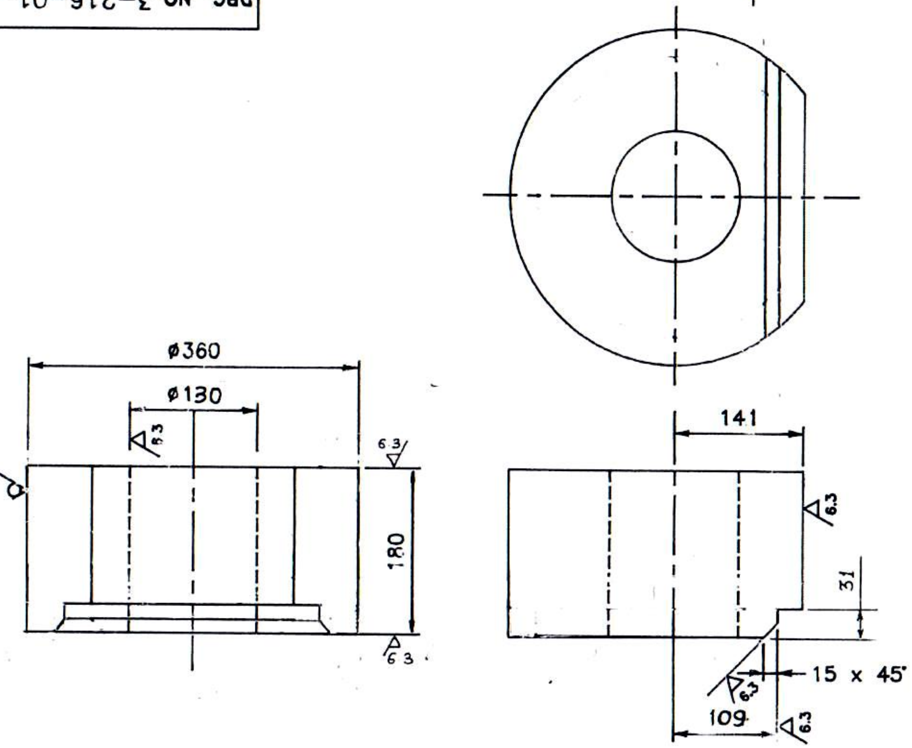
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

DRG. NO. 3-216-01-12188



TECHNICAL REQUIREMENTS

1. PERMISSIBLE VARIATIONS FOR UN-TOLERANCED DIMNS. TO BE AS PER DRG. NO. 3-200-00-49014.
2. REMOVE ALL SHARP EDGES & BURRS.
3. IT IS ALLOWED TO MAKE TRUNNION HOUSING FROM THICK PLATE CONFORMING TO AA 10119/AA 10401.

VAR.00	REMARKS	VAR NO.	ITEM NO	DESCRIPTION	STD.	DRAWING NO.	IT.NO. / VAR.	MATL. CODE / MATL. SPCN	A / C	UNIT WT. / QTY.
	ø360 BAR		001	TRUNNION HOUSING	2	—	— / —	BP1930231865 / AA19331	- / -	105.000 / 001

28 — CARD TYPE- · 28 — CARD TYPE- · 28 — CARD TYPE-2

DRAWING REVIEW			
DEPT.	NAME	SIGN.	DATE
FCM	-	-	-
THX	MDS	[signature]	23.7.98

ADDITIONAL INFORMATION

STATUS OF DRAWING U

DISTRIBUTION OF PRINTS
HTE-2, WTM-5, THX-1
FBM-7

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: B.F.V. STANDARD.

