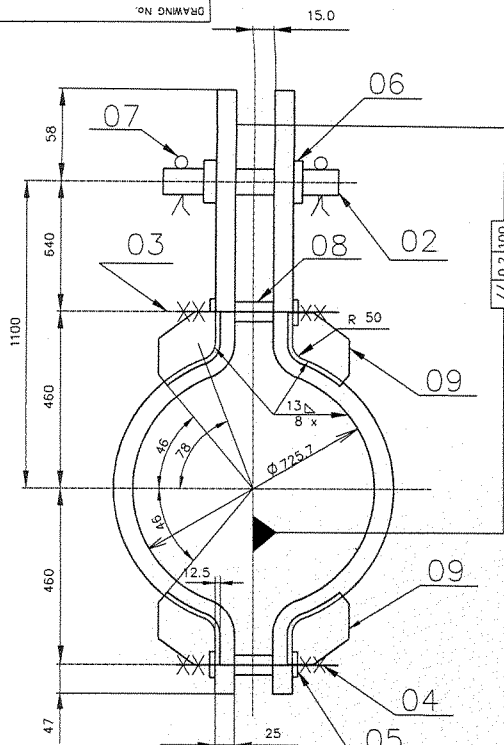
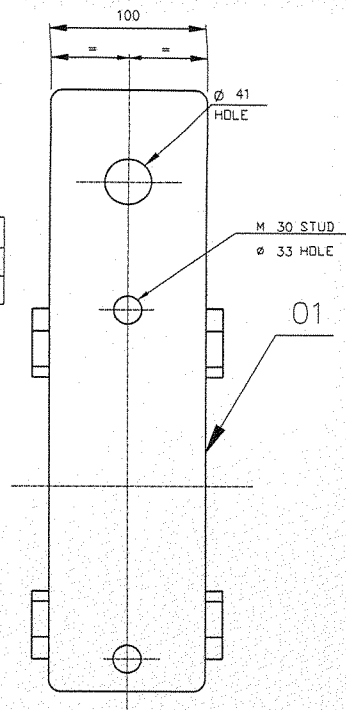


99601-088-08-2

DRAWING No.



ITEM No.09



12.5

NOTES:

1.0 FOR NOTES REFER DRAWING No. 4-80-800-34106

DESIGN PARAMETERS

LOAD : 4000 KG

TEMPERATURE : 596 °C

VAR NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	ITEM NO.	MATL CODE	VAR NO.	MATL SPECN	C	UNIT	UNIT WT.	QTY.	C/S	ZONE
	09	RIB PL.16x190x277		28083010965		159422530000			C		3.621			
						SA387GR22CL2					8			
	08	SPACER RING		48099999326	11	943250302200			C		0.273			
						SA182F12					1			
	07	SPLIT PIN		4170408056		417040805600					0.028			
											2			
	06	LOAD PIN WASHER		4140839000		414080003900					0.126			
											2			
	05	STUD WASHER		4140830000		414080003000					0.05			
											4			
	04	NUT M30		4132430000		413240003000					0.225			
											8			
	03	STUD M30x260		48099999320	2	948223026600			F		1.248			
						SA193B16					2			
	02	LOAD PIN DIA 39x165		48099999307	12	948223917000			C		1.54			
						SA105					1			
	01	CLAMP PL.25x100x2002		28083010965		159421560000			C		39.293			
						SA387GR91CL2					2			

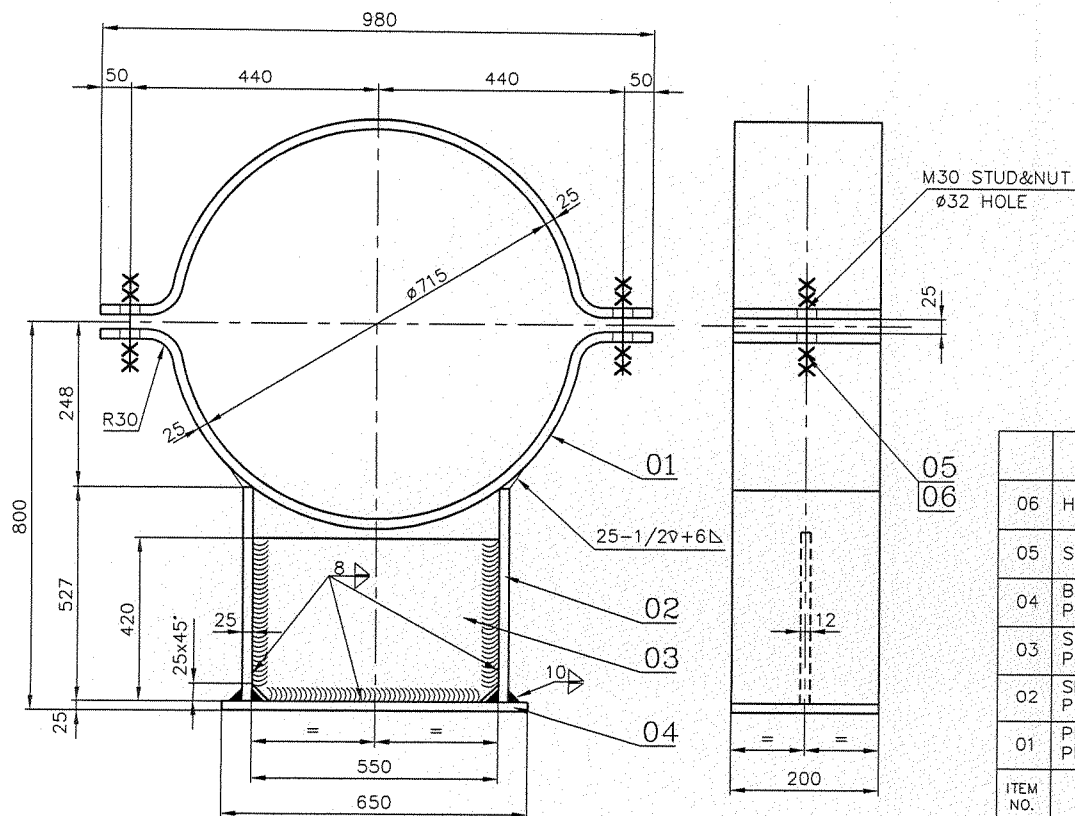
TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG.	ITEM No.
CODE	C/M/F	NTS			

