.7			0.7	1.3				
12	12.4	11.6						4.1		
(14)	14.4	13.6								
16	16.4	15.6								
20	20.5	19.5				2.2		5.5		
25	25.5	24.5			1.5					
30	30.5	29.5						7.3		
35	35.5	34.5								
40	40.5	39.5								
45	45.5	44.5								
50	50.5	49.5								
55	56	54				4.6				
60	61	59								
(65)	66	64				5.4				
70	71	69								
80	81	79								

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WEIGHTS

**Note:**

1. Screws with nominal length above the dotted stepped line are threaded up to the head (b=l-a)
2. Sizes in brackets are non-preferred.
3. Preferred lengths are in between the stepped bold lines.
4. For stocked sizes refer EPS components book-let.
5. Weights are given in Kg. per 1000 numbers only.



# PLANT STANDARD

HPBP TIRUCHIRAPALLI

BPS: 41302

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Based on IS:1364 (part 4)-1985

## HEXAGON THIN NUTS, PRODUCT GRADES A&B

(Property Class 05)

### 1.0 SCOPE

Covers the requirements of hexagon thin nuts in the size range M3 to M39x3.

### 2.0 SPECIFICATION AND REFERENCE STANDARDS

Dimensions and preferred sizes	Table 1 of this standard	
Tolerances	Product grades	A for nuts with $d \leq M16$ B for nuts with $d > M16$
	Indian Standard	IS: 1367 (Part 2)
Thread	Pitch	Table 1 of this standard
	Tolerance	6H
	Indian Standard	IS:4218 (Parts 3, 5 & 6)
Material	Steel	
Mechanical properties	Property Class 05	
	Indian Standard	IS: 1367 (Part 6)
Sampling and Acceptability	Indian Standard	IS: 2614
General requirements	Nuts shall comply with IS: 1364 in respect of requirements not covered in this standard	

### 2.1 Referred Standards (Only the relevant parts of current versions are applicable).

IS: 1364 Specification for hexagon head bolts, screws and nuts of product grade A&B. Part 4 - Hexagon thin nuts.

IS: 1367 Technical supply conditions for threaded steel fasteners

IS: 2614 Method of sampling fasteners

IS: 4218 ISO Metric screw threads

REVISIONS

DATE

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# PLANT STANDARD

HPBP TIRUCHIRAPALLI

BPS: 41302

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## 3.0 DESIGNATION

A Grade A Hexagon Thin Nut to this standard of thread size M10 shall be designated as:

### 3.1 On Drawings:

- i) Material Specification column : IS:1364 (for nuts with  $d \leq M30$ )
- ii) Description column : THIN NUT HEX GR A 05 M10
- iii) Drawing Number column : 4130210000
- iv) Material Code column : 4130200010

### 3.2 Ordering Description

For placing indents, issuing enquiries and on purchase order, the Ordering Description given below shall be followed. (Typical examples)

- i) Hexagon Thin Nut (Chamfered) M10 IS: 1364 -(Part 4)-05 for nuts with  $d \leq M30$
- ii) Hexagon Thin Nut (Chamfered) M33 BPS: 41302-05 for nuts with  $d = M33$
- iii) Hexagon Thin Nut (Chamfered) M39x3 BPS: 41302 for nuts with  $d \geq M36x3$

## 4.0 ADDITIONAL INFORMATION

- 4.1 The hardness value in Table 4 of IS: 1367 Part 6 (for coarse pitch series) shall be applicable for thread sizes  $\geq M36x3$
- 4.2 For Cadmium plated thin nuts of this type, refer BPS: 41342.
- 4.3 Copies of this standard shall be enclosed alongwith the purchase order for thread sizes M33 and above.

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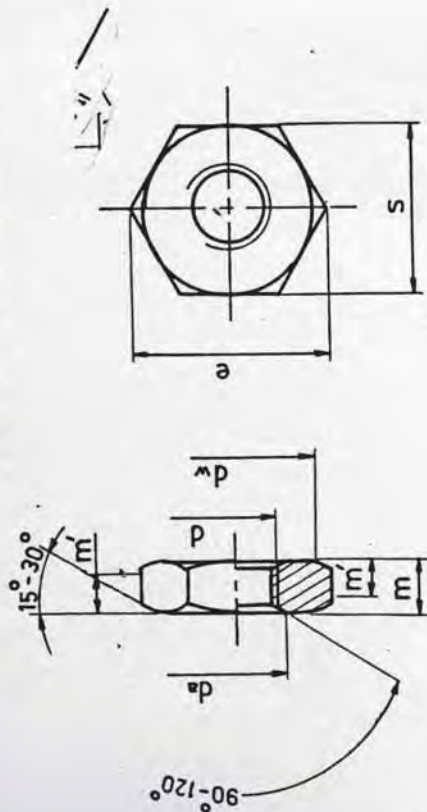
BPS: 4102

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TABLE-2 DIMENSIONS FOR HEXAGON THIN NUTS



Note:

1. Sizes in brackets are non-preferred.
2. Weights are given, in Kg per 1000 numbers only.
3. For stocked sizes refer BPS components book-let.

m' = Effective gauging height (All dimensions are in mm)

Thread size d	M3	M4	M5	M6	M8	M10	M12	M16	M20	M24	M30	(M33)	M36x3	(M39x3)
P(Pitch)	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2.5	3	3.5	3.5	3	3
da	3	4	5	6	8	10	12	16	20	24	30	33	36	39
da	3.45	4.6	5.7	6.7	8.75	10.8	13	17.3	21.6	25.9	32.4	35.64	38.9	42.1
dw	4.6	5.9	6.9	8.9	11.6	14.6	16.6	22.5	27.7	33.2	42.7	46.67	51.1	56
e	6.01	7.66	8.79	11.05	14.38	17.77	20.03	26.75	32.95	39.55	50.85	55.37	60.79	66.44
m	1.8	2.2	2.7	3.2	4	5	6	8	10	12	15	17	18	20
m'	1.55	1.95	2.45	2.9	3.7	4.7	5.7	7.42	9.10	10.9	13.9	15.9	16.9	18.7
s	1.24	1.56	1.96	2.32	2.96	3.76	4.56	5.94	7.28	8.72	11.1	12.7	13.5	14.96
s	5.5	7	8	10	13	16	18	24	30	36	46	50	55	60
Weight	5.32	6.78	7.78	9.78	12.73	15.73	17.73	23.67	29.16	35	45	49	53.8	58.8
Weight					3.1	6.7	11.6	20.3	36.3	58.0	115			251

\* Pitch of the thread.



# PLANT STANDARD

HPBP TIRUCHIRAPPALLI

BPS 41319

Rev. No. 03

PAGE 1 OF 2

## NUTS FOR TEMPERATURE USE

(For medium of temperature upto 425 ° C)

### 1.0 SCOPE

Covers the requirements of hexagon nuts for use in medium of temperature upto 425 ° C and in the size range M8 to M45x3.

### 2.0 SPECIFICATION AND REFERENCE STANDARDS

Dimensions and preferred sizes	Fig 1 & Table 1 of this standard	
Tolerance	Product grade	A for nuts with d ≤ M16 B for nuts with d > M16
	Indian Standard	IS 1367 (Part 2)
Thread	Pitch	Table 1 of this standards
	Tolerance	6H
	Indian Standard	IS 4218 (Part 3, 5 & 6)
Material	Steel to ASTM A 194 2H Certified	
Testing	The finished nut shall satisfy the requirements of hardness, proof load and cone proof load, tests as specified in ASTM A194	
General requirements	Nuts shall comply with TDC:5:166 in respect of requirements not covered in this standard. except for cadmium plating	

### 2.1 Referred standards (Only the relevant parts of current versions are applicable)

IS 1367 (Part 2)	Technical supply conditions for threaded steel fasteners
IS 4218 (Part 3,5 & 6)	ISO metric screw threads
TDC:5:166	Carbon steel nuts for OFE & other applications asper A 194 GR 2H/2HM
ASTM A194	Specification for carbon and alloy steel nuts for bolts for high pressure and high temperature service.

### 3.0 DESIGNATION

A Grade 'A' hexagon nut to this standard of thread size M8 shall be designated as :

#### 3.1 On Drawings

i) Material Specification column	ASTM A 194 - 2H
ii) Description Column	NUT HEX GR A T425 M8
iii) Drawing Number Column	BPS 41319
iv) Material Code column:	4131900008

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Revisions Brought upto date			Approved STANDARDS SECTION CONTRACT ENGINEERING AND CO-ORDINATION HPBP, TIRUCHIRAPPALLI		
Rev. No. 03	Amd. No.	Reaffirmed	Prepared STANDARDS	Issued STANDARDS	Dt of 1st Issue DEC 1986
Dt. JUN 1997	Dt.	Year			



# PLANT STANDARD

HPBP TIRUCHIRAPPALLI

BPS 41319

Rev. No. 03

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## 3.2 Ordering Description

For placing indents, issuing enquiries and on purchase order, Ordering Description given below shall be followed. (Typical examples)

Hex Nut M8 to BPS : 41319-A-ASTM A194-2H for nuts with  $d \leq M16$

Hex Nut M20 to BPS : 41319-B-ASTM A194-2H for nuts with  $d > M16$  and  $d < M36 \times 3$

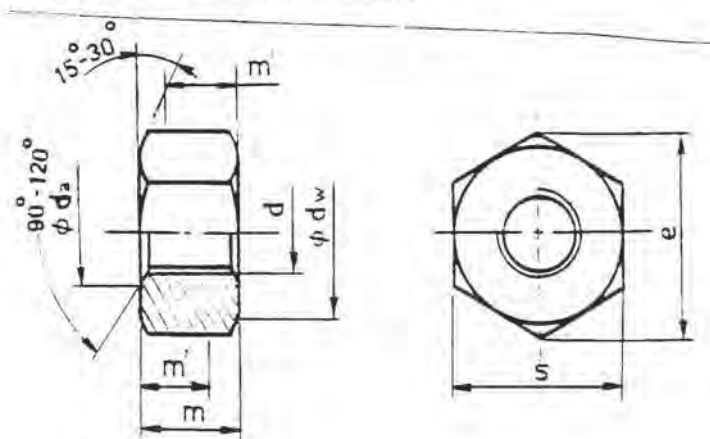
Hex Nut M36x3 to BPS: 41319-B-ASTM A194-2H for nuts with  $d \geq M36 \times 3$

## 4.0 ADDITIONAL INFORMATION

4.1 Copies of this standard and TDC:5:166 shall be enclosed along with the purchase order.

Figure 1 DIMENSIONS FOR HEXAGON NUTS

(All dimensions are in millimetres)



'm' = Effective gauging height

TABLE 1

(All dimensions are in millimetres)

Thread Size d	d <sub>a</sub>		d <sub>w</sub>	e		m		m'	s		Weight
	Min	Max		Min	Max	Min	Max		Min	Max	
M8	8	8.75	11.6		14.38	8	7.64	6.1	13	12.73	6.0
M10	10	10.80	14.6		17.77	10	9.64	7.7	16	15.73	10.8
M12	12	13.00	16.6		20.03	12	11.57	9.3	18	17.73	16.5
M16	16	17.30	22.5		26.75	17.1	16.40	13.1	24	23.67	33.0
M20	20	21.60	27.7		32.95	20.7	19.40	15.5	30	29.16	64.5
M24	24	25.90	33.2		39.55	24.2	22.90	18.3	36	35.00	110.0
(M27)					45.20	27.6	26.30	21.0	41	40.00	166.0
M30	30	32.40	42.7		50.85	30.7	29.10	23.3	46	45.00	231.0
(M33)					55.37	33	31.40	25.1	50	49.00	299.0
M36x3	36	38.90	51.1		60.79	36.6	35.00	28.6	55	53.80	364.0
(M39x3)					66.44	39	37.40	29.9	60	58.80	485.0
(M45x3)				80.8		45	43.40	34.7	70	68.80	750.0