BHARAT HEAVY ELECTRICALS LTD. BHOPAL

	NAME	SIGN	DATE	NO. OF VAR.
DRN	SRS	[signature]	9.5.98	
CKD	ILR	[signature]	9.5.98	
APPD	JSH	[signature]	9.5.98	—

DEPT.	CODE	UNTOL. DIMS. GR.	SCALE	WEIGHT(K.G.)	REF.TO ASSY.DRG.	ITEM NO	NO.OF ITEM
H.T.E.	40	—	1:5	105	0-216-01-12090	014	01

TITLE: TRUNNION HOUSING

DRAWING NO. 3-216-01-12188 · REV 03

SHT NO. 1 · NO. OF SHT. 1

REV.	DATE	ALTERED / CHECKED / APPD.	
03	21 2 01	[signature]	- DIMN 109 WAS 114 - ø300 DELETED. - PROJECT NAME B.F.V. Std. WAS FARIDABAD.
02	30.9.98	ILR / JSH / JSH	DRG. REVISED AS SHOWN. CHAMFER REMOVED.
01	5 9 98	[signature]	T.R. 3 ADDED

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

A3 SIZE

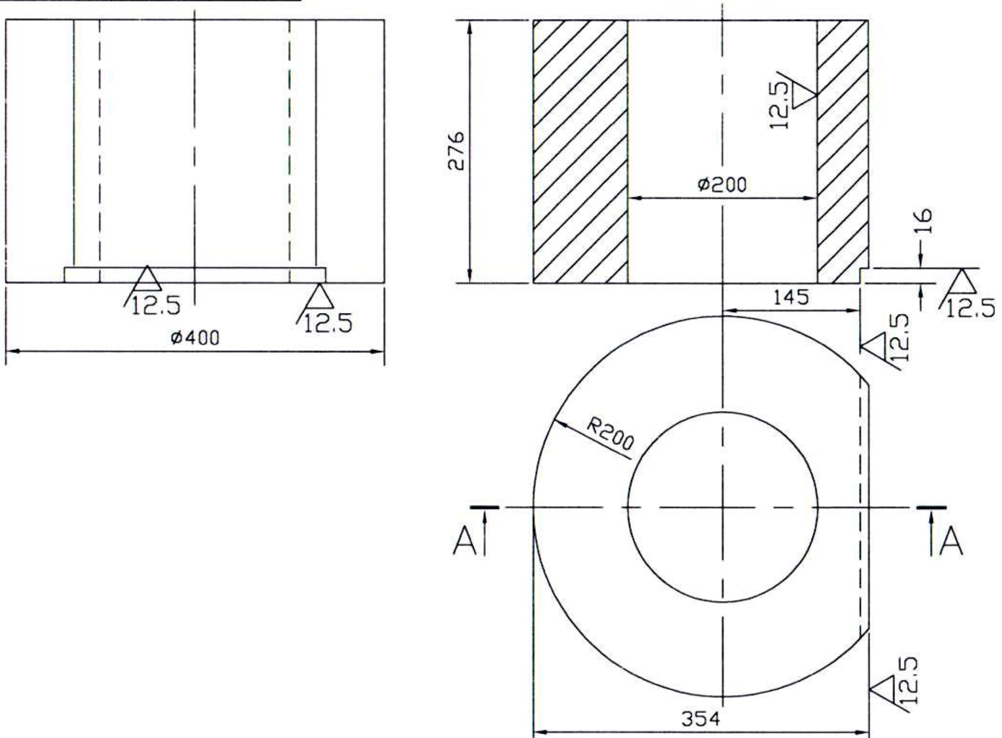
12

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

DRG. NO. 39513800019

SECTION–AA



TECH. REQUIREMENT :

1. ULTRASONIC TEST TO BE AS PER AA0850118 LEVEL–III.
2. PERMISSIBLE VARIATIONS ON UNTOLERANCED DIMENSIONS TO BE AS PER DRAWING NO. 32000049014.
3. PATTERN NO. 1229502

REFERENCE :

TRUNNION HOUSING CASTING DRAWING NO. 39513800018.