REV 01	DATE	ALTERED	CHECKED	DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG.	ITEM No.
ZONE				CODE	C/M/F	NTS			

TITLE	CARD CODE	DRAWING No.	REV
HORIZONTAL PIPE CLAMP (LOAD=40KN) P91 FOR PIPE OD711	U 01	2-80-830-10965	00

DRAWING NO.



FOR NOTES REFER DRAWING NO.4-80-800-34106

LOAD: 80KN, TEMP. 596°C

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

DEPT.	GRADE OF UN TOL. DIM		SCALE	WEIGHT (Kg)	NAME OF ORIGINAL ORGANISATION	ITEM No.
CODE	C/M/F		N.T.S			

TITLE	BEARING CLAMP FOR PIPE OD 711 (P91)	CARD CODE	DRAWING No.	REV
		U 01	3-80-830-28847	00

REV 01	DATE	ALTERED
		CHECKED
ZONE		

05-228/C

FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)

06601-088-08-2

DRAWING No.

09

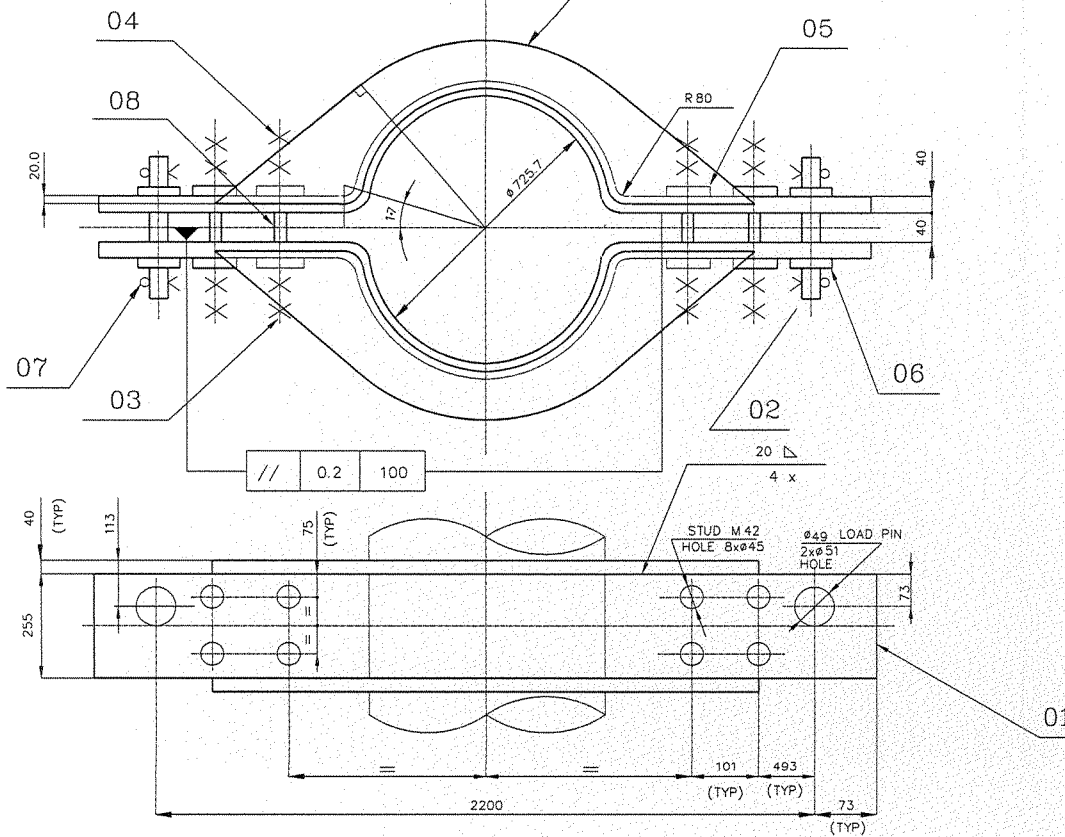
DESIGN PARAMETERS

LOAD : 13000 KG

TEMPERATURE : 596 °C

NOTES: -

FOR NOTES REFER DRG. No. 4-80-800-34106



ITEM NO 09

VAR NO.	ITEM NO.	DESCRIPTION	DWG NO.	ITEM NO.	MATL CODE	UNIT	UNIT WT.	QTY.	ZONE
	09	RIB PL. 40x483x1933	28083010990		159422720000	C	103.479		
					SA387GR22CL2		4		
	08	SPACER RING	48083260238		153391730000	C	0.48		
					SA182F22		8		
	07	SPLIT PIN	4170410063		417041006300		0.037		
							4		
	06	LOAD PIN WASHER	4140848000		414080004800		0.284		
							4		
	05	STUD WASHER	4140842000		414080004200		0.15		
							16		
	04	NUT M42	4132442000		413244504200		0.81		
							32		
	03	STUD M42x320	48083250999		150391690000	P	2.86		
					SA193B16		8		
	02	LOAD PIN DIA. 49x191	48099937401		153391430000	C	2.8		
					SA105		2		
	01	CLAMP PL. 40x255x2656	28083010990		159421570000	C	212.603		
					SA387GR91CL2		2		

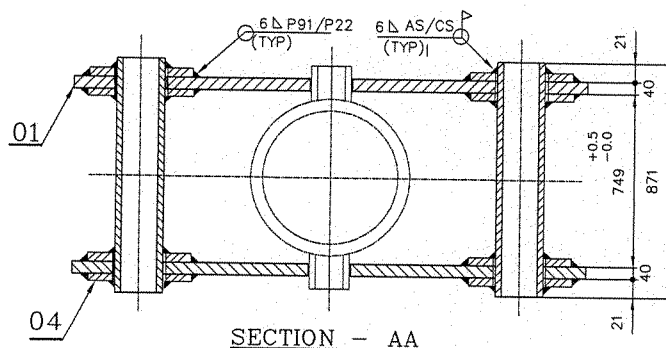
TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG.	ITEM No.
CODE	C/M/F	NTS			

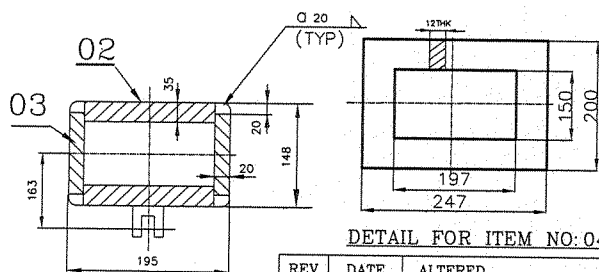