**NOTE :**

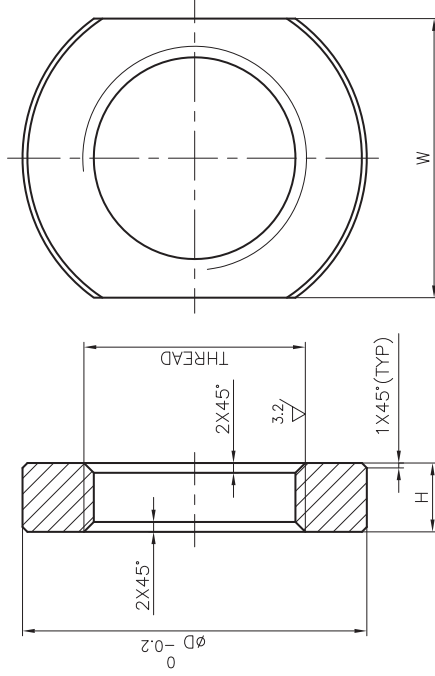
- Sizes in brackets are non-preferred.
- Weights are given in Kg per 1000 numbers only.

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

86£60-0000-A-£ DRAWING NO.

12.5 / 3.2

SL. No.	DRAWING No.	COMPONENT CODE	RAW MATERIAL DETAILS			SCRAP SORT	DIMENSIONS			WT. IN Kgs.		
			SUGG. SIZE	SPECN.	HEAT TREAT.		WT. (Kgs)	ØD	H		W	THREAD
01.	3-V-S833-09398/01	93 059 604 0000	Ø56 x 20	SA 105 CERTIFY	NR	0.39	10	56	14	50	M36X2	0.15
02.	3-V-S836-09398/01	93 103 470 0000	Ø80 x 26	SA 105 CERTIFY	NR	1.03	10	80	20	70	M52X2	0.44
03.	3-V-S837-09398/01	93 103 471 0000	Ø100 x 27	SA 105 CERTIFY	NR	1.66	10	100	21	90	M60X2	0.92
04.	3-V-S843-09398/01	93 108 304 0000	Ø100 x 20	SA 105 CERTIFY	NR	1.23	10	100	14	90	M64X2	0.57
05.	3-V-S860-09398/01	93 103 629 0000	Ø70 x 20	SA 105 CERTIFY	NR	0.60	10	70	14	60	M45X2	0.23
06.	3-V-S863-09398/01	93 103 637 0000	Ø80 x 20	SA 105 CERTIFY	NR	0.79	10	80	14	70	M56X2	0.27
07.	3-V-C036-09398/01	93 105 086 0000	Ø100 x 20	SA 105 CERTIFY	NR	1.23	10	100	14	90	M56X2	0.59
08.	3-V-F502-09398	93 109 834 0000	Ø70 x 20	SA 105 CERTIFY	NR	0.60	10	70	14	60	M42X2	0.25
09.	3-V-F508-09398	93 130 294 0000	Ø100 x 27	SA 105 CERTIFY	NR	1.66	10	100	21	90	M64X2	0.91



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.  
TIRUCHIRAPPALLI-620014.

365-121  
DEPT: VL  
CODE: 320  
TITLE:

REV: 04  
DATE: 18.04.06  
ALTERED BY: M.SRINIVASAN  
CHD & APPD: P.Boomnathan

SL. Nos. 08 & 09 INCLUDED.

SCALE: NTS  
WEIGHT (KG): REF. TABLE

NAME: M.SRINIVASAN  
SIGN: P.Boomnathan  
REFERENCE INFORMATIONS: CAD :C309398

DATE: 18.04.06  
NO. OF VAR: 18.04.06  
18.04.06

**RETAINER**

CARD CODE: U 01  
DRAWING NO.: 3-V-0000-09398

REV: 04

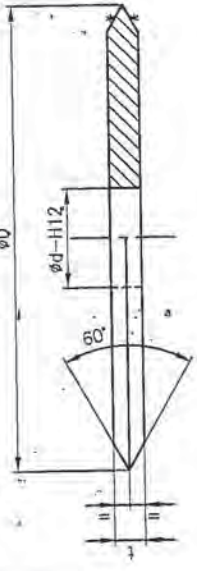
ALL DIMENSIONS ARE IN MILLIMETRES. FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT OCP / QP.

12.5 /  $\Delta$

$\phi 6$ to $\phi 8$ -H12	+0.150
	-0.000
$\phi 10$ to $\phi 18$ -H12	+0.180
	-0.000
$\phi 18$ to $\phi 30$ -H12	+0.210
	-0.000

3-V-0000-09400/06  
ON DIMENSIONS

SL. No.	DRAWING NO.	COMP. CODE	RAW MATERIAL		DIMENSIONS			FINISHED Wt. (kg)	
			MATL. SPECN.	SIZE	WT. (kg)	$\phi D$	L		$\phi d$ -H12
01	3-V-S856-09400	---	SA 105	$\phi 36 \times 5$	0.03	32.5	3.15	8.4	0.02
02	3-V-S858-09400	---	SA 105	$\phi 40 \times 5$	0.04	39.0	3.15	8.4	0.02
03	3-V-S833-09400	930596850000	SA 105	$\phi 63 \times 5$	0.12	51.0	3.15	8.4	0.05
04	3-V-S847-09400	931036300000	SA 105	$\phi 80 \times 5$	0.19	63.0	3.15	8.4	0.07
05	3-V-S836-09400	931034790000	SA 105	$\phi 80 \times 5$	0.19	74.0	3.15	8.4	0.10
06	3-V-S837-09400	931034800000	SA 105	$\phi 100 \times 5$	0.30	97.0	3.15	8.4	0.18
07	3-V-S850-09400	931034810000	SA 105	$\phi 80 \times 5$	0.19	67.0	3.15	8.4	0.08
08	3-V-K318-09400	931034380000	SA 105	$\phi 63 \times 5$	0.12	51.0	3.15	6.4	0.05
09	3-V-N244-09400	931064690000	SA 105	$\phi 100 \times 5$	0.30	94.0	3.15	16.5	0.18
10	3-V-N248-09400	931064700000	SA 105	$\phi 80 \times 5$	0.19	74.0	3.15	16.5	0.10
11	3-V-N645-09400	931083020000	SA 105	$\phi 100 \times 5$	0.30	94.0	3.15	20.5	0.18
12	3-V-N628-09400	931085940000	SA 105	$\phi 63 \times 5$	0.12	52.0	3.15	20.5	0.05
13	3-V-N790-09400	931092230000	SA 105	$\phi 63 \times 5$	0.12	51.0	3.15	16.5	0.05
14	3-V-F503-09400	931101260000	SA 105	$\phi 80 \times 5$	0.20	74.0	3.15	12.5	0.11



\* PERIPHERY OF THIS INDICATOR DISC SHALL BE COATED WITH LUMINOUS PAINT.

REV	DATE	ALTERED	BY
06	28-10-20	CHD & APPD	
05	24.12.98	CHD & APPD	

SL. No. 14 INCLUDED.

SL. No. 13 INCLUDED.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

CS

DRAWING RETRACED WITH REVISION 05 ON 24.12.98

NO. OFF	DESCRIPTION	MATL. CODE	MATL. SPECN.	HEAT TREATMENT	SCRAP SORT	NET WT. (KG)	GROSS WT. (KG)	DRAWING NO.	ITEM NO.
BHARAT HEAVY ELECTRICALS LTD. UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.									
DEPT. VL		SCALE		WEIGHT (KG)		REFERENCE INFORMATION		NO. OF VAR.	
CODE 320		NTS.		REF. TABLE		CAD: C309400		24.12.98	
TITLE		INDICATOR DISC		U 01		DRAWING NO.		06	

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.

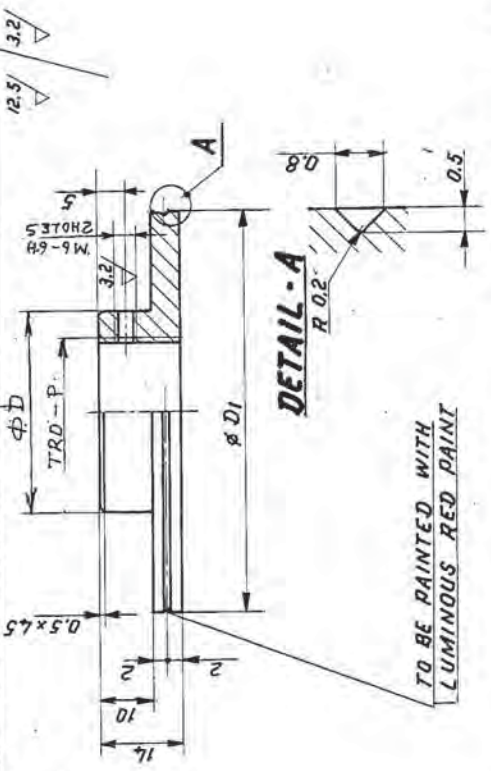
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP/QP

FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)

DRAWING NO. 3.V.0000-09681/03

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. NO.	DRAWING NO.		RAW MATERIAL		DIMENSIONS			FINISHED WT. (Kg)	APPLICABLE TYPE NOS.
	COMP. CODE	SPECN.	SIZE	CODE	WT. (Kg)	Ø D	Ø D1		
01	3-V-A358-09681	SA 105 NORMALISED	Ø 50 X 18	15339142	0.28	25.3	43	0.5625" - 10 AGME-2G	A-358
02	3-V-A359-09681	SA 105 NORMALISED	Ø 63 X 18	15339143	0.44	28.4	59	0.685" - 7 AGME-2G	A-359
03	3-V-A360-09681	SA 105 NORMALISED	Ø 80 X 18	15339144	0.71	38	77	1.0625" - 5 AGME-2G	A-360
04	3-V-K333-09681	SA 105 NR CERTIFY	Ø 63 X 18	15339143	0.44	40	58	TR 24 X 3	2"/C 300 GLV
05	3-V-K334-09681	SA 105, NR CERTIFY	Ø 63 X 18	15339143	0.44	44	62	TR 28 X 3 - 8H	3"/C 300 GLV
06	3-V-K335-09681	SA 105, NR CERTIFY	Ø 100 X 18	15339134	1.10	52	86	TR 36 X 3 - 8H	6"/C 300 GLV
07	3-V-2925-09681/1	SA 105, NR CERTIFY	Ø 125 X 18	-	1.6	60	112	TR 44 X 4 - 8H	8"/C 300 GLV



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125 / 32

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

**ROLL OVER FRAME**

**Bharat Heavy Electricals Ltd.,**  
BOILER PLANT UNIT  
TIRUCHIRAPALLI-620 014

DATE: 21.2.81

SCALE: NTS

WEIGHT (KG):

REF TO ASY JOLD DRG

DEPT: VL

UNDOING CLAMP

CODE: 320

ITEM NO.:

VAR NO.:

DRAWING NO.:

DESCRIPTION:

ITEM NO.:

VAR NO.:

MATL CODE:

MATL SPEC:

UNIT WT:

QTY:

NO. OF VAR:

DATE:

SIGN:

NAME:

V.G. KRISHNAN

V.G. KRISHNAN

REV: 03

DRAWING NO. 3.V.0000-09681

TITLE: RING OF INDEX

CHROME PLATE THE RING OF INDEX TO A DEPTH OF 0.05 mm BRIGHTLY

REV: 01

DATE: 22.8.81

ALTD: N.D.