QTY VAR00	REMARKS	VAR. NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	IT.NO. / VAR.	MATL. CODE / MATL. SPCN.	C	UNIT	UNIT WT. / QTY.	GS	ZONE
	ø 400X276 LG C.ST. CASTING		001	TRUNNION HOUSING	I	-	- / -	BP19599	C		186.85 / 001		G

28 —— CARD TYPE-3 28 —— CARD TYPE-1 28 —— CARD TYPE-2

ADDITIONAL INFORMATION

STATUS OF DRAWING

DISTRIBUTION OF PRINTS

PSE – 2, STM – 5
TGX – 1, FBM – 7

उत्पाद का प्रकार या ग्राहक/परियोजना का नाम
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: TDL TPS PANIPAT 7 & 8

भारत हेवी इलेक्ट्रिकल्स लिमिटेड भोपाल
BHARAT HEAVY ELECTRICALS LTD. BHOPAL

	नाम/ NAME	हस्ता/ SIGN	दिनांक/ DATE
बनाया DRN	RAJBHATT	राजभट्ट	08.08.03
जँचा CKD	P.M.S. BISHT	[illegible]	08.08.03
अनुमोदित APPD	V.K. JAIN	वि जैन	08.08.03

REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED

विभाग DEPT	कोड CODE	अन. टल. नाप की श्रेणी UNTOL.DIMS. GR.	अनुपात SCALE	भार कि.ग्रा. WEIGHT (K.G.)	उसे. ड्राइंग का संदर्भ REF. TO ASSY. DRG.	मद क्र. ITEM NO.	मद. संख्या NO. OF ITEM
PSE	412	-	1:10	187	09513800017	014	001

शीर्षक/ TITLE: TRUNNION HOUSING (FOR 2500 NB BFV)

उरेख क्रं/ DRAWING NO.: 39513800019

पुन./REV: 00

पृष्ठ क्रं/SHT. No. पृष्ठों की संख्या/ NO. OF SHT.

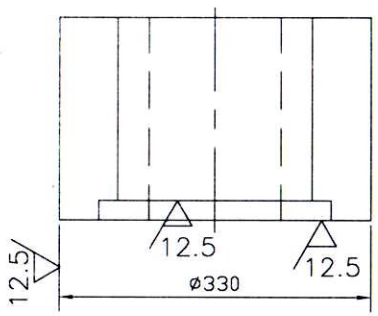
A3

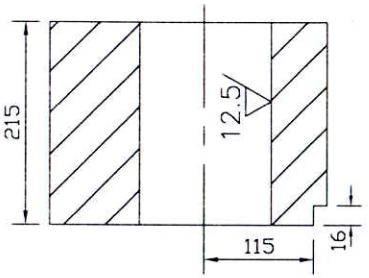
INVENTORY NO. SIGN. & DATE REF. DRG. NO.

FIRST ANGLE PROJECTION

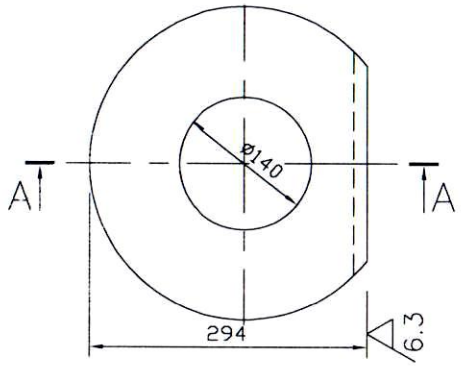
(ALL DIMENSIONS ARE IN mm)

DRG. NO. 39513800033





SECTION–AA



TECH. REQT.:–

1. ULTRASONIC TEST TO BE AS PER AA 0850118– LEVEL III
2. PERMISSIBLE VARIATIONS ON UNTOLERANCED DIMS TO BE AS PER DRG. NO.3–200–00–49014

QTY VAR00	REMARKS	VAR. NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	IT.NO.	MATL. CODE	A/C	UNIT	UNIT WT.	GS	ZONE
ø 360X215 LG. C.S.T.FORGING		001	TRUNNION HOUSING	I	–	–		C		92.50		
						–	AA19331			001		
						VAR.	MATL. SPCN.			QTY.		