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT	DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG.	ITEM No.
BHARAT HEAVY ELECTRICALS LTD. PIPING CENTRE, CHENNAI	DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG.	ITEM No.
	CODE	C/M/F	NTS			
TITLE	CARD CODE	DRAWING No.	REV			
RISER CLAMP (LOAD=130KN) P91 FOR PIPE OD711	U 01	2-80-830-10990	00			

SIZE A2

DRAWING NO.



SECTION - AA



DETAIL FOR ITEM NO: 04

DETAIL - B

REV 02	DATE	ALTERED
		APPROVED
ZONE		

REV 01	DATE	ALTERED
		APPROVED
ZONE		

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

HRH



BHARAT HEAVY ELECTRICALS LTD.
PIPING CENTRE,
CHENNAI 600 017

DRN	NAME DINESH	SIGN -sd-	DATE 22.09.11	NO OF ITEMS
CHD	LALIT	-sd-	22.09.11	
APPD	C.SARAVANAN	-sd-	22.09.11	

DEPT.	GRADE OF UN TOL DIM		SCALE	WEIGHT (Kg.)	REF TO ASSY / OLD DRG	ITEM No.
CODE	C/M/F					
TITLE				CARD CODE	DRAWING No.	REV
TRUNNION CLAMP (PIPE OD 711 P91 150KN)				U 01	3-80-830-28785	00

1. THE CLAMP PLATE & BOX PLATE ARE TO BE TACK WELDED AT SHOP AND SENT AS A SINGLE DESPATCHABLE UNIT,
2. W.O NO & DU NO ARE TO BE MARKED IN BOTH THE CLAMP PLATE AS WELL AS IN BOTH THE BOXES BEFORE DESPATCH.
3. REQUIRED SURFACE FINISH IS
a. FOR HOLE: 6.3 μ m
b. OTHER MACHINED SURFACE :12.5 μ m

1,BEFORE TACK WELDING OF PLATE WITH BOX,THE FOLLOWING ARE TO BE ENSURED

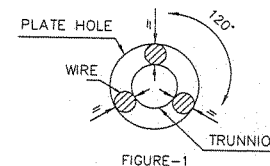
a. UNIFORM GAP BETWEEN PLATE HOLE AND TRUNNION ALONG THE CIRCUMFERENCE AS SHOWN IN FIGURE -1, THIS COULD BE ENSURED BY INSERTING THIN SHEETS OF SUITABLE THICKNESS OR WIRES OF SUITABLE DIAMETER AT 3 PLACES 120° APART.

b. PARALLELITY OF THE TWO PLATES BY MEASURING THE INNER SURFACE TO INNER SURFACE DIMENSION AT THE FOUR CORNER POINTS (①-④) OF THE PLATES MARKED IN THE DRG. ALL THE FOUR MEASUREMENT SHALL BE TO THE DIMENSIONS GIVEN IN THE DRAWING TAKING IN TO CONSIDERATION THE TOLERANCE.