CHKD: BAPPAD

SL. NOS. A, S & G INCLUDED.

COMP. CODES INCLUDED.

SL. NO. 7 INCLUDED.

NOTES UPDATED

REFER DCN. NO. CS: 0647

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP/QP

FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)

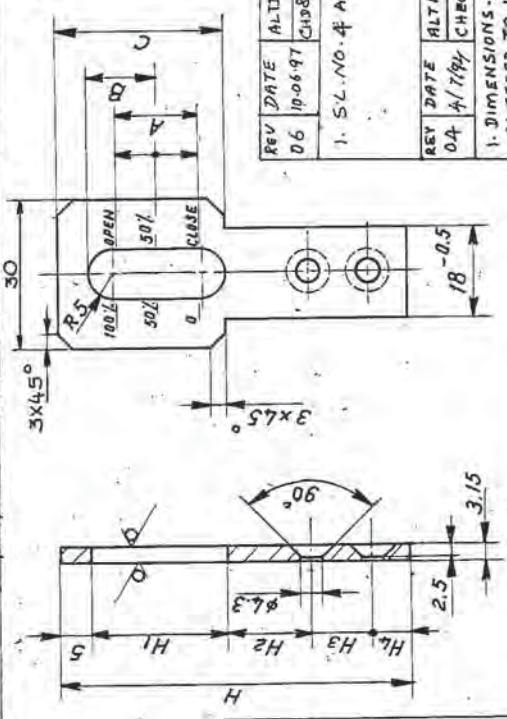
3-V-0000-09682/07

DRAWING 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.

SL. No.	DRG. NO.	RAW MATERIAL			DIMENSIONS								COMP CODE	FINIS. HD Wt. (kg)	APPLICABLE TYPE NO.
		SPECN.	SIZE	CODE	Wt. (kg)	H	H1	H2	H3	H4	A	B			
01	3-V-A358-09682	BMC-10	SH-60x35-3.15	150H182	0.052	56	25	13	8	5	12	12.5	30		A-358
02	3-V-A359-09682	BMC-10	SH-70x35-3.15	150H182	0.061	67	29	15	11	7	16	14.5	34		A-359
03	3-V-A360-09682	BMC-10	SH-110x35-3.15	150H182	0.095	107	53	26	15	8	40	26.5	58		A-360
04	3-V-K333-09682/02	IS 2062 Fe 410 NR CERTIFY W/B	PL. 100x35-3.15	150H182	0.087	90	33	27	15	10	27	16.5	38	93 103 520 0000	2"/C 300 GLV
05	3-V-K334-09682/02	IS 2062 Fe 410 NR CER. W/B	PL. 110x35-3.15	150H182	0.095	100	43	27	15	10	31	21.5	48	93 103 521 0000	3"/C 300 GLV
06	3-V-K335-09682/02	IS 2062 Fe 410 NR CERTIFY W/B	PL. 135x35-3.15	150H182	0.12	125	68	27	15	10	35	34	73	93 103 522 0000	6"/C 300 GLV
07	3-V-K353-09682/03	IS 2062 F2	PL. 130x35-3.15	15 011 182	0.11	121	44	31	15	10	58	22.5	75	93 103 750 0000	3"/C 300 RGLV
08	3-V-K354-09682/03	NR CER. 410 W/B	PL. 155x35-3.15	15 011 182	0.134	147	90	27	15	10	75	45	100	93 103 751 0000	6"/C 300 RGLV

NOTE: 1. CHROME PLATE TO A DEPTH OF 0.05 mm. BRIGHTLY AND FILL THE SCALE LINES WITH LUMINOUS RED PAINT  
 2. FOR SL. NO. 1, 50% MARKING ON SCALE NEED NOT BE MADE



REV DATE	07	6-11-97	ALT'D: N. DHANAPAL
REV DATE	06	10-04-97	ALT'D: N. DHANAPAL
REV DATE	04	4/7/94	ALTERED: N. DHANAPAL

1. SL. NO. 4, 5 AND 6 DIMENSION "A" CORRECTED.  
 2. REFER DCN. NO. CS: 0778

1. SL. NO. 4 AND 6 INCLUDED  
 2. REFER DCN. NO. CS: 0347

REV DATE 03/28/1296  
 ALT'D: T.C.  
 CHD: SAPP  
 NOTES UPDATED  
 REFER DCN. NO: 0647

REV DATE 11-1-92  
 ALT'D: [Signature]  
 CHKD: [Signature]  
 IN SL. NOS. 7 & 8, RAW MATL. SIZE & WT. CHANGED FROM 110 X 35-3.15 L. 0.085 AND 135 X 35-3.15 L. 0.12 TO 130 X 35-3.15 L. 0.10 AND 155 X 35-3.15 L. 0.134 RESPECTIVELY.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT  
**MICROFILMED ON 09/11/85**  
**FRONT COVER FRAME 11/11/85**

DEPT. V/L  
 CODE 320  
 SCALE NTS  
 REF. TO ASBY (OLD ORD)

REV DATE 01/22/89  
 ALT'D: [Signature]  
 CHKD: [Signature]  
 1. DIMENSIONS - H, H1, A, B, C, H2 ALTERED TO 166, 451, 95, 23.5, 60  
 2. REFER DCN. NO. CS: 0347

REV DATE 25-2-92  
 ALT'D: [Signature]  
 CHKD: [Signature]  
 SL. NOS. 07 & 08 INCLUDED.

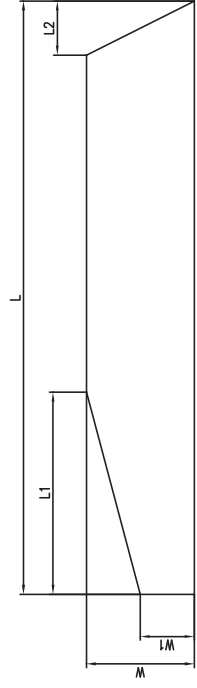
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REV DATE	03	25-2-92	ALTERED: [Signature]
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REV DATE	179	07/06/1296	ALT'D: T.C.
REV DATE	180	07/06/1296	

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

3-V-0000-09840/5  
DRAWING ON SKIN

SL. No.	DRAWING No.	COMP. CODE	SPECN	RAW MATERIAL		DIMENSIONS							NET WT(Kg.)	REMARKS
				SIZE	CODE	GROSS WT(KG)	L	L1	W	W1	t	L2		
01	3-V-K011-09840/01	93 101 916 0000	IS 2062 Fe -410MA	PL-10-225x35	15011098	0.62	213	77	30	10	10	7	0.433	10"/C150 GV
02	3-V-K163-09840/02	93 102 574 0000	NR, CERTIFY	PL-10-230x30	15011098	0.54	220	60	25	10	10	7	0.38	8"/300 GV
03	3-V-K164-09840/02	93 102 575 0000		PL-10-230x30	15011098	0.54	220	60	25	10	10	5	0.39	10"/C300 GV
04	3-V-C757-09840	93 130 323 0000		PL-10-240x30	15011098	0.56	226	60	25	10	10	2	0.42	10"/1500 GV

12.5/d



NO. OF	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.5 ON 9.08.04

BHARAT HEAVY ELECTRICALS LTD. UNIT - HIGH PRESSURE BOILER PLANT. THIRUCHIRAPPALLI #20014.		DRN	V.BAIRAVAN	SIGN	DATE	9.08.04	NO. OF VAR.
DEPT	385-121	GHD	R.L.N			9.08.04	
VL		APPD	M.RAJKUMAR	REFERENCE INFORMATION		9.08.04	
SCALE	NTS	WEIGHT (KG)		CAD REFER:	C309840		
CODE							
TITLE	RIB						
		SARD CODE	U 01				
		DRAWING NO.	3-V-0000-09840				
		REV	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.

REV	DATE	ALTERED	V.B
5	9.08.04	GHD & APPD	M.R.K
SL NO.04 INCLUDED			



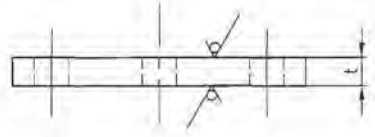
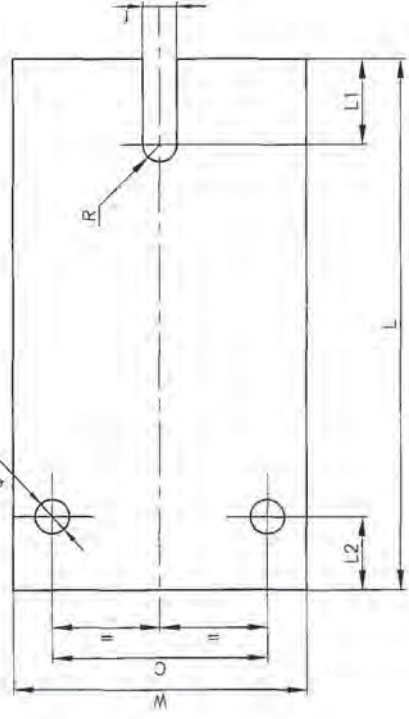
ALL DIMENSIONS ARE IN MILLIMETRES. FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP / OP.

09860-0000-A-ε  
ON 21/01/2002

SL. NO.	DRG. NO.	COMP. CODE	SIZE	MATERIAL SPECN.	CODE	WT. (kg)	DIMENSIONS										NET WT (kg)	VALVE TYPE
							L	L1	L2	W	C	R	gd	t	f			
01	3-V-K011-09860/02	931018120000	120x230 PL.10	IS 2062 Fe 410WB	15 011 098	2.30	220	40	30	88	11	14	10	22	2.00	10"-150C-GV		
02	3-V-K164-09860/01	931025510000	120x260 PL.10		15 011 098	2.45	250	40	30	88	11	14	10	22	2.30	10"-300C-GV		
03	3-V-K268-09860/01	9310298660000	120x140 PL.10		15 011 098	1.32	140	20	30	88	7	14	10	14	1.27	65/40 GV		
04	3-V-N209-09860/02	931101800000	120x230 PL.10		15 011 098	1.20	145	10	30	88	7	14	10	14	1.15	3"-300C-GV		
05	3-V-N631-09860/00	931107130000	130x285 PL.10		15 011 098	2.60	275	40	30	120	11	14	10	22	2.4	12"-300C-GV		

12.5 / A

Ø2-HOLES



NO. OF OFF.	DESCRIPTION	MATL. CODE	IS 2062 Fe410WB CERTIFY	NORMALISED	10	GROSS WT (kg)	405
				HEAT TREATMENT			

TYPE OF PRODUCT: CS  
OR NAME OF CUSTOMER/PROJECT: CS  
DRG. RETRACED WITH REV.05 ON 26.11.2002 (REF. DCN:CS:0647)

DEPT	VL	SCALE	WEIGHT (KG)	DATE	NO. OF VAR.
365-121		NTS	REFER TABLE	26.11.02	

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

DRN	NAME	SIGN	DATE
CHD	P. BOOMINATHAN		26.11.02
APPD	K.S. RAMAN		26.11.02

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REV	DATE	ALTERED BY
05	26.11.02	CHD & APPD

SL. NUMBER 05 INCLUDED.