28 → CARD TYPE-3 | 28 → CARD TYPE-1 | 28 → CARD TYPE-2

ADDITIONAL INFORMATION

STATUS OF DRAWING

DISTRIBUTION OF PRINTS

PSE-2, STM-5, TGX-1, FBM-7

उत्पाद का प्रकार या ग्राहक/परियोजना का नाम
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

BF VALVE STANDARD

भारत हेवी इलेक्ट्रिकल्स लिमिटेड भोपाल
BHARAT HEAVY ELECTRICALS LTD. BHOPAL

	नाम/ NAME	हस्ता/ SIGN	दिनांक/ DATE
बनाया DRN	SARVESH	सर्वेश	30.09.2013
जाँचा CKD	H.K.LAVVANSHI	लवंशी	30.09.2013
अनुमोदित APPD	MAYANK JAIN		30.09.2013

REV.	DATE	ALTERED / CHECKED / APPROVED

REV.	DATE	ALTERED / CHECKED / APPROVED

विभाग DEPT	उन. टल. नाप की त्रेची UNTOL.DIMS. GR.	उनुपात SCALE	भार कि.ग्रा. WEIGHT (K.G.)	उसे. ड्राईंग का संदर्भ REF. TO ASSY. DRG.	मद क्र. ITEM NO.	मद. संख्या NO. OF ITEM
PSE	–	NTS	92.50	–	–	001
कोड CODE 412						

शीर्षक/ TITLE

TRUNNION HOUSING

ड्रा.सं क्र/ DRAWING NO. **39513800033** | पुन./REV 00

पृष्ठ क्र/SHT. No. | पृष्ठों की संख्या/ NO. OF SHT.

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

A3

(7)

BHEL	CORPORATE PURCHASE SPECIFICATION	AA 193 31
		Rev. No. 11
		PREFACE SHEET

CARBON STEEL FORGINGS, CLASS 2

FOR INTERNAL USE ONLY
REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS

Comparable Standards:

1. INDIAN : IS: 2004 - 1991 Class 2 (20C8),

Suggested/Probable Suppliers and Grades:

Refer plant vendors list.

User Plant References:

1. BHOPAL : PS 10124, PS 10159206
2. HARDWAR : IS:2004, Class 2
3. HYDERABAD : HY19363, CSN 412020.1, CSN412020.3, SAE1020, IS:2004-Cl 2, CSN411373.0,
4. TIRUCHY : IS:2004. Class 2

REVISIONS : 36th MOM OF MRC (FCF+HTM)			APPROVED : INTERPLANT MATERIAL RATIONALISATION COMMITTEE-MRC (FCF+HTM)		
Rev. No. 11	Amd.No.	Reaffirmed	Prepared	Issued	Dt. of 1st Issue
Dt: 30.01.2008	Dt :	Year:04-11-2011	HARDWAR	Corp. R&D	JULY, 1980

BHEL	CORPORATE PURCHASE SPECIFICATION	AA 193 31 Rev. No. 11 PAGE 1 OF 6

CARBON STEEL FORGINGS, CLASS 2

1.0 GENERAL:

This specification governs the quality requirements of Carbon Steel Forgings, Class 2.

2.0 APPLICATION:

Suitable for general engineering purposes and for use in welded constructions.

3.0 CONDITION OF DELIVERY:

Normalised / Normalised and tempered..

Rough machining of the forgings shall be carried out, unless otherwise specified in the BHEL order/drawing.

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

The material shall comply with the following National standards and also meet the requirements of this specification.

IS::2004 – 1991 (RA -2006) } Carbon Steel Forgings For General Engineering
Gr: 2 (20C8), } Purposes.

5.0 DIMENSIONS AND TOLERANCES:

The dimensions and tolerances shall be as specified on the order/ drawing. Wherever these are not specified, specified, the machining allowances and tolerances shall be as specified below:

For finish machined drawings : 3 ± 1 mm

For rough machined drawings : ± 1 mm

REVISIONS : 36th MOM OF MRC (FCF+HTM)			APPROVED : INTERPLANT MATERIAL RATIONALISATION COMMITTEE-MRC (FCF+HTM)		
Rev. No. 11	Amd.No.	Reaffirmed	Prepared	Issued	Dt. of 1st Issue
Dt. 30.01.2008	Dt :	Year:04-11-2011	HARDWAR	Corp. R&D	JULY, 1980

6.0 MANUFACTURE:

Forgings shall be manufactured from steel produced by the open hearth, electric or such other process as may be agreed to between BHEL and the manufacturer.