2. BEFORE FINAL WELDING OF BOXES TO PLATE, ROTATION OF CLAMP ABOUT TRUNNIONS IS TO BE ENSURED.

3. LOCATION OF WELD ON BRACKET SHALL BE AS INDICATED IN THIS DRAWING. ORIENTATION OF WELD ON BRACKET SHALL BE AS PER THE GUIDELINES GIVEN IN THE ERECTION NOTES FOR PIPING HANGERS AND SUPPORTS (DRG.NO. 4-80-999-99321)

4. CORRECT ELECTRODE TO BE USED FOR WELDING STOPPER PLATE(AS) WITH BOX(CS).



FIGURE—

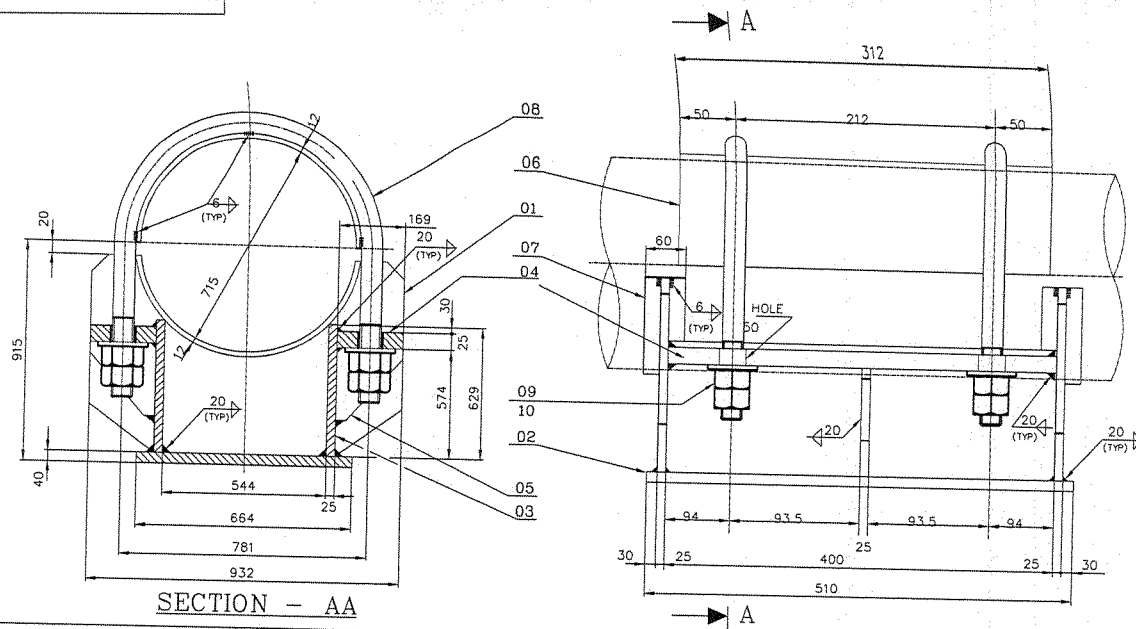
05-228/C

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DRAWING NO. 2-80-830-11021

FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)

ALL DIMENSIONS ARE IN MILLIMETRES

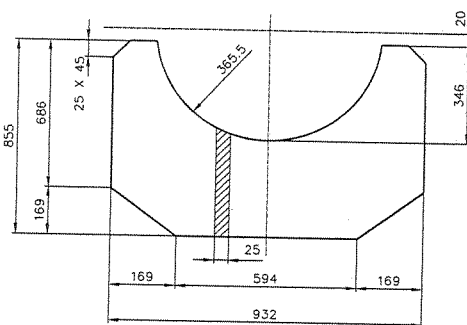


NOTES: -

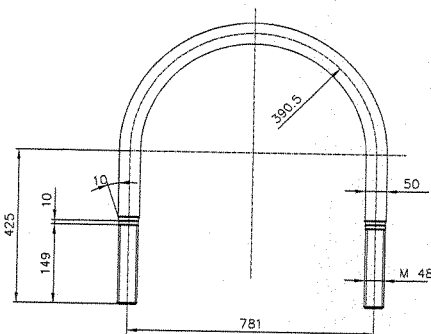
01 FOR NOTES REFER DRAWING NO. 4-80-800-34106

DESIGN LOAD : 10000KG

DESIGN TEMP. : 596 °C



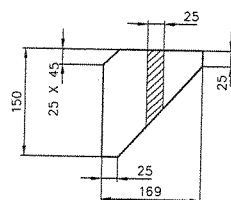
ITEM No.01



ITEM No.08

NOTES: -

01. METRIC SCREW THREADS AS PER IS: 4218.



ITEM No.05

10	PUNCHED WASHER A48	41408 48000	414080004800	0.284
09	NUT M48 X5	4-80-999-99290	SA387G722CL2	4
08	U' ROD M48 ROD DIA50 : L=2077	2-80-830-11021	413195004800	1.240
07	PAD PLATE-2 PL 12THKX60X1090	2-80-830-11021	SA194G7	8
06	PAD PLATE-1 PL 12THKX312X1130	2-80-830-11021	153394040000	32.011
05	STIFFNER PLATE PL 25THKX169X150	2-80-830-11021	SA182F91	2
04	FIXING PLATE PL 25THKX169X400	2-80-830-11021	159421550000	4.107
03	VERTICAL PLATE PL 25THKX629X400	2-80-830-11021	SA387G79TCL2	2
02	BOTTOM PLATE PL 40THKX664X510	2-80-830-11021	159421550000	22.141
01	SIDE PLATE PL 25THKX855X932	2-80-830-11021	SA387G79TCL2	1
ITEM NO.	DESCRIPTION	DRAWING NO.	NO. VAR NO.	UNIT WT.
			MATL CODE	A
			MATL SPECN	C
			QTY.	