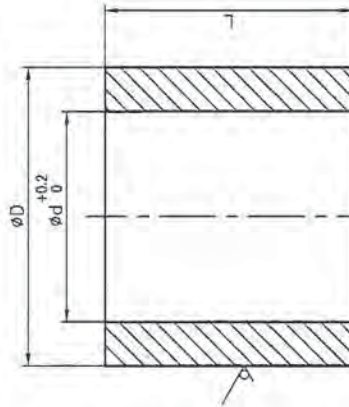
TITLE: BOTTOM PLATE  
CARD CODE: U 01  
DRAWING NO.: 3-V-0000-09860 05

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

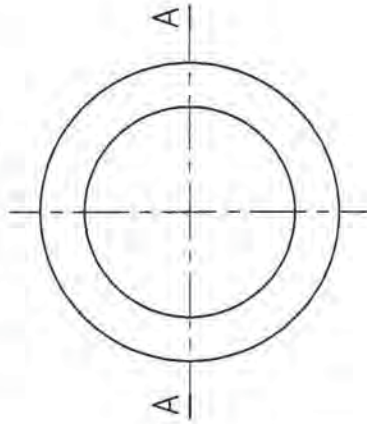
30/09860-0000-A-3  
ON SHIMBARD

SL.NO.	DRG.NO.	COMP.CODE	SIZE	MATL.SPECN.	CODE	WT.(kg)	DIMENSIONS		NET WT (kg)	VALVE TYPE
							ØD	L		
01	3-V-K011-09863/00	931018150000	Ø32 x 30	SA 105	15 339 140	0.19	32	25	0.11	10"-C150 & 3"-300C-GV
02	3-V-K020-09863/00	931018850000	Ø32 x 30		15 339 140	0.19	32	25	0.08	14"-C150
03	3-V-K268-09863/00	931029840000	Ø32 x 30		15 339 140	0.19	32	25	0.13	65/40 GV
04	3-V-K324-09863/00	931034590000	Ø32 x 30		15 339 140	0.19	32	25	0.15	2"-C800 GV
05	3-V-K357-09863/00	931038410000	Ø32 x 30		15 339 140	0.19	32	9	0.15	1"-C800 GV

12.5 / A



SECTION-AA



NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	NORMALISED	10	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING NO	ITEM No
											421
TYPE OF PRODUCT: CS DRG. RETRACED WITH REV.03 ON 14.06.2001 OR NAME OF CUSTOMER/PROJECT: BHARAT HEAVY ELECTRICALS LTD. UNIT: HIGH PRESSURE BOILER PLANT. THIRUCHIRAPALLI, 520014.											
DEPT. CODE: 365-121 VL. CODE:		SCALE: NTS WEIGHT (KG): REFER TABLE.		NAME: K.P.LEON SIGN: [Signature] DATE: 14.06.01		DRN: P. BOOMINATHAN CHD: K.S.RAMAN APPD: [Signature]		REFERENCE INFORMATION: CAD: C309863		NO. OF REV: 03	
TITLE: HUB										DRAWING NO: 3-V-0000-09863 03	



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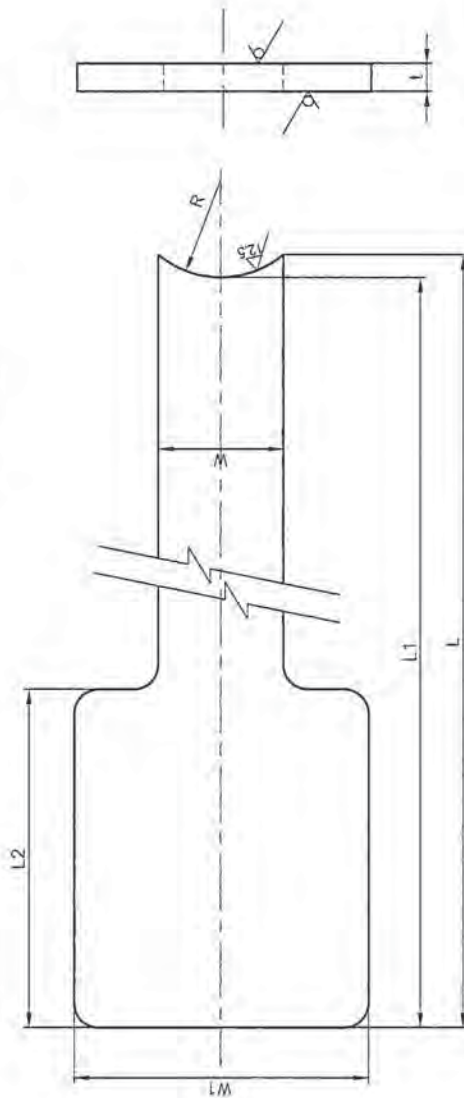
REV	DATE	ALTERED	K.P.Leon
03	14.06.01	CHD & APPD	[Signature]
SL. NUMBER 05 INCLUDED.			

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

90/49860-0000-3-V-0000  
ON SHIMMING

SL.NO.	DRG.NO.	COMP.CODE	SIZE	MATL.SPECN.	CODE	WT.(kg)	DIMENSIONS						NET WT (kg)	VALVE TYPE
							L1	W	W1	R	L	L2		
01	3-V-K011-09864/01	931018160000	300 x 65 PL.10		15 011 098	1.53	294	20	58	16	10	75	0.67	10"-150C-GV
02	3-V-K020-09864/02	931018810000	360 x 65 PL.10		15 011 098	1.84	348	20	58	16	10	40	0.76	14"-150C
03	3-V-K268-09864/01	931029850000	200 x 65 PL.10	IS 2062 Fe 410WA NR. CERTIFY	15 011 098	1.02	188	20	58	16	10	75	0.51	65/40 GV
04	3-V-K320-09864/00	931034260000	270 x 65 PL.10		15 011 098	1.37	263	20	58	16	10	75	0.63	6"-150C GV
05	3-V-K324-09864/00	931034580000	120 x 65 PL.10		15 011 098	0.61	113	20	58	16	10	75	0.40	2"-800C GV
06	3-V-G041-09864/00	931183990000	250 x 75 PL.10		15 011 098	1.50	238	20	70	16	10	75	0.70	65/1500 GLV
07	3-V-N209-09864/00	931101790000	180 x 65 PL.10		15 011 098	1.01	174	20	58	16	10	75	0.48	3"-300C GV

12.5 / ✓



NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING NO	ITEM NO
					10				404

TYPE OF PRODUCT: CS  
 OR NAME OF CUSTOMER/PROJECT: DRG. RETRACED WITH REV.06 ON 14.06.2001 (REF. DCN:HM:0207)

DRN	NAME	SIGN	DATE
CHD	K.P.LEON	[Signature]	14.06.01
APPD	P.Boomathan	[Signature]	14.06.01
	K.S.RAMAN	[Signature]	14.06.01

REFERENCE INFORMATION: CAD:C309864

DEPT	SCALE	WEIGHT (KG)	REFER TABLE
VL	NTS		
CODE			
TITLE	STRIKER PLATE		

CARD CODE: U 01  
 DRAWING NO: 3-V-0000-09864 06

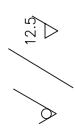
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

REV	DATE	ALTERED	BY
06	14.06.01	CHD & APPD	[Signature]

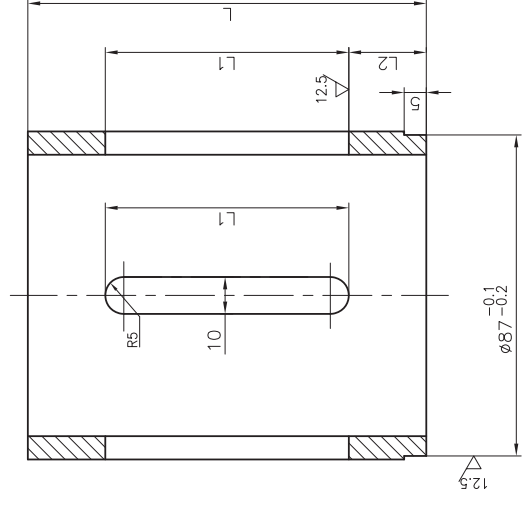
SL. NUMBER 07 INCLUDED.

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

88547-0000-A-3  
DRAWING NO.



Sl. No.	DRAWING NUMBER	COMPONENT CODE	MATL. SPECN.	DIMENSIONS:			SCRAP SORT	WEIGHT IN Kgs.	APPLICABLE TYPE
				SIZE	WT. (kg)	DIMENSIONS: L L1 L2			
01.	3-V-N205-24588	93 201 124 0000	SA 106 GR. B NR, CERTIFY	ø88.9 x 6.3-321	4.12	10 300 265 15	3.1	8"-C150-CV	
02	3-V-N244-24588	93 201 125 0000		ø88.9 x 6.3-356	4.56	10 335 275 20	3.5	8"-C300-CV	
03	3-V-N206-24588	93 201 126 0000		ø88.9 x 6.3-405	5.20	10 384 330 14	4.0	10"-C150-CV	
04	3-V-N207-24588	93 201 127 0000		ø88.9 x 6.3-465	6.04	10 444 383 26	5.0	12"-C150-CV	
05	3-V-F504-24588	93 201 128 0000		ø88.9 x 6.3-305	3.96	10 284 200 20	2.9	6"-C600-CV	
06	3-V-N631-24588	93 130 607 0000		ø88.9 x 6.3-475	6.05	10 460 383 42	5.2	12"-C300-CV	



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

TYPE OF PRODUCT: DRAWING REDRAWN WITH REV. 01 ON 06.11.2007  
OR NAME OF CUSTOMER/PROJECT:

DEPT	VL	SCALE	WEIGHT (KG)	REFER TABLE	DRN	NAME	SIGN	DATE	NO.OF VAR.
365-121		NTS			CHD	T.R.RAMAMOORTHY		06.11.07	
CODE	320				APPD	P.Boomnathan		06.11.07	
TITLE					REFERENCE INFORMATIONS				
					CAD REF.C324588				

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

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REV 01 06.11.07 ALTERED L.R.RAMAMOORTHY / CHD & APPD P.Boomnathan

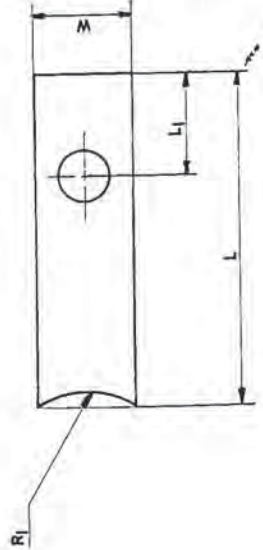
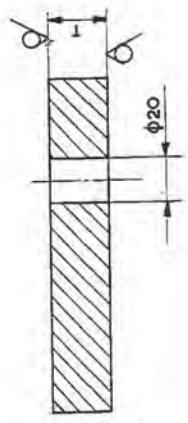
SL.No.06 INCLUDED