Steel shall be fully killed.

Sufficient discard shall be made from each ingot to ensure freedom from pipe, segregation and other defects.

The amount of hot working and finishing temperature shall be such as to ensure complete soundness and adequate uniformity of structure and mechanical properties after heat treatment. The forgings shall not be overheated.

The minimum reduction ratio when forgings are made out of ingots shall be 4:1.

For sizes above 250 mm ruling section, the minimum reduction ratio shall be 3.5:1

Note: Raw material like Ingots/Blooms/Billets required for forgings should be procured from BHEL approved sources along with test certificate."

7.0 FREEDOM FROM DEFECTS:

The forging shall be free from defects, such as cracks, fold, flakes, seams, segregation, nonmetallic inclusions and other injurious defects which may affect the utility of the forging.

8.0 HEAT TREATMENT:

Forgings shall be normalised / normalised and tempered at suitable temperature to achieve the mechanical properties specified.

Test pieces shall also be heat treated along with the forgings they represent.

9.0 FINISH:

As mentioned in the drawing.

10.0 CHEMICAL COMPOSITION:

The melt analysis of the steel and permissible variation in the composition of the forgings from the melt analysis shall be as follows:

Element	Percent		Permissible variation , percent
	min.	max.	
Carbon	0.15	0.25	± 0.02
Silicon	0.15	0.35	± 0.03
Manganese	0.60	0.90	± 0.04
Sulphur	---	0.040	+ 0.005
Phosphorus	---	0.040	+ 0.005

NOTE:

1. Elements not quoted above shall not be added to the steel, other than for the purpose of finishing the heat and shall not exceed the following limits:

Element	Percent, max.
Nickel	0.30
Chromium	0.30
Copper	0.25
Molybdenum	0 05
Vanadium	0.05
Tin	0.05
Boron	0.0003

2. When steel is aluminium killed or killed with both aluminium and silicon, the requirements of minimum silicon content shall not apply. For aluminium killed steel the total aluminium content shall be with in 0.02 to 0.05 percent.
3. Percent Cu + 10 X (percent Tin) shall not exceed 0.5%.
4. Carbon equivalent (Melt analysis) value (C.E.) = 0.42%, max.

$$C.E. = C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$$

5. Mo ≤ 0.15%, limiting to meeting conditions of Cr + Mo + Ni = 0.5%.

11.0 TEST SAMPLES:

11.1 Unless otherwise specified in the order/drawing, test samples shall be taken from each melt and heat treatment batch. Test samples should be cut from the heat treated forgings by cold process only and shall receive no further heat treatment.

Test samples shall be cylindrical or rectangular in shape and cut at a distance of 12.5 mm below the heat treated surface.

11.2 When integral test pieces are not called for, a test sample, having similar reduction ratio and heat treatment, as the forgings it represents, shall be provided per heat, per heat treatment batch, for check testing at BHEL, along with the forgings. The samples shall be properly identified and correlated with the Heat/Heat treatment batch No./Test certificate No. Test samples shall be taken, at a distance 12.5 mm below heat treatment surface.

11.3 Test samples shall generally be taken in the longitudinal direction. However, for economic reasons or where the size/configuration does not permit the same, test samples may be taken in the transverse or radial direction.

12.0 **MECHANICAL PROPERTIES :**

The test pieces, after being heat treated as per clause 7.0 above, shall show the following properties upto a limiting ruling section of 800 mm. Properties for thicker sections shall be subject to agreement between BHEL and the manufacturer.

Test methods are specified below:

12.1 Tensile : IS: 1608

12.2 Hardness Test (Brinell) : IS:1500

12.3 Charpy Impact Value (2mm U-Notch): IS:1499

The test is applicable for forgings of sizes above 16mm only.