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LTD.
PIPING CENTRE, MADRAS

DRN	NAME	SIGN	DATE	NO OF
CHD	SARAVANAN.C	-Sg-	22.09.2011	ITEMS
APPD	SARAVANAN.C	-Sd-	22.09.2011	

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	NAME OF ORIGINAL ORGANIZATION	ITEM No.
CODE	C/M/F	NTS	526.615		
TITLE	SHOCK ABSORBER CLAMP FOR PIPE OD711 P91 90KN		CARD CODE	DRAWING No.	REV
			U 01	2-80-830-11021	00

SIZE A2

ITEM No.09

12.5

1.0 FOR NOTES REFER DRAWING No. 4-80-800-34106

LOAD : 10000 KG (HYDRO LOAD: 25162KG)
TEMPERATURE : 596 °C

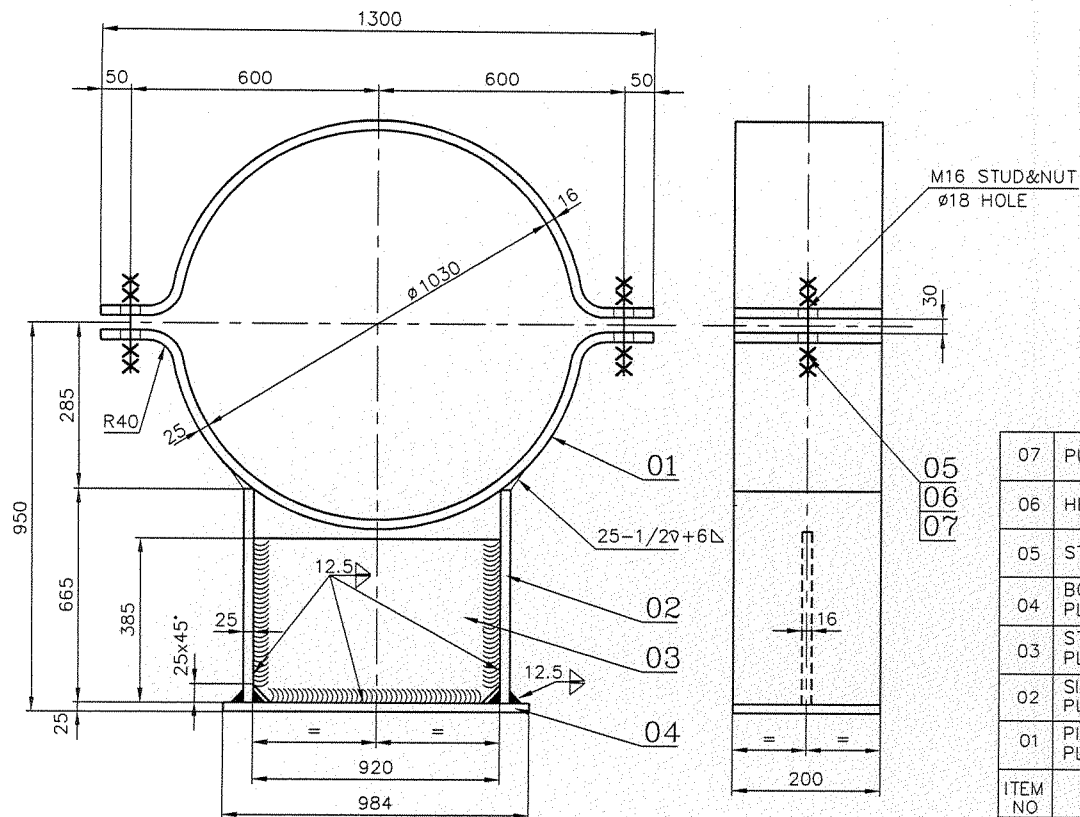
VAR NO.	ITEM NO.	DESCRIPTION	STD.	DRAWING NO.	ITEM NO.	MATL. CODE	UNIT	UNIT WT.	ZONE
					VAR NO.	MATL. SPECN	DI	QTY.	G.S.
	09	RIB PL.20x272x403		28083010936		159422540000	C	8.993	
						SA387GR91		8	
	08	SPACER RING		48092337402	2	153392420000	C	0.26	
						SA182F12		2	
	07	SPLIT PIN		4170410080		417041008000		0.047	
								2	
	06	LOAD PIN WASHER		4140872000		414080007200		0.543	
								2	
	05	STUD WASHER		4140836000		414080003600		0.087	
								8	
	04	NUT M36	4-80-999-99045			413244003600		0.43	
					5			16	
	03	STUD M36x290		48099999320		948223629600	P	2.001	
					3	SA193B16		4	
	02	LOAD PIN DIA 61x191		48083253538		153391440000	C	4.35	
					3	SA105		1	
	01	CLAMP PL.40x200x2233		28083010936		159421570000	C	140.244	
						SA387GR91		2	

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

	BHARAT HEAVY ELECTRICALS LTD. PIPING CENTRE, CHENNAI	DRN	NAME	SIGN	DATE	NO OF
			KONDAPA		18.08.11	ITEMS
		CHD	KONDAPA		18.08.11	
		APPD	KVRAMANI		18.08.11	

REV 01	DATE	ALTERED CHECKED	DEPT.	GRADE OF UN TOL. DIM		SCALE	WEIGHT (Kg.)	REF TO ASSY / OLD DRG.	ITEM No.
ZONE			CODE	C/M/F		NTS	320.014		
			TITLE	HORIZONTAL PIPE CLAMP			CARD CODE	DRAWING No.	REV
			FOR PIPE OD1016X52 LOAD: 10000KG(AS)				U 01	2-80-830-10936	00

DRAWING NO.