DRAWING NO. 3-V-0000-24588

REV 01

SL. NO.	DRAWING No.	COMP. CODE.	MATL. SPECN.	SUGGESTED RAW MATERIAL SIZE	GROSS WT IN SORT KG.	SCRAP	W	L	L <sub>1</sub>	R <sub>1</sub>	T	NET WT. IN KG.
1.	3-V-N201-95136	931050320000	A515 GR 70, NR, CERTIFY	PL. 25 X 55 X 85	0.92	10	40	72	21	86	25	0.5
2.	3-V-N202-95136/01	931050830000	A515 GR 70, NR, CERTIFY	PL. 25 X 55 X 85	0.92	10	40	47	21	62.5	25	0.5
3.	3.V.F602.95136	93 109 830	SA 515 Gr. 70, NR, CERTIFY	PL. 20 - 85 X 50	0.67	10	40	77	21	62.5	25	0.43

12.5  
A/d



**BHARAT HEAVY ELECTRICALS LTD.,  
BOILER PLANT UNIT, TIRUCHIRAPALLI-14**

FIRST ANGLE	SCALE	DRAWN	S.K.	TOTAL NET WT. (KG)
NTS	NTS	CHECKED	H. Srinivasan	TYPE
		APPROVED	A.V. Srinivasan	NEW/OLD DRG. NO.
		DATE	28.05.94	TITLE

**CAUTION**  
THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD., BOILER PLANT UNIT, TIRUCHIRAPALLI-14 AND SHALL NOT BE USED WITHOUT THEIR EXPRESS WRITTEN PERMISSION IN ANY FORM OR PART THEREOF FOR ANY OTHER PURPOSE THAN FOR WHICH IT IS SENT TO YOU.

33-115

**LOCK PLATE**

DRAWING NO. 3-V-0000-95136

REVISION 02

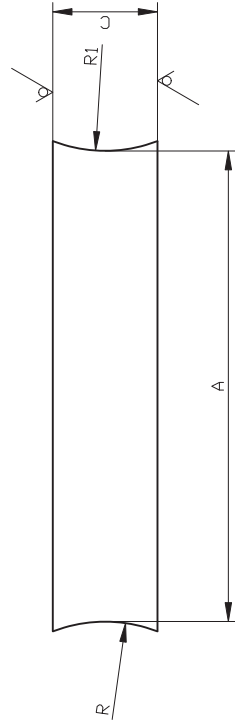
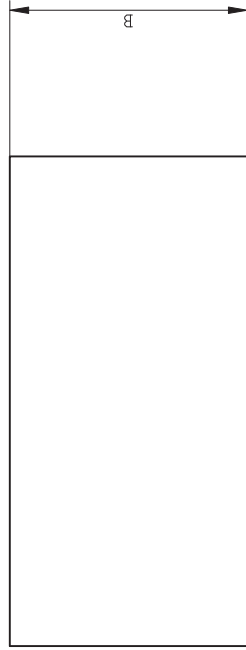
REV	DATE	ALTERED	BY	DATE	ALTERED	BY
00	27.12.99	CHD & APPD.	[Signature]	01	05.04.97	CHECKED & APPD. [Signature]
		SL. No. 3	INCLUDED.			IN SL. NO. 2 DIMENS. L & R, = 47 & 62.5 WAS TO 41 REFER DGN. CS: 0819

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

CS 156-0000-A-3  
ON ANIMYRD

12.5/1 ✓

SL. NO.	DRAWING NO.	COMP. CODE	MATERIAL SPECN.	RAW MATERIAL		SCRAP SORT	DIMENSIONS				NET WT(KG)	APPLICABLE VALVE	
				SUGGESTED SIZE	WT(KG)		A	B	C	R			
01	3-V-N204-95137/01	931050340000		PL.22x82x30	0.42		72.5	20	22	47.5	20	0.29	6"/C150,
02	3-V-N205-95137	931050360000		PL.22x120x50	1.04		110	40	22	50	20	0.75	8"/C150
03	3-V-N212-95137	931050370000		PL.22x115x50	0.99		105	40	22	55	20	0.71	8"/C300
04	3-V-N206-95137	931050380000	SA515 Gr.70 NR CERTIFY	PL.22x85x60	0.88		75	50	22	85	20	0.64	10"/C150
05	3-V-N213-95137/01	931050390000		PL.22x109x70	1.33	10	99	60	22	85	20	0.77	10"/C300
06	3-V-B003-95137/01	931073770000		PL.22x58x30	0.30		48.8	20	22	50	20	0.17	6"/C300
07	3-V-F504-95137/01	931104950000		PL.16x80x25	0.25		71	16	22	47.5	20	0.20	6"/C600
08	3-V-NC12-95137/01	931109990000		PL.22x109x60	1.13		99	50	22	60	20	0.87	12"/C150
09	3-V-N761-95137	932019980000		PL.22x80x60	0.83		71.5	50	22	85	20	0.62	12"/C150



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								
	CS DRAWING REDRAWN WITH REVISION 04 ON 11.06.2010								
	BHARAT HEAVY ELECTRICALS LTD. UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI_620014.								
	DRN K.P.LEON								
	CHD P.BOOMINATHAN								
	APPD K.S.RAMAN								
	DEPT 365-121								
	SCALE N T S								
	WEIGHT (KG) --								
	REFERENCE INFORMATION								
	CAD NO:C395137								
	DRAWING NO.								
	3-V-0000-95137								
	NO. OF ITEMS								
	04								

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REV	DATE	ALTERED BY	T. RAMAMURTHY
04	11.06.10	CHD & APPD	S.S.K & M.R.K
		IN SL.Nos.01,05 & 08	DIM.NR 72.5, 99 & 99 WERE 88.75 & 103 RESPECTIVELY
		IN SL.Nos.06 & 07	DIM.NR. 50 & 47.5 WERE 87.5 & 87.5 RESPECTIVELY
			SL.No.09 INCLUDED
			REFER DCP:CS801063

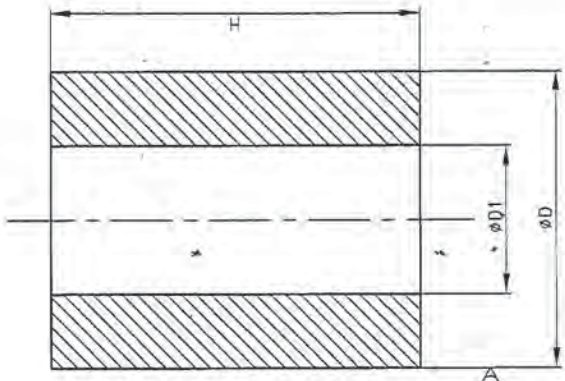


ALL DIMENSIONS ARE IN MILLIMETRES. FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP / QP.

3-V-0000-95139/02  
DRAWING NO.

SL. NO.	DRAWING NO.	COMPONENT CODE	MATL-SPECN	SUGGESTED SIZE	GROSS WT (KG)	H	ØD	ØD1	NET WT (KG)	SCRAP SORT
01	3-V-N204-95139/01	93 105 046 0000		Ø40-50	0.493	40	40	20	0.3	
02	3-V-N205-95139/01	93 105 047 0000		Ø40-60	0.592	50	40	20	0.37	
03	3-V-N206-95139/01	93 105 048 0000	SA 105,NR,CERTIFY	Ø40-70	0.690	60	40	20	0.44	10
04	3-V-N213-95139/01	93 105 049 0000		Ø40-80	0.790	70	40	20	0.52	
05	3-V-N954-95139	93 109 900 0000		Ø50-50	0.77	40	50	20	0.61	

12.5 / 10



RETRACED WITH REV 02 ON 04-03-2000

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP NET WT (KG)	GROSS NET WT (KG)	ITEM No
	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT						
	BHARAT HEAVY ELECTRICALS LTD. UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPPALLI-620014.						
	DEPT VL CODE 320	SCALE N15	WEIGHT (KG)				
	TITLE LOCK BUSH						
	NAME V.BHARAVAN	SIGNATURE [Signature]	DATE 4-3-2000	NO OF VAR.			
	DRN CHD	R.L.MANIVANAN	04-03-2000				
	APPD M.BAJAJUMAR		4-3-2000				
	REFERENCE INFORMATION						
	CAD REFERENCE--C395139						
	DRAWING NO. 3-V-0000-95139						
	CARD CODE U 01						
	REV 02						



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REV DATE 02 4-3-2000  
ALTERED R.L. [Signature]  
CHD & APPD M.R.K.W.

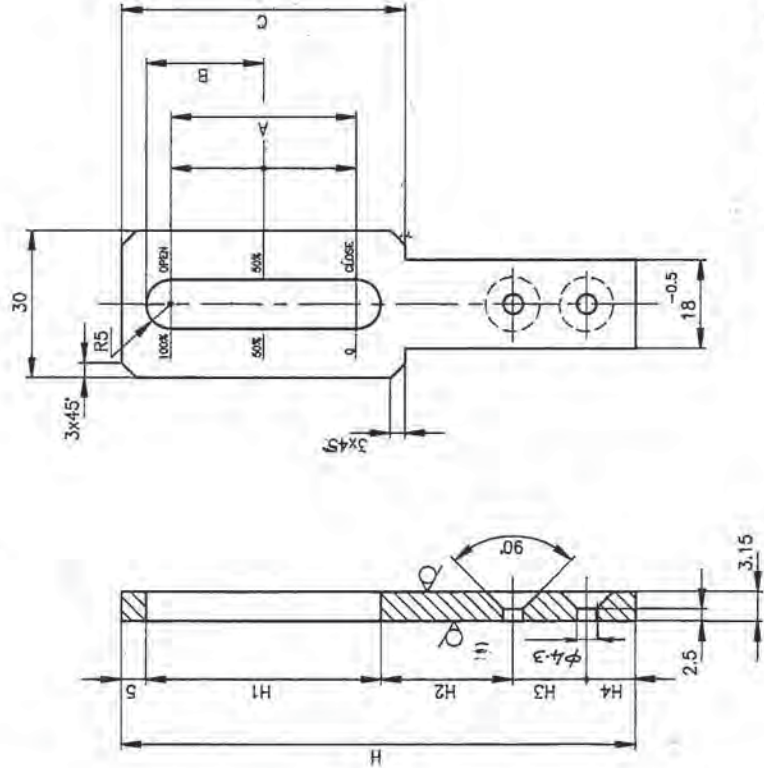
SI.No.05 INCLUDED

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

DRAWING NO. **3-V-0000-95344/01**

SL NO.	DRG. NO.	COMP. CODE	RAW MATERIAL DETAILS		DIMENSIONS										NET WT (kg)	VALVE TYPE
			MATL. SPECN.	SIZE	Wt.(kg)	H	H1	H2	H3	H4	A	B	C			
01	3-V-2886-95344	931057980000	IS:1078 St34	PL-115x35-3-15	0.10	105	48	27	15	10	38	24	58	0.58	4" -C300 RGLV	
02	3-V-2925-95344	931064020000	IS:1079 St34	PL-118x35-3-15	0.16	175	110	35	15	10	50	55	120	1.067	8" -C300 RGLV	

12.5 / 17



**NOTE:-**

CHROME PLATE TO A DEPTH OF 0.05mm. BRIGHTLY AND FILL THE SCALE LINES WITH LUMINUS RED PAINT.

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 BOLLER PLANT. TRUCHIRAPALLI-480014.									
DEPT	VL	SCALE	WEIGHT (KG)	REFERENCE INFORMATION	NO. OF	NO. OF	NO. OF	NO. OF	NO. OF
CODE 320	NTS	NTS	-	CAD:0395344	1	1	1	1	1
TITLE SCALE OF INDEX									
CARD CODE U 01									
DRAWING NO. 3-V-0000-95344									
REV									

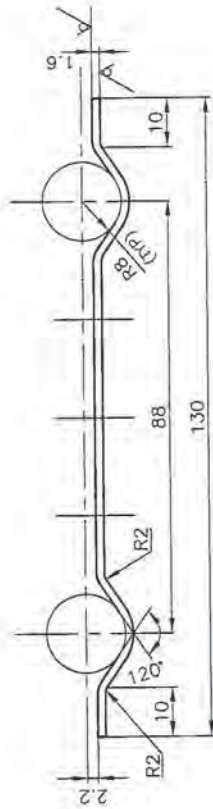
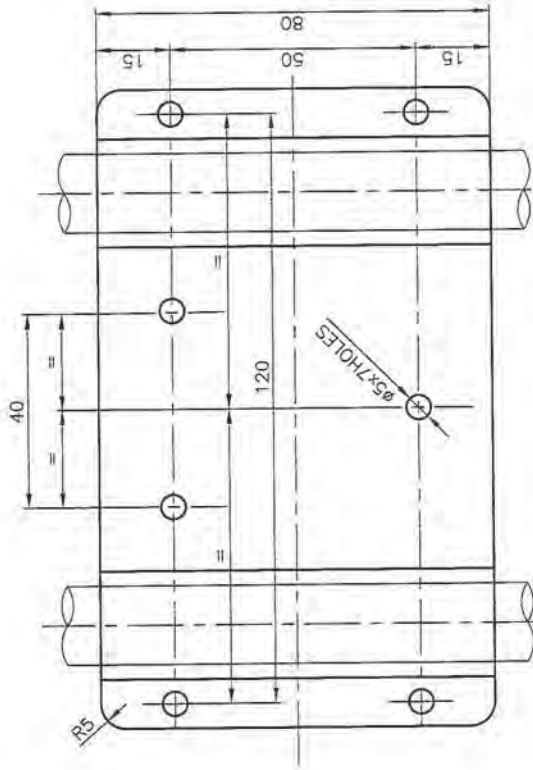
CAUTION- The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

REV DATE ALTERED M.D. PAL  
 01 16-03-96 CHD & APPD  
 SL. NO 12 INCLUDED

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

10/19860  
DRAWING ON  
3-V-K011-09861/01

12.5 / A




04	150x85 SH 1.6	15 011 076	IS 2062 F9410WB CERTIFY	NORMALISED	10	0.13	0.15	424	
NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (KG)	GROSS WT (KG)	ITEM NO	
TYPE OF PRODUCT				OR NAME OF CUSTOMER/PROJECT					
CS				DRG. RETRACED WITH REV.01 ON 11.06.2001 (REF. DCN:CS:0647)					
DEPT VL		SCALE 1:1		WEIGHT (KG)		REFER TABLE		NO. OF ITEMS	
CODE		TITLE		CARD CODE		DRAWING NO.		REV	
365-121		FIXING PLATE		U 01		3-V-K011-09861		01	
BHARAT HEAVY ELECTRICALS LTD. UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI 620014.		DRN K.P.LEON		CHD P.Boomathan		APPD K.S.RAMAN		SIGN Date 11.06.01 11.06.01 11.06.01	
REFERENCE INFORMATION		COMP. CODE: 931018130000		CAD: C309861		DRAWING NO.		REV	
365-121		1:1		U 01		3-V-K011-09861		01	

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REV DATE ALTERED K.P.Leon  
01 11.06.01 CHD & APPD  
NOTES UPDATED  
REFER DCN NO. CS:0647

FOR TOLERANCES OF UNEXPLAINED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP/APP

SL. NO.	DRG. NO.	RAW MATERIAL			DIMENSIONS										FINISH WT.	APPLICABLE TYPE NO.	COMP. CODE
		SPECIFICATION	SIZE	CODE NO.	WT.	L	L1	L2	L3	L4	φD1	φD	φD2				
1	3-V-S833-09406/1	SA210GrA	φ63.5x5.2-189	15086123	1.25	153	15	7	32	70.4	56.5	6.6	1-21	S833-50/16/111	931066720000		
2	3-V-S834-09406/1	SA210GrA	φ63.5x5.2-189	"	1.49	184	15	7	36	128	56.5	6.6	1-45	S834	931031240000		
3	3-V-S835-09406/2	SA210GrA	φ63.5x5.2-230	15082140	1.63	203	15	7	32	154	56.5	6.6	1-59	S835-100/16/111	931034860000		
4	3-V-S836-09406/1	SA106GrB	φ63.5x5.2-285	15082162	3.27	275	21	10	28	196	80.5	6.6	3-21	S836-150/14/111	931059610000		
5	3-V-S837-09406/1	SA106GrB	φ108x4.5-358	15082162	3.71	371	22	10.5	36	269	100.5	6.6	3-64	S837-200/16/111	931066730000		
6	3-V-S838-09406/1	SA106GrB	φ108x4.5-405	"	4.25	405	22	10.5	30	314	100.5	6.6	4-19	S838-250/16/111	931053810000		
7	3-V-S839-09406/01	SA210GrA	φ63.5x5.2-157	15086123	1.24	152	15	7	27	105	56.5	6.6	1-20	S839	931034860000		
8	3-V-S840-09406/01	SA210GrA	φ63.5x5.2-208	"	1.63	203	15	7	23	160	56.5	6.6	1-59	S840	931034870000		
9	3-V-S841-09406	SA106GrB	φ88.9x6.3-280	15082140	3.66	275	21	10	34	221	80.5	6.6	3-60	S841	931034880000		
10	3-V-S842-09406	SA106GrB	φ108x4.5-321	15082162	3.71	316	22	10.5	31	265	100.5	6.6	3-64	S842	931034880000		
11	3-V-S843-09406	SA106GrB	φ108x4.5-378	"	6.52	563	15	7	36	507	100.5	6.6	6-46	S843			
12	3-V-S844-09406/1	SA210GrA	φ63.5x5.2-184	15086123	1.21	179	15	7	23	118	56.5	6.6	1-18	S844-50/140/111	431036410000		
13	3-V-S845-09406/02	SA210GrA	φ63.5x5.2-189	"	1.42	175	15	7	28	137	56.5	6.6	1-38	S845-65/140/111			
14	3-V-S846-09406/1	SA210GrA	φ63.5x5.2-210	"	1.42	206	15	7	18	153	56.5	6.6	1-39	S846-100/140/111			
15	3-V-S847-09406/1	SA192	φ76x5.6-259	15084130	2.34	254	19	9	24	188	67.5	6.6	2-29	S847-150/140/111	931034890000		
16	3-V-S848-09406/01	SA210GrA	φ63.5x5.2-189	15086123	1.49	184	15	7	24	140	56.5	6.6	1-45	S848	931036510000		
17	3-V-S849-09406/01	SA210GrA	φ63.5x5.2-209	"	1.64	204	15	7	22	162	56.5	6.6	1-61	S849	931034900000		
18	3-V-S851-09406	SA106GrB	φ108x4.5-378	15082162	4.35	373	22	10.5	44	309	100.5	6.6	4-28	S851	931066740000		
19	3-V-S852-09406/02	SA210GrA	φ63.5x5.2-184	15086123	1.19	174	15	7	20	138	56.5	6.6	1-16	S852-50/164/111	931049620000		
20	3-V-S853-09406/02	SA210GrA	φ63.5x5.2-184	"	1.39	192	15	7	20	132	56.5	6.6	1-36	S853-65/164/111	931053600000		
21	3-V-1376-09406	SA106GrB	φ108x4.5-465	15086162	5.81	460	22	10.5	42	383	100.5	6.6	5-70	ROLL DOOR	931053600000		

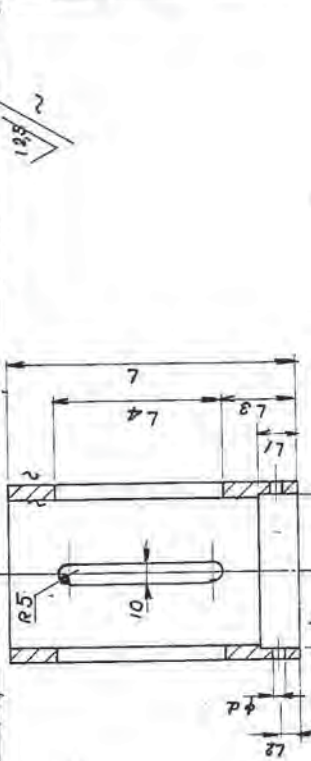


**BHARAT HEAVY ELECTRICALS LTD.,**  
BOILER PLANT UNIT, TIRUCHIRAPALLI-14

MATERIAL SPECIFICATION	HEAT TREATMENT	SCRAP SORT	TYPE OF CERTIFICATION	CERTIFY.
SA210GrA SA106GrB SA192				
SCALE: FIRST ANGLE	SCALE: N.T.S.	DRAWN: M. N. Srinivasan	CHECKED: K. Venkatesh	APPROVED: K. Venkatesh
ALL DIMENSIONS IN MILLIMETRES	DATE: 17-9-57	TOTAL WT. (KG):	NEW OLD DRG. NO.:	
TITLE: TUBE			REVISION: 03	
DRAWING NO. 3-V-5000-09406				

**CAUTION**

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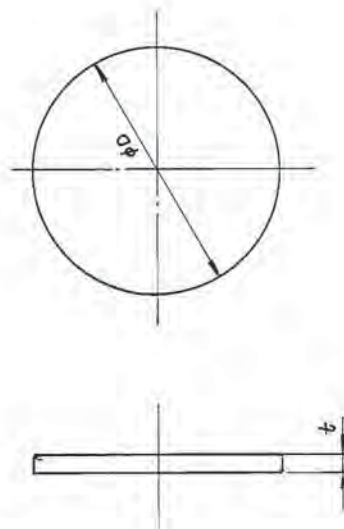


REV. DATE	ALT. BY	CHKD. BY	APP. BY	REV. DATE	ALT. BY	CHKD. BY	APP. BY
03	09/04/59	02	09/11/59	01	12/1/79	01	12/1/79

SL. NO. 1, 3, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21 IS INCLUDED  
MATERIAL SA210GrA CORRECTED AS SA210GrA  
REFER. DCN. NO.: C.S. 0989

FOR DIMENSIONS OF UNRELEASED DIMENSIONS DURING MANUFACTURE REFER RELEVANT DCP/AP

SL NO	DRG. NO.	RAW MATERIAL		DIMENSIONS			FINISH N <sub>A</sub> (kg)	APPLICABLE TYPE NO.
		SPECIFICATION	SIZE	CODE NO.	WT (kg)	φ D		
1	3-V-S855-09407	SA 105	Ø1A.50x6	15-339-142	0.09	38.5	4	S855, S866, S857
2	3-V-S858-09407	SA 105	Ø1A.50x6	15-339-142	0.08	45	4	S858, S859
3	3-V-S833-09407	SA 105	Ø1A.63x6	15-339-143	0.14	57.5	4	S833, S834, S835, S839, S840, S844, S845, S846, S848, S849, S852, S853, S854
4	3-V-S847-09407	SA 105	Ø1A.80x6	15-339-144	0.23	70	4	S847, S860, S861, S862, S867, S868, S869, S870, S882, S883
5	3-V-S836-09407	SA 105	Ø1A.100x6	15-339-134	0.36	82.9	4	S836, S841, S863, S864, S885
6	3-V-S837-09407	SA 105	Ø1A.125x6	15-339-281	0.57	102	4	S837, S838, S842, S843, S851, S864, S865, S866
7	3-V-S850-09407	SA 105	Ø1A.80x6	15-339-144	0.23	72	3	S850



12.5

MICROFILMED ON 24.1.84  
ROLL 90583 FRAME 103

SA 105	NR	10	CERTIFY.
MATERIAL SPECIFICATION		HEAT TREATMENT	SCARP SCRT
BHARAT HEAVY ELECTRICALS LTD., BOILER PLANT UNIT, TIRUCHIRAPALLI-14		TYPE OF CERTIFICATION	
FIRST ANGLE	SCALE	DRAWN	TOTAL WT. (KG)
		CHECKED	M. J. K. Narayan Iy
ALL DIMENSIONS IN MILLIMETRES		APPROVED	TYPE
		DATE	NEW/OLD DRG. No.
		17-9-87	17-9-87
		TITLE	
		END COVER	
CAUTION THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED, BOILER PLANT UNIT, TIRUCHY-620014, AND SHALL NOT BE USED WITHOUT THEIR EXPRESS WRITTEN PERMISSION UNDER PENALTY OF PROSECUTION FOR WHICH IT IS SENT TO YOU.		REVISION	
96-237		DRAWING No. 3-V-S000-09407	

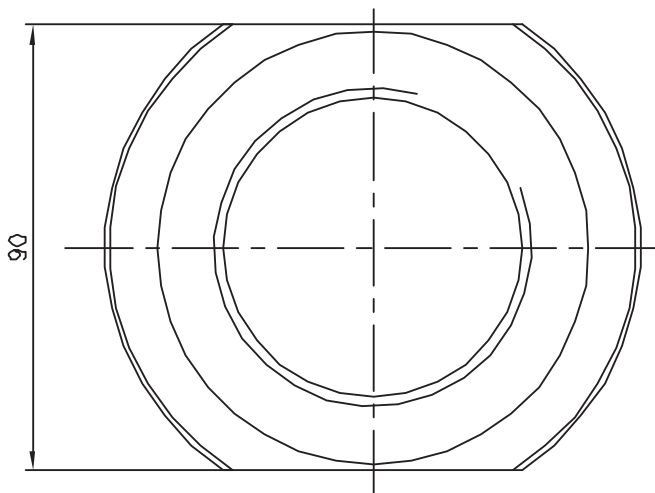
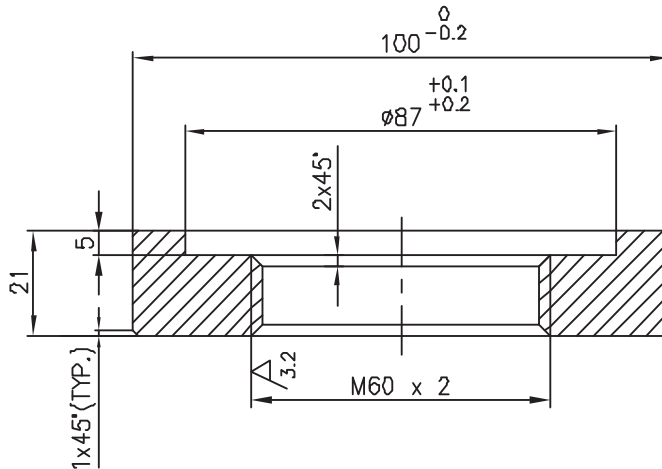
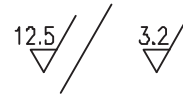
DATE	ALTERED	CHECKED
01		
ZONE		



ALL DIMENSIONS ARE IN MILLIMETRES.

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP/QP

REV	DATE	ALTERED
		CHD & APPD



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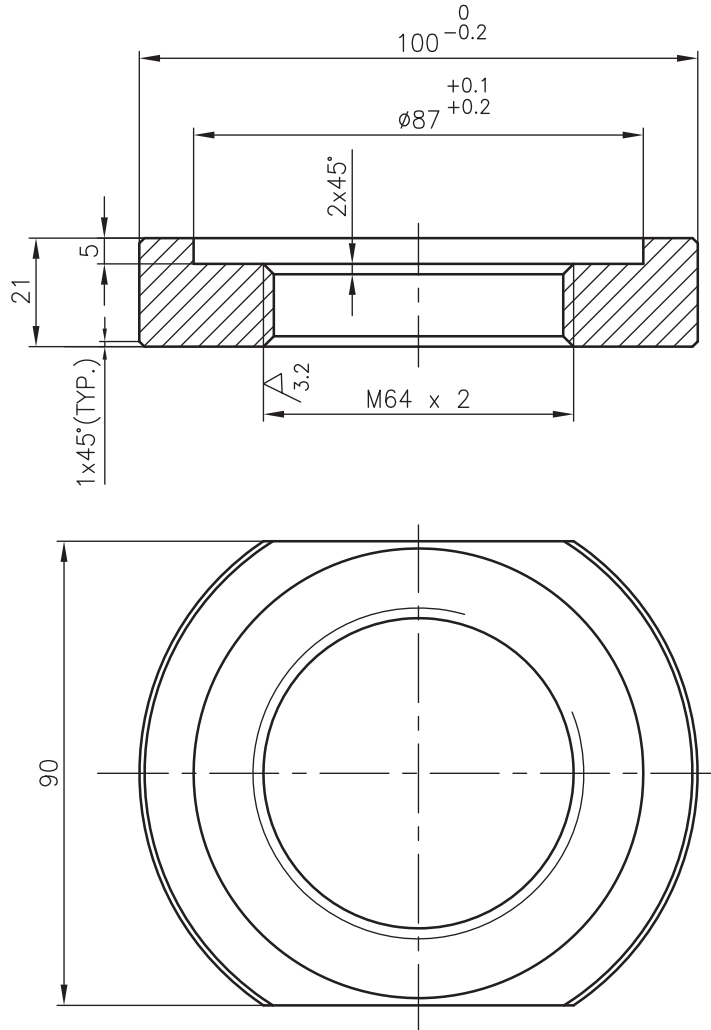
01	SUGG.SIZE:- ø105 x 27	-	ASTM A105 CERTIFY	NR	10	0.72	1.66	--	--
NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
	<b>BHARAT HEAVY ELECTRICALS LTD.</b> UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI 620014.				DRN	NAME A.S.PANDY	SIGN	DATE 07.07.07	NO. OF VAR
					CHD	T.R.RAMAMURTHY		07.07.07	
					APPD	P.BOOMINATHAN		07.07.07	
DEPT VL		SCALE NTS	WEIGHT (KG).	REFERENCE INFORMATION				NO. OF ITEMS	
CODE 320		NTS	0.72	CAD REF. C426590 COMP.CODE: 93 130 606 0000					
TITLE RETAINER					CARD CODE U 01	DRAWING NO. 4-V-N244-2659000			REV

ALL DIMENSIONS ARE IN MILLIMETRES.

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP/QP

REV	DATE	ALTERED
		CHD & APPD

12.5 / 3.2



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01	SUGG.SIZE:- ø105 x 27	-	ASTM A105 CERTIFY	NR	10	0.72	1.66	--	--
NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No



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

365-122

DRN	NAME T.R.RAMAMURTHY	SIGN	DATE 06.11.07	NO.OF VAR
CHD	T.R.RAMAMURTHY		06.11.07	
APPD	P.BOOMINATHAN		06.11.07	

DEPT VL	/		SCALE NTS	WEIGHT (KG). 0.72	REFERENCE INFORMATIONS CAD REF. C426721 COMP.CODE: 93 201 159 0000	NO. OF ITEMS
CODE 320						

TITLE <b>RETAINER</b>	CARD CODE U 01	DRAWING NO. <b>4-V-N631-26721</b>	REV <b>00</b>
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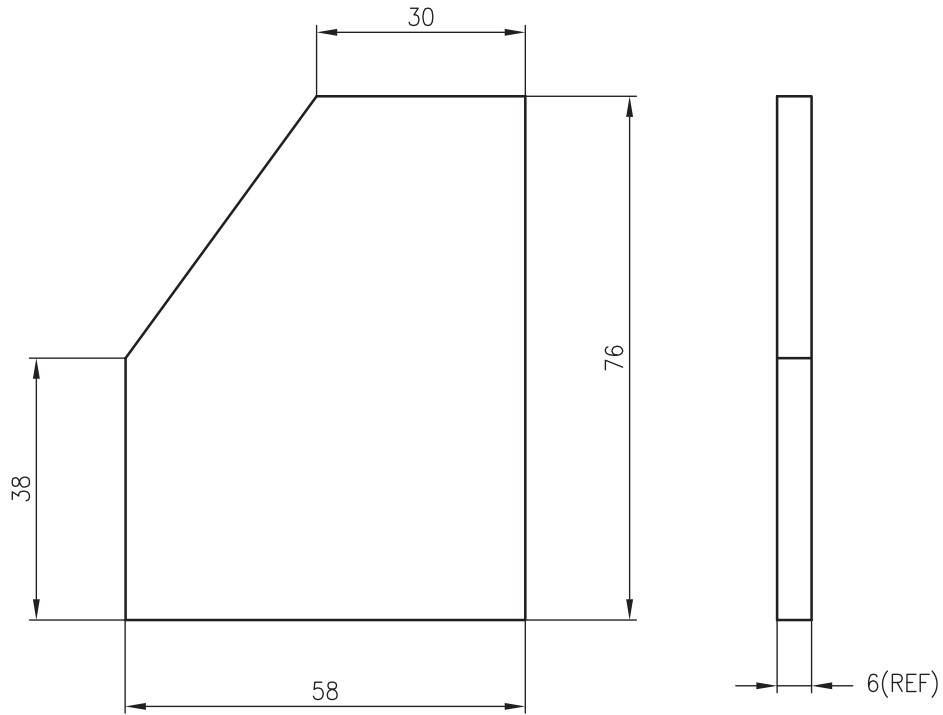
ALL DIMENSIONS ARE IN MILLIMETRES.

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP/QP

REV	DATE	ALTERED
		CHD & APPD

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12.5 / √



-	PLATE THICK-6 68x85	--	IS 2062- FE410 GR.B	NORMALISED	10	0.18	0.24	-	428
NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No



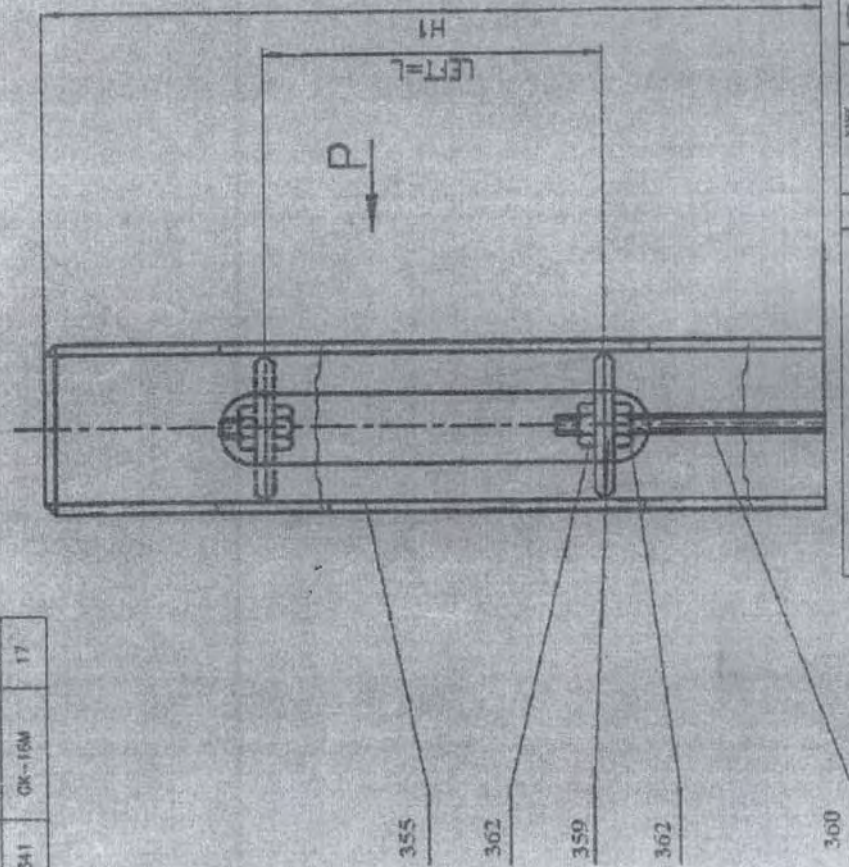
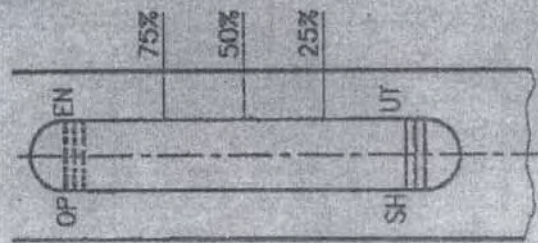
**BHARAT HEAVY ELECTRICALS LTD.,**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI 620014.

DRN	NAME G.KRITHIKA	SIGN	DATE 31.05.08	NO.OF VAR
CHD	M.SRINIVASAN		31.05.08	
APPD	P.BOOMINATHAN		31.05.08	

DEPT VL	/		SCALE	WEIGHT (KG).	REFERENCE INFORMATIONS	NO. OF ITEMS
CODE 320			NTS	0.18	COMP.CODE: 93 201 361 0000 CAD: F426748	

TITLE	CARD CODE	DRAWING NO.	REV
RIB	U 01	4-V-P408-26748	00

Sl. No.	DRAWING No.	COMP. CODE	H	HT	L	GEAR BOX	WL (kg)
01	3-V-N214-85827	93 108 596 0000	1624	484	341	BA-0	14
02	3-V-N214-85827	93 201 171 0000	1907	640	341	GR-16M	17

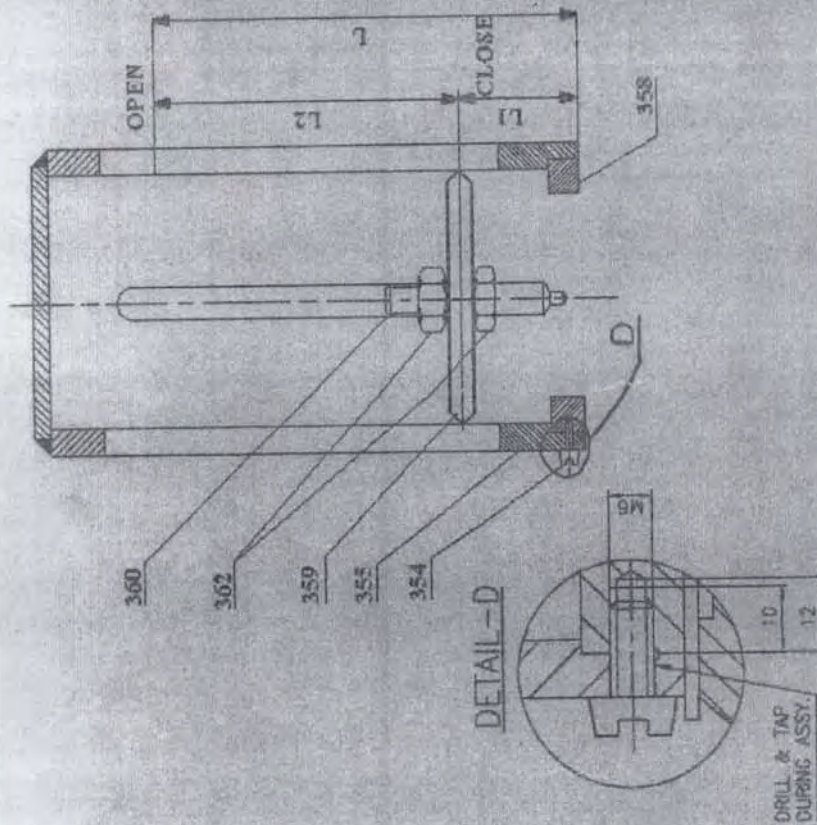


		NAME: VIKAS POLLE DESIGN: VIKAS POLLE DATE: 20/05/83		DATE: 20/05/83 NO: 30-106
BHARAT HEAVY ELECTRICALS LTD. UNIT - I.V.P. GOINDWAL		PROJECT NO: 3V-0000-95827 SHEET NO: 00		NO: 30-106 DATE: 20/05/83
TITLE: INDICATOR ARRANGEMENT		SKETCH-4		NO: 30-106 DATE: 20/05/83

NOTE:-  
 01. OPEN / CLOSE MARKINGS ARE TO PUNCHED ON THE TUBE AT THE CORRESPONDING POSITIONS  
 02. ALL DIMENSIONS ARE IN MM



COMPONENT CODE	DIMENSIONS			WEIGHT IN Kgs.	APPLICABLE TYPE
	L	L1	L2		
93 105 916 0000	208	30	125	1.64	4"-C300-GV-COMPACT
93 105 917 0000	279	56	181	3.71	6"-C300-GV-COMPACT
93 105 918 0000	355	51	230	3.84	8"-C300-GV-COMPACT
93 105 982 0000	156	34	65	1.35	2"-C300-GV-COMPACT
93 105 983 0000	175	30	96	1.35	3"-C300-GV-COMPACT
93 105 984 0000	364	36.5	282	4.26	10"-C300-GV-COMPACT
93 105 985 0000	188	55	71	1.37	2"-C150-GV-COMPACT
93 105 986 0000	320	36	227	4.20	8"-C150-GV-COMPACT
93 105 987 0000	404	48	266	4.65	10"-C150-GV-COMPACT
93 105 988 0000	460	55	333	6.28	12"-C150-GV-COMPACT
93 106 024 0000	355	51	230	3.84	8"-C300-GV-COMPACT
93 106 441 0000	207	42	121	3.30	4"-C150-GV-COMPACT
93 106 451 0000	201	40	89	3.20	3"-C150-GV-COMPACT
93 106 460 0000	320	38	227	4.20	8"-C150-GV-COMPACT
93 106 461 0000	404	48	266	4.65	10"-C150-GV-COMPACT
93 106 462 0000	460	55	333	6.28	12"-C150-GV-WCB-SG
93 108 018 0000	460	55	341	6.28	12"-C300-GV-WCB-SG
93 106 324 0000	188	49	86	1.37	3"-C300-GV-WCB-SG
93 106 342 0000	208	31	125	1.64	4"-C300-GV-WCB-SG
93 108 746 0000	279	46.5	175	3.71	6"-C150-GV-WCB-SG
93 108 932 0000	304	61	167	4.96	6"-C600-GV
93 110 124 0000	265	55	122	3.80	4"-C600-GV
93 130 292 0000	355	60	216	4.80	8"-C600-GV
93 130 833 0000	404	30	330	5.40	10"-C600-GV



- 01. OPEN / CLOSE MARKINGS ARE TO PUNCHED ON THE TUBE AT THE CORRESPONDING POSITIONS
- 02. STUD TO BE FITTED ON STEM ( NOT SHOWN)
- 03. ALL DIMENSIONS ARE IN MM

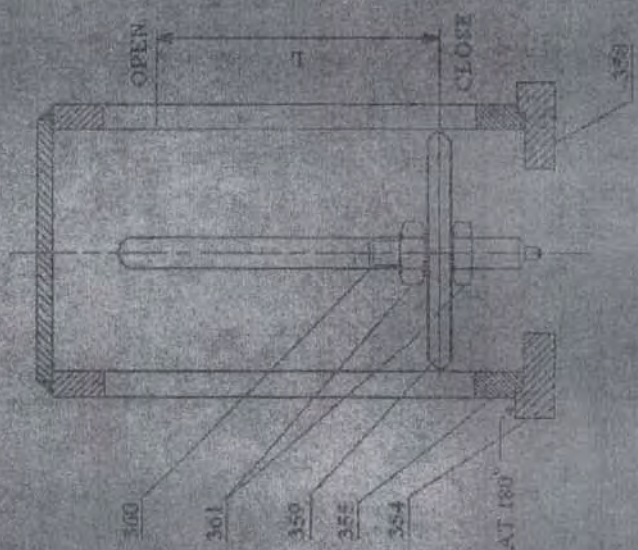
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BY	DATE	NO OF
SK	10/10/82	100
CHECKED BY	DATE	NO OF
SK	10/10/82	100
APPROVED BY	DATE	NO OF
SK	10/10/82	100
REVISIONS	DATE	NO OF
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93	10/10/82	100
94	10/10/82	100
95	10/10/82	100
96	10/10/82	100
97	10/10/82	100
98	10/10/82	100
99	10/10/82	100
100	10/10/82	100

INDICATOR ARRANGEMENT

SKETCH - 2

00

COMPONENT CODE	L	WEIGHT IN KGS.	APPLICABLE TYPE
93 201 109 0000	227	4.2	8" - C150 - GV
93 201 110 0000	230	5.0	8" - C300 - GV
93 201 111 0000	266	6.0	10" - C150 - GV
93 201 112 0000	333	6.6	12" - C150 - GV
93 201 113 0000	187	3.9	6" - C600 - GV
93 201 169 0000	341	6.7	17" - C700 - GV



TACK WELDED IN TWO PLACE AT 180°

PROJECT NAME	DATE	NO.	REV.
UNIT - IVP CONDUM	1954	107	101
DESIGNER	DATE	NO.	REV.
Y-0000-24585		SKETCH 1	
100% OR APPROXIMATE		100	

NOTE:

- 01. OPEN CLOSE MARKINGS ARE TO PUNCHED ON THE TUBE AT THE CORRESPONDING POSITIONS.
- 02. STUB TO BE FITTED ON STEM (NOT SHOWN).
- 03. ALL DIMENSIONS ARE IN INCH.