Property	Sample (Cl 11.3)	Limiting ruling section, mm		
		Upto & incl.100	> 100 & upto 400	> 400 & upto 800
Tensile strength, min, N/mm^2	Longitudinal Transverse/ Radial/ Tangential	430	390	370
Yield strength, min, N/mm^2	Longitudinal Transverse/ Radial/ Tangential	230	195	185
Elongation on $5.65\sqrt{So}$ gauge length percent, min.	Longitudinal Transverse/ Radial/ Tangential	24 12 16 18	23 11 15 17	21 9 13 15
* Hardness, Brinell, HB	----	120 – 167	111 – 156	111 - 156
Charpy Impact value (2mm U-Notch) min., joules	Longitudinal Transverse/ Radial/ Tangential	47 24 28 35	43 22 26 32	40 20 24 28

Note:

1. Unless otherwise stated on the order/drawing small forgings of non-critical nature weighing less than 300 kg shall be accepted on the basis of chemical composition and hardness.

*2. Hardness test can be conducted only when tensile test can not be performed.

13.0 ULTRASONIC TESTS:

13.1 For forgings ordered by BHEL, Hyderabad: Unless other wise specified on the drawing, ultrasonic test shall be carried out as per BHEL standard AA 085 01 18 and norms of acceptance shall be as per category 2. Î

3.13.2 For forgings ordered by other units: If specified on the drawing/order, ultrasonic test shall be carried out as per BHEL standard AA 085 01 18 and norms of acceptance shall be as per category 2, unless otherwise specified. Î

14.0 ADDITIONAL TESTS: If specified in the drawing /order, the following tests shall be conducted:

14.1 Bend Test (Longitudinal):

The test pieces (230mm long and 32 mm square with edges rounded off, where the dimensions permit) shall be capable of being bent cold by direct pressure without fracture, until the sides are parallel, round a mandrel having a diameter of 44 mm when tested as per IS:1599.

14.2 Magnetic particle test:

14.3 Any other tests.

"Norms of acceptance shall be as specified on the drawing/order. "

15.0 SCOPE OF THIRD PARTY INSPECTION:

Wherever, separate quality plan is not attached, the scope of third party inspection shall be as follows:

1. Review of supplier's declared chemical composition.
2. Selection of test samples for mechanical tests and witness of mechanical tests.
3. Witness of Non-destructive tests as applicable.
4. Review of HT charts.
5. Dimensional inspection.

16.0 TEST CERTIFICATES:

Three copies of a test certificates shall be supplied, unless otherwise stated in the order, in the Test Certificate proforma annexed to this specification (Annexure -I).
In addition, the supplier shall ensure to enclose one copy of the test certificate along with their dispatch documents to facilitate quick clearance of the material.

The following details shall be furnished in the test certificate:

Dimensional inspection.
Details of heat treatment.
Reduction ratio
Chemical composition including trace elements.
Results of mechanical tests.
Results of Ultrasonic test
Results of ultrasonic examination.
Results of additional tests called for in the drawing/order.

17.0 PACKING & MARKING:

Forgings shall be suitably packed to prevent damage during transit.
Machined surfaces shall be properly protected with anticorrosive compounds.
Each package or forging (when supplied separately) shall be legibly marked with the following information:

AA 193 31 - Carbon Steel Forgings, Class 2 (20C8).
BHEL Order No.
Suppliers Name
Consignment/ Identification No.
Batch No.
Weight.

18.0 **REFERRED STANDARDS (Latest publications Including Amendments):**

1) IS:1499	2) IS:1500	3) IS:1599	4) IS:1608
5) IS:2004	6) AA 085 01 18		

ANNEXURE-I: RECOMMENDED TEST CERTIFICATE FORMAT FOR FORGINGS

SUPPLIER'S NAME AND ADDRESS

TEST CERTIFICATE FOR FORGINGS

1. Customer:
2. TC No. & Date:
3. PO No.:
4. Process of Melting Ingot:
5. Deoxidisation Process:
6. Forging Method:
7. BHEL's Reference for Approval of Bloom
8. Discard: Top_____%; Bottom _____%
9. Reduction Ratio } Ingot to Bloom / Bloom to Blank
10. Batch No.:
11. Heat/Melt No.
12. Spec.No.
13. Test Bar Size & Nos.
14. Supplier of the ingot/billet/ Bloom and TC reference.