FOR NOTES REFER DRAWING NO.4-80-800-34106

LOAD: 200KN, TEMP. 596°C

07	PUNCHED WASHER A16	4-80-999-99026	01	159482650000 SA387GR22		0 017 4
06	HEX NUT M16	41324 16000		41324 0001600		0 017 8
05	STUD M16X200	4-80-999-99320	05	948221620600 SA193B16	P	0 280 2
04	BOTTOM PLATE PL 25X200X984	3-80-830-29054		159421560000 SA387GR91	P	24 718 1
03	STIFFNER PLATE PL 25X920X385	3-80-830-29054		159421560000 SA387GR91	P	40 905 1
02	SIDE PLATE PL 25X200X665	3-80-830-29054		159421560000 SA387GR91	P	15 950 2
01	PIPE CLAMP PL 25X200X1832	3-80-830-29054		159421560000 SA387GR91	P	46 019 2
ITEM NO	DESCRIPTION	DRAWING NO	ITEM NO VAR	MATERIAL CODE MATERIAL SPEC	A C	UNIT WEIGHT QTY

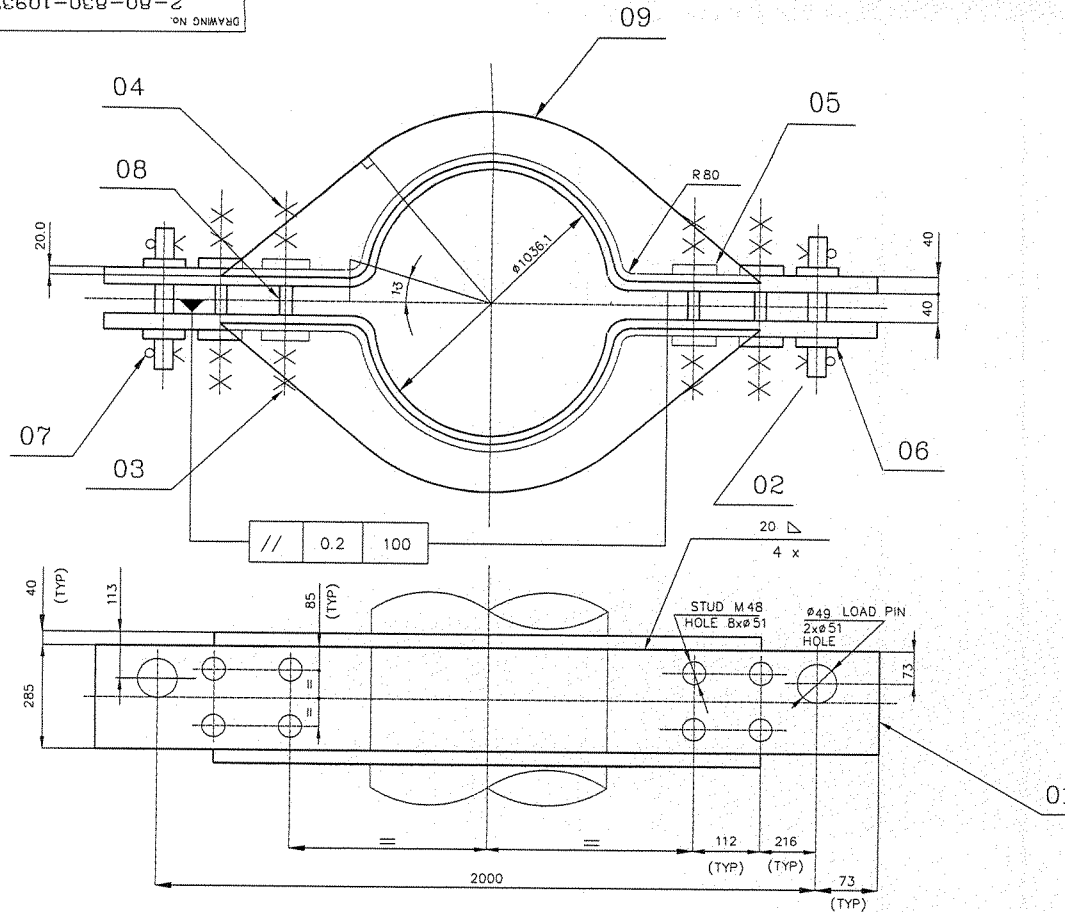
TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

	BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, MADRAS	DRN	NAME KONDAPA	SIGN	DATE 20.12.11	NO OF ITEMS
		CHD	KONDAPA		20.12.11	
		APPD	KV RAMANI		20.12.11	

REV 01	DATE	ALTERED CHECKED	DEPT.	GRADE OF UN TOL. DIM		SCALE N.T.S.	WEIGHT (Kg.) 98.10	NAME OF ORIGINAL ORGANISATION	ITEM No.
ZONE			CODE	C/M/F					
			TITLE BEARING CLAMP FOR PIPE OD1016 LOAD: 200KN				CARD CODE U 01	DRAWING No. 3-80-830-29054	REV 00

2-80-830-10937

DRAWING No.



ITEM NO 09

DESIGN PARAMETERS

LOAD : 16000 KG (HYDRO LOAD: 35501KG)

TEMPERATURE : 596 °C

NOTES: -

FOR NOTES REFER DRG. No. 4-80-800-34106

VAR NO.	ITEM NO.	DESCRIPTION	DWG NO.	ITEM NO. VAR NO.	MATL CODE	A/C	UNIT	UNIT WT.	QTY.	ZONE
	09	RIB PL. 40x639x2016	28083010937		159422720000	C		116.895		
					SA387GR91			4		
	08	SPACER RING	48083260239		153391730000	C		0.34		
					SA182F22			8		
	07	SPLIT PIN	4170410063		417041006300			0.037		
								4		
	06	LOAD PIN WASHER	4140856000		414080005600			0.405		
								4		
	05	STUD WASHER	4140848000		414080004800			0.284		
								16		
	04	NUT M48	4132448000		413245004800			1.24		
								32		
	03	STUD M48x350	48099993083		150391690000	P		4.36		
					SA193B16			8		
	02	LOAD PIN DIA 49x191	48099937401	9	153391430000	C		2.8		
					SA105			2		
	01	CLAMP PL. 40x285x2624	28083010937		159421570000	C		234.821		
					SA387GR91			2		

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

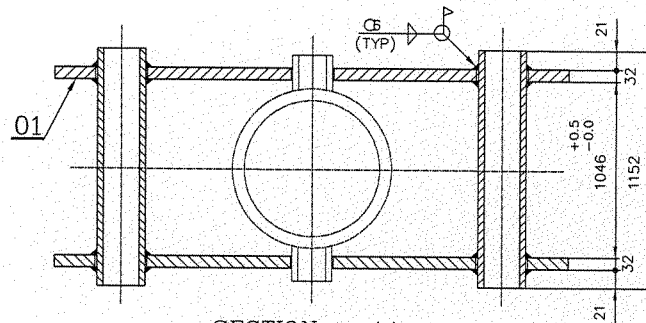
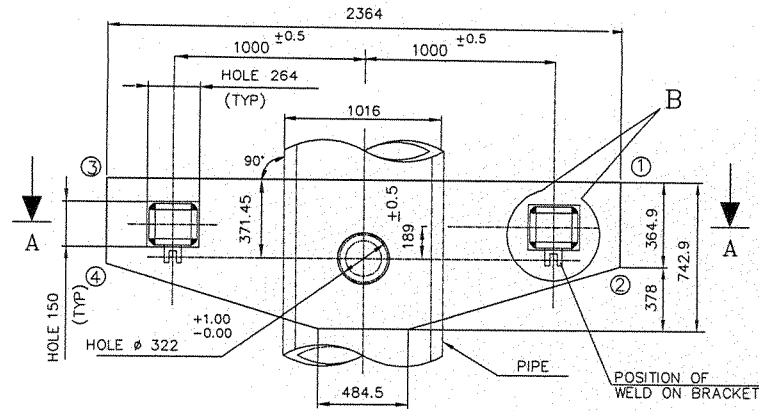
DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG.	ITEM No.
C/M/F	NTS	1026.414			

TYPE	CARD CODE	DRAWING No.	REV
RISER CLAMP	U 01	2-80-830-10937	00

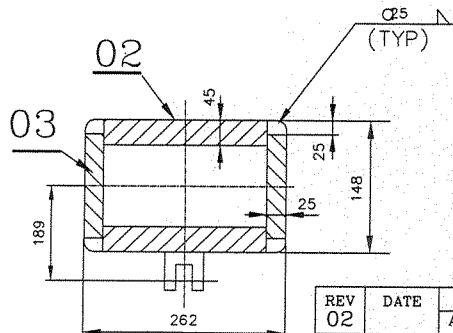
FOR PIPE OD1016X54 LOAD:16000KG(AS)

3-80-830-29062

DRAWING No



SECTION - AA



DETAIL - B

- 1.DESIGN LOAD : 310 KN
 2.MEDIUM TEMP : 596 °C
 3.WELD ON BRACKET: 250 KN
 4.TRUNNION SIZE : 321 mm
 5.HYDRO LOAD : 310 KN

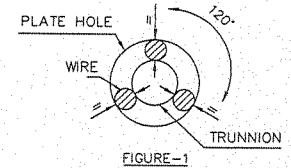
REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

A. NOTES FOR PRODUCTION

- 1.THE CLAMP PLATE & BOX PLATE ARE TO BE TACK WELDED AT SHOP AND SENT AS A SINGLE DESPATCHABLE UNIT,
 2.W.O NO & DU NO ARE TO BE MARKED IN BOTH THE CLAMP PLATE AS WELL AS IN BOTH THE BOXES BEFORE DESPATCH.
 3.REQUIRED SURFACE FINISH IS
 a. FOR HOLE: 6.3 μ m
 b. OTHER MACHINED SURFACE : 12.5 μ m

B. NOTES FOR ERECTION

- 1,BEFORE TACK WELDING OF PLATE WITH BOX,THE FOLLOWING ARE TO BE ENSURED
 a,UNIFORM GAP BETWEEN PLATE HOLE AND TRUNNION ALONG THE CIRCUMFERENCE AS SHOWN IN FIGURE -1. THIS COULD BE ENSURED BY INSERTING THIN SHEETS OF SUITABLE THICKNESS OR WIRES OF SUITABLE DIAMETER AT 3 PLACES 120° APART.
 b,PARALLELITY OF THE TWO PLATES BY MEASURING THE INNER SURFACE TO INNER SURFACE DIMENSION AT THE FOUR CORNER POINTS (①-④) OF THE PLATES MARKED IN THE DRG.ALL THE FOUR MEASUREMENT SHALL BE TO THE DIMENSIONS GIVEN IN THE DRAWING TAKING IN TO CONSIDERATION THE TOLERANCE.
 2, BEFORE FINAL WELDING OF BOXES TO PLATE, ROTATION OF CLAMP ABOUT TRUNNIONS IS TO BE ENSURED.
 3,LOCATION OF WELD ON BRACKET SHALL BE AS INDICATED IN THIS DRAWING. ORIENTATION OF WELD ON BRACKET SHALL BE AS PER THE GUIDELINES GIVEN IN THE ERECTION NOTES FOR PIPING HANGERS AND SUPPORTS (DRG.NO. 4-80-999-99332)
 4,CORRECT ELECTRODE TO BE USED FOR WELDING PLATE WITH BOX CONSIDERING PLATE & BOX MATL.SPECIFICATION.

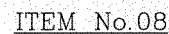


VAR NO.	ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE	MATERIAL SPEC.	UNIT WT.	QTY.
	03	BOX PLATE 2 25 x 98 x 1152	3-80-830-29062		159421140000 SA 515 Gr70	C	22.156	4
	02	BOX PLATE 1 45 x 212 x 1152	3-80-830-29062		159421180000 SA 515 Gr70	C	86.272	4
	01	CLAMP PLATE 40 x 742.9 x 2364	3-80-830-29062		159421570000 SA387GR91CL2	C	389.432	2

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		XXXXXXXXXXXXXXXXXXXXXXXXXXXX		XXXXXXXXXXXXXXXXXXXXXXXXXXXX			
TAG No.							
	BHARAT HEAVY ELECTRICALS LTD.,		DRN	NAME	SIGN	DATE	NO OF ITEMS
	PIPING CENTRE,		CHD				
	CHENNAI 600 017		APPD				
DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	REF TO ASSY / OLD DRG		ITEM No.	
CODE	C/M/F		1212.34				
TITLE			CARD CODE	DRAWING No.		REV	
TRUNNION CLAMP (PIPE OD /ID 1016)			U 01	3-80-830-29062		00	

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DRAWING No. 10938-888-888-2



01. METRIC SCREW THREADS AS PER IS: 4218.

10	PUNCHED WASHER A68	4-80-999-99026	414080007200	C	0.543
09	NUT M68 X4	4-80-999-99045	3A3876R22	C	6
08	'U' ROD M68 ROD DIA80 ; L=2995	2-80-830-10938	413244006800	C	2.700
07	PAD PLATE-2 PL 12THXKX70X1560	2-80-830-10938	3A194077	C	16
06	PAD PLATE-1 PL 12THX832X1600	2-80-830-10938	153394010000	C	118.166
05	STIFFENER PLATE PL 40THXKX263X200	2-80-830-10938	SA18ZGF91	C	3
04	FIXING PLATE PL 40THXKX263X900	2-80-830-10938	159421550000	C	6.858
03	VERTICAL PLATE PL 40THXKX537X900	2-80-830-10938	SA387G91CL2	C	8
02	BOTTOM PLATE PL 40THXKX897X1070	2-80-830-10938	159421550000	C	83.599
01	SIDE PLATE PL 40THXKX690X1323	2-80-830-10938	SA387G91CL2	C	1
			159421570000	C	9.879
			SA387G91CL2	C	4
			159421570000	C	70.699
			SA387G91CL2	C	2
			159421570000	C	151.756
			SA387G91CL2	C	2
			159421570000	C	301.374
			SA387G91CL2	C	1
			159421570000	C	222.965
			SA387G91CL2	C	2
ITEM NO.	DESCRIPTION	DRAWING NO.	NO. VAR.	MATL CODE	UNIT WT.
				MATL SPECN	QTY.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

HRH-H23 & H29A



BHARAT HEAVY ELECTRICALS LTD.
PIPING CENTRE, MADRAS

D.	DRN	NAME KONDAPA
	CHD	KONDAPA
	APPD	KVRAMANI

SIGN	DATE	NO OF ITEMS

DEPT.	GRADE OF
CODE	UN TOL DIM
	C/M/F

SCALE
NTS

WEIGHT (K)	1503.
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(8)	NAME OF ORIGIN ORGANISATION
117	

NAL N	ITEM No.
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TITLE SHOCK ABSORBER CLAMP
FOR PIPE OD 1016 (AS)

CARD CODE	U O
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DRAWING No.	REV
2-80-830-10938	00