15. FORGINGS COVERED BY TEST CERTIFICATE

S.No.	Drawing No. & Item No.	Description	Quantity & Weight

16. CHEMICAL COMPOSITION (PERCENT)

Element		C	Si	Mn	S	P									
As Per Specn.	Min.														
	Max.														
Actual Values															

17. HEAT TREATMENT
(To be accompanied by Recorder Chart, Whenever called for)

Condition	Heating Rate, °C/hr.	Temp.°C	Soaking Time, Hrs.	Cooling Rate, °C/hr	Cooling Medium

18. MECHANICAL PROPERTIES

		T.S. N/mm²	Y.S. 0.5/0.2% Proof N/mm²	% Elongation $5.65\sqrt{So}$ GL	% R.A. Min.	Hardness BHN(Min.3 values)	Impact Value Joules	Bend Test		
								Angle of bend	Dia of mandrel	Result
As Per Specn.	Min.									
	Max.									
Actual Values										

19. SURFACE FINISH (When called for in the order/drg.)

20. DIMENSIONAL INSPECTION

21. NON-DESTRUCTIVE TESTS

Nature of Test	Acceptance level	Instrument used	Range	Results	Any other detail
Ultrasonic					
Radiographic					
Dye penetrant/ Magnetic Particle					

22. METALLOGRAPHIC EXAMINATION
(To be conducted if called for and photo micrographs to be attached along with a report)

Location of Sample	Etchant used	Magnification	Constituent observed	Relative %	
Microstructure	Macroetch	Inclusion Rating			

23. OTHER TESTS IF ANY (MICROSCOPIC, SULPHUR PRINTS, ETC)

24. IDENTIFICATION OF FORGINGS AS PER PURCHASE SPEC.

We hereby certify that the items mentioned above have been tested and inspected in our presence and are found to be in accordance with drawings, specifications and purchase order.

SIGNATURE, NAME & SEAL OF THE INSPECTING OFFICER
DATE:

SIGNATURE, NAME & SEAL OF THE CHIEF OF QUALITY CONTROL/ CHIEF METALLURGIST OF THE SUPPLIER
DATE:

INSTRUCTIONS

a) Details of all heat treatment processes carried out should be furnished sequentially in 17.
b) Test certificates are to be furnished as per Purchase order and specification, in A4 size preferably in transparent paper.
c) All the entries including signature should be in block colour ink.
d) If testing is done by outside agencies, the original TCs shall be furnished.
e) The actual TC may run into more than one A4 size paper, if needed, to facilitate filling up of details.

	VENDOR'S NAME & ADDRESS:	MANUFACTURING QUALITY PLAN		QP. NO.:	
		CUSTOMER: BHEL, PROJECT: PRODUCT:	BHEL P.O.NO.: P.O.DATE: BHEL SPEC: FP 50617 REV: 00	REV NO: 00	DATE: PAGE 1 OF 2

SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*D	AGENCY			REMARKS
										P	W	V	
1	**RAW MATERIALS & BOUGHT OUT ITEMS**												
1.1	MS plates	(a) Chemical propoerties	Major	Chem test	1/heat	IS 2062	IS 2062 Gr E250(Fe410W) QLY "B	Manufactur's TC	✓	2		1	
		(b) Mechanical propoerties	Major	Mech test	1/heat	IS 2062	IS 2062 Gr E250(Fe410W) QLY "B	Manufactur's TC	✓	2		1	
		(c) UT examination (plates above 40 mm)	Major	UT	100%	IS 2062, ASTM A435	IS 2062 Gr E250(Fe410W) QLY "B, ASTM A436	Manufactur's TC	✓	2		1	
		(d) Dimension	Major	Mesurement	100%	PO	PO	Manufactur's TC	✓	2		1	
1.2	Bars, angles, beams, chanels	(a) Chemical propoerties	Major	Chem test	1/heat	IS 2062	IS 2062 Gr E250(Fe410W) QLY "A"	Manufactur's TC	✓	2		1	
		(a) Mechanical propoerties	Major	Mech test	1/heat	IS 2062	IS 2062 Gr E250(Fe410W) QLY "A"	Manufactur's TC	✓	2		1	
		(c) Dimension	Major	Mesurement	100%	PO	PO	Manufactur's TC	✓	2		1	
2	**INPROCESS INSPECTION**												
2.1	Fitting and welding	Welder Qualification	Critical	Test	100%	WE 008, WPS	WPS	PQR		2		1	
2.2	NDE Weld joints	DP examination	Critical	Test	100%	AA 0850131	AA 0850129	Inspection report		2		1	
2.3	Stress relieving	Heat treatment	Critical	SR	100%	HY 0640763	HY 0640763	Heat cycle	✓	2		1	
2.4	NDE Weld joints	(b) Radiography examination	Critical	RT	10 % on butt weld. 100% on butt weld pl th above 37.50 mm	ASME Sec III, DIV-1	UW 51/52	Test report	✓				
2.5	Machining	Concentricity & perpendicularity (to be checked on machine)	Major	Mesurement	100%	Drawing	Drawing	Dimension report		2		1	

LEGEND: P: PERFORM, W: WITNESS, V: VERIFICATION. INDICATE 1 FOR BHEL CQS (OR BHEL NOMINATED INSPECTION AGENCY) & 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W & V COLUMNS. * FOR ITEMS MARKED ✓ (TICK) IN COLUMN 'D', TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.

PREPARED BY	APPROVED BY	APPROVED BY
VENDOR'S SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP

Sample

03

	VENDOR'S NAME & ADDRESS:	MANUFACTURING QUALITY PLAN				QP. NO.:						
		CUSTOMER: BHEL. PROJECT: PRODUCT:				BHEL P.O.NO.: P.O.DATE: BHEL SPEC: FP 50617 REV: 00		REV NO: 00	DATE:	PAGE 2 OF 2		

SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*D	AGENCY			REMARKS
										P	W	V	
2.6	NDE Pressure test	Hydraulic pressure test	Major	Test	100%	at 5 kg/sq cm for 30 min	no lekage, no pressure drop	Test report	✓	2		1	
2.7	Painting (high build coal tar epoxide paint)	Paint thickness	Major	Mesurement	at min 10 locations	AA 56101	AA 56101 (total DFT 100 micron)	Inspection report		2		1	
2.8	Painting (TRP)	Paint (TRP) on machined area, drill & tap holes	Major	Verification	100%	AA 55153, HY 0490563	HY 0490563 (cat F)	Inspection report		2		1	
2.9	Identification	by weld deposits of letter size 30 mm	Major	Verification	100%	Drawing	Drawing	Inspection report		2		1	
3	FINAL INSPECTION & TESTING												
3.1	Finished product	(a) Identification	Major	Verification	100%	Drawing	Drawing	Inspection report	✓	2	1		
		(a) Dimension	Major	Mesurement	100%	Drawing	Drawing	Dimension report	✓	2	1		
		(b) Correlation of materials and verification of TC's and final report	Major	Verification	100%	Drawing, FP 50617	Drawing, FP 50618	Fianl inspection report	✓	2		1	

Legend

TC - Test certificate
PO - purchase order
WPS - welding procedure specification
UT - ultrasonic test
NDE - non destructive examination
RT - radiography test
SR - stress releiving

LEGEND: P: PERFORM, W: WITNESS, V: VERIFICATION. INDICATE 1 FOR BHEL CQS (OR BHEL NOMINATED INSPECTION AGENCY) & 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W & V COLUMNS. * FOR ITEMS MARKED ✓ (TICK) IN COLUMN 'D', TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.

PREPARED BY	APPROVED BY	APPROVED BY
VENDOR'S SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP