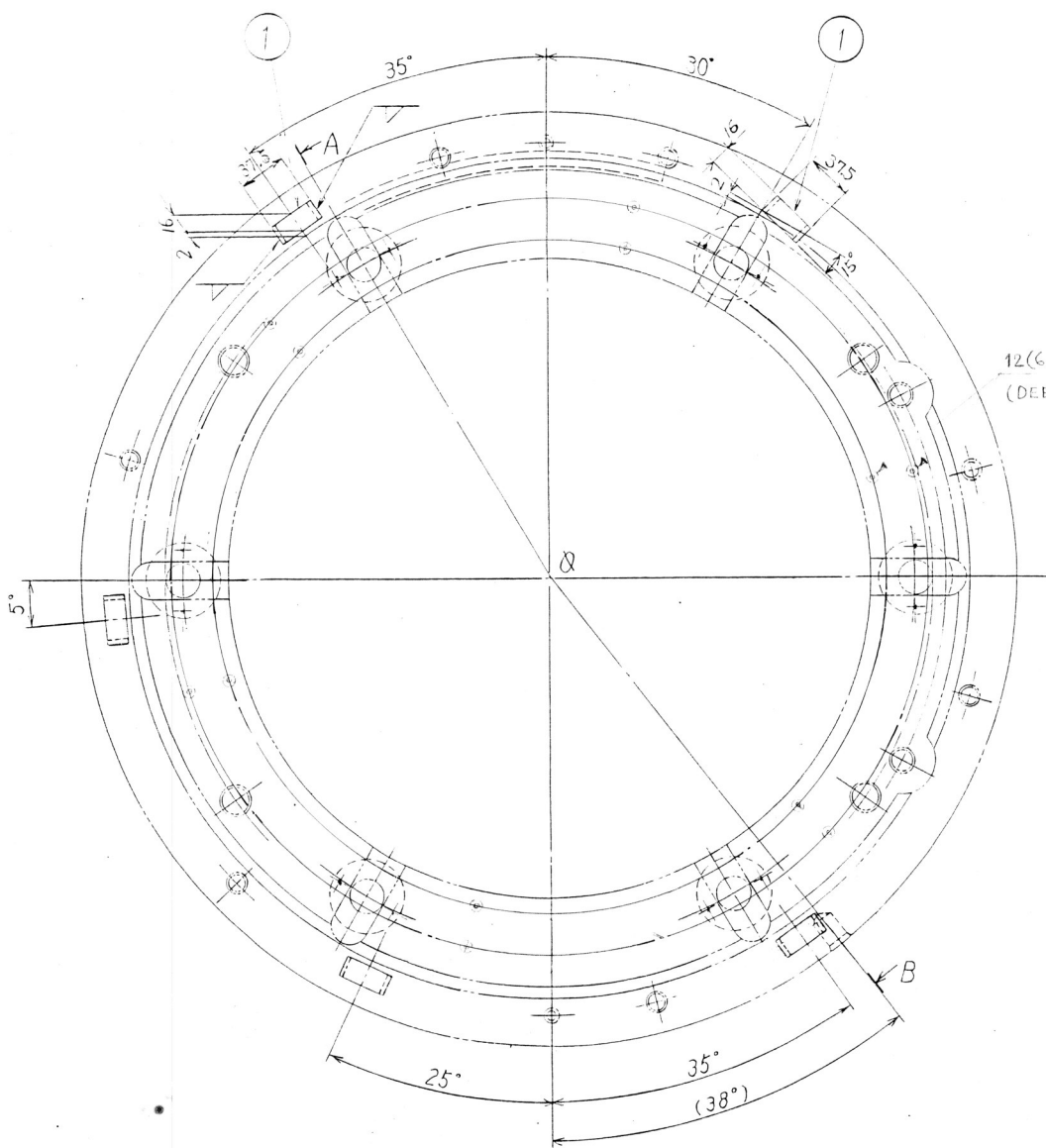
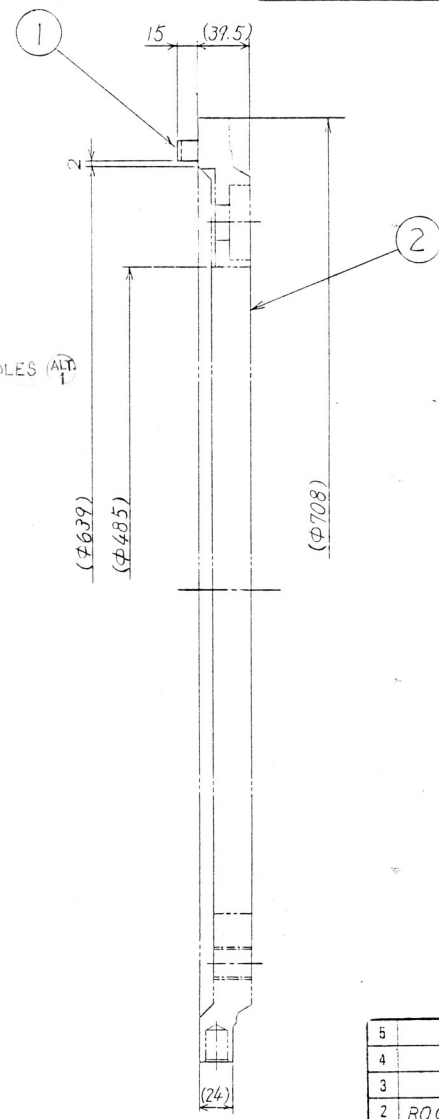


SYM.	DWG. ZONE	REVISIONS	DATE	REVD.	CHKD.	RE. DWG.	MTR.	RE. MF.
1.		M8 TAPPED HOLES PROVIDED FOR HANGING BRACKET ASSEMBLY Dwg. NO. FOR CLEAT CHANGED. REF. RD605 Dwg. NO. SKEL-4446	98-04-27	Q	-	-	-	-



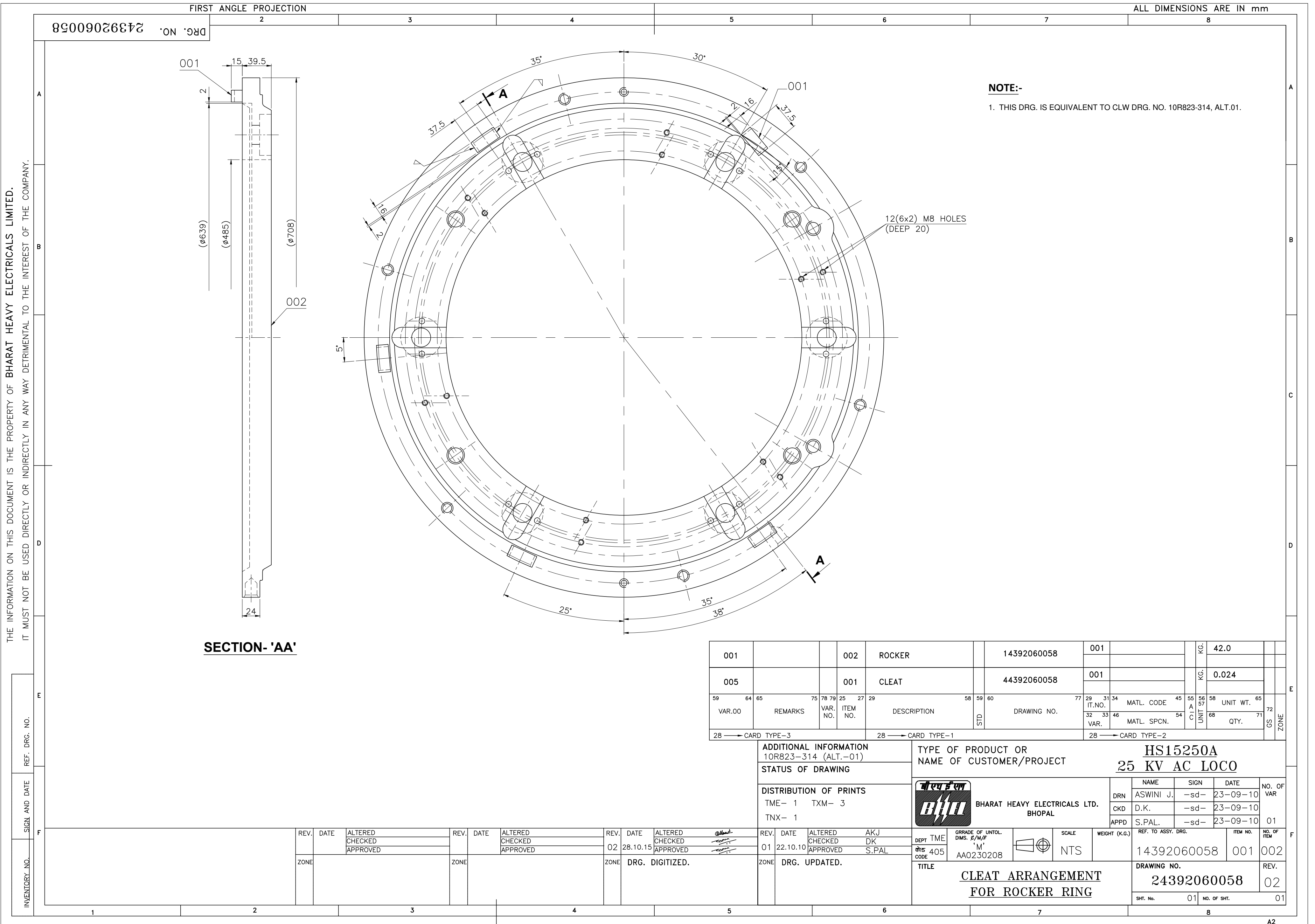
12 (6x2) M8 HOLES (ALT)
(DEEP 20)



SECTION A-A-B

5					
4					
3					
2	ROCKER	100750-317	(1)		
1	CLEAT	487-035-088	5		
NO.	PARTS NAME	DRAWING NO.	NO. OF PIECES PER MOTOR	REMARKS	
DWN.	88-02-03	THIRD	TITLE HS 15250A		
CHKD.	88-02-05	ANG. PROJ.	CLEAT ARRANGEMENT		
APPR.	88-02-05	REG. SCALE	FOR ROCKER RING		
Hitachi, Ltd.		HITACHI WORKS DWG. NO.		REV. 1	
Tokyo Japan		10R823-314			
		SIATHIGI		S 2213	

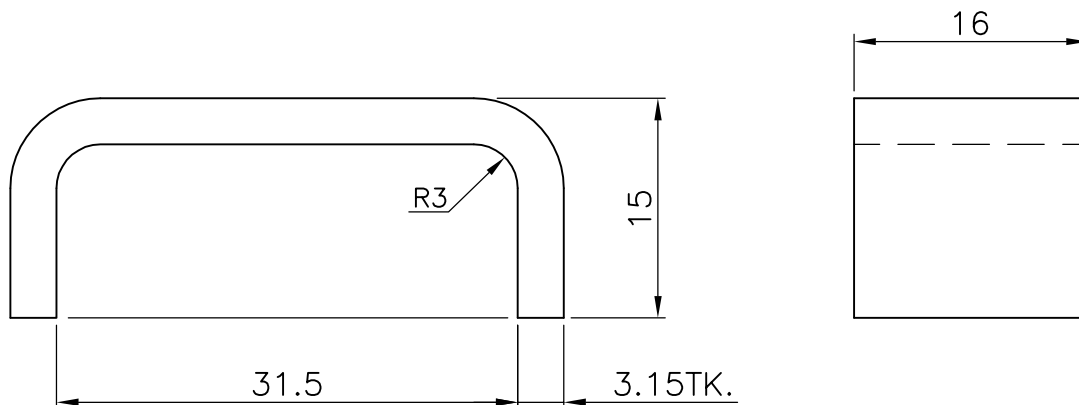
Signature Not Verified
Digitally signed by Ravindra Kumar
Date: 2022.04.06 15:33:40 +05'30'
Reason: I am a CRIS
Location: KAW BEM
Generated from eOffice by Shalendra Kumar Yadav, MANAGER (SKY)-MNX35400-HEP, MANAGER, HEP HEAVY ELECTRICALS PLANT (HEP) on 27/05/2026 05:43 pm



FIRST ANGLE PROJECTION

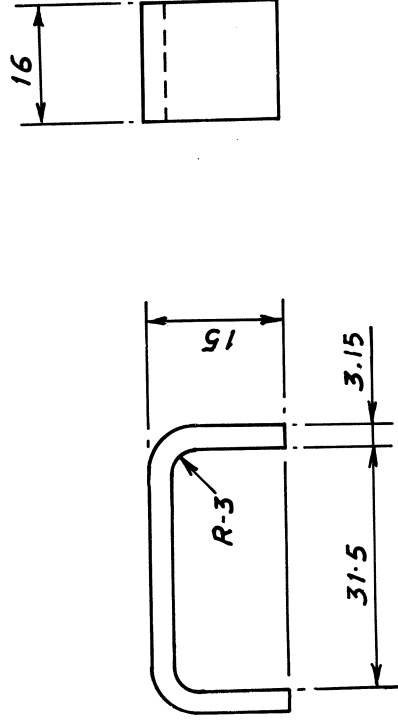
(ALL DIMENSIONS ARE IN mm)

REV.	DATE	ALTERED	REV.	DATE	ALTERED	ADDITIONAL INFORMATION
		CHECKED			CHECKED	
		APPROVED			APPROVED	
			01	18.05.16		4 TWD 095 088
			DRG. DIGITIZED & UPDATED.			STATUS OF DRAWING
						DISTRIBUTION TME- 1, TNX -1, OF PRINTS TXM- 4

NOTES:-

1. TOLERANCE ON UNTOLERATED DIMENSIONS ARE ± 0.5 MM.
2. CLEAT TO BE ZINC PLATED TO AA0673603 & PASSIVATED TO AA0673604 WITH A PLATING THICKNESS OF 0.013 TO 0.015 MM.
3. REMOVE SHARP CORNERS.
4. THIS DRAWING IS EQUIVALENT TO CLW DRG NO. 4TWD.095.088, (ALT.00).

INVENTORY NO.	SIGN. & DATE	REF. DRG. NO.	10 T 835 027	CARD TYPE 3		28	CARD TYPE 1		28	CARD TYPE 2		28
				REMARKS		ITEM NO.	DESCRIPTION	STD	MATL. CODE	A/C	UNIT	UNIT WT.
				001		CLEAT	AA1011713136	KG.	0.03			
				3.15TK.x16x62		AA10113						
DEPT. TME		UNTOL. DIMS. GR.			SCALE	WEIGHT(KG)	REF.TO ASSY.DRG.	ITEM NO.	NO.OF ITEM			
CODE	DIMS \varnothing /M/ $\frac{1}{8}$	NTS								0.03	2 439 20 60 058	001
TITLE							DRAWING NO.		REV			
<u>CLEAT</u> HS15250A, 25 KV AC LOCO 5							44392060058		01			
							SHT.NO	01	NO.OF.SHT.	01		



NOTE:-

1. ALL SHARP CORNERS ARE TO BE ROUNDED OFF.

[illegible]

JIS

JAPANESE INDUSTRIAL STANDARD

Rolled Steel for
General Structure

☞ JIS G 3101 —1976

Translated and Published

by

Japanese Standards Association

Translation without guarantee
In the event of any doubt arising, the original
standard in Japanese is to be evidence



JAPANESE INDUSTRIAL STANDARD

J I S

Rolled Steel for General Structure

G 3101-1976
(Reaffirmed: 1979)1. Scope

This Japanese Industrial Standard covers the rolled steel used for general structure such as buildings, bridges, ships, rolling stocks and other structures.

2. Classification and Symbols

The rolled steel shall be classified with the symbols as shown in Table 1.

Table 1. Classification and Symbols

Classification	Symbols	Remarks
✓ Class 1	SS 34	Steel plates and sheets, strips, flats and bars
Class 2	SS 41	Steel plates and sheets, strips, flats, bars and shapes
Class 3	SS 50	
Class 4	SS 55	Steel plates and sheets, strips flat bars and shapes of not more than 40 mm in thickness and steel bars of not more than 40 mm in diameter, side or distance across flats

Remark: Steel bars include bar-in-coils.

3. Chemical Composition

The chemical composition of the rolled steel shall conform to Table 2 which shows the values of the ladle analysis.

Table 2. Chemical Composition

Classification	Symbol	Chemical composition %			
		C	Mn	P	S
Class 1	SS 34	—	—	0.050 max.	0.050 max.
Class 2	SS 41				
Class 3	SS 50				
Class 4	SS 55	0.30 max.	1.60 max.	0.040 max.	0.040 max.

Remark: Alloy elements other than shown in the above Table may be added to the Class 4 rolled steel as required.

4. Mechanical Properties

The yield point or strength, tensile strength, elongation and bend of the rolled steel shall conform to Table 3, provided that there shall be no cracks on the external surface of rolled steel when bent.

Table 3. Mechanical Properties

Classification	Symbol	Tension test					Bend test		
		Yield point or yield strength kgf/mm ² (N/mm ²)		Tensile strength kgf/mm ² (N/mm ²)	Elongation mm	Angle of bending	Inside radius	Test piece	
		Thickness of rolled steel (l) mm							
		16 max.	Over 16 to 40 incl.						
Class 1	SS 34	21 min. (206) min.	20 min. (196) min.	31 ~ 44 (333 ~ 431)	Steel plates and sheets, strips and flats steel of not more than 5 in thickness	180°	Half of the thickness	No. 5 26 min.	
					Steel plates and sheets, strips and flat steel of over 5 to 16 incl. in thickness			No. 1 A 21 min.	
					Steel plates and sheets, strips and flat steel of over 16 to 50 incl. in thickness			No. 1 A 26 min.	
					Steel plates and sheets and flat steel of more than 40 in thickness			No. 4 23 min.	
					Steel bars of not more than 25 in dia., side or distance across flats			No. 2 25 min.	
Class 2	SS 41	25 min. (245) min.	24 min. (235) min.	41 ~ 52 (402 ~ 510)	Steel bars of more than 25 in dia., side or distance across flats	180°	1.5 times the thickness	No. 3 30 min.	
					Steel plates and sheets, strips, flats and shapes of not more than 5 in thickness			No. 5 21 min.	
					Steel plates and sheets, strips, flats and shapes of over 5 to 16 incl. in thickness			No. 1 A 17 min.	
					Steel plates and sheets, strips, flats and shapes of over 16 to 50 incl. in thickness			No. 1 A 21 min.	
					Steel plates and sheets, flats and shapes of more than 40 in thickness			No. 4 23 min.	
					Steel bars of not more than 25 in dia., side or distance across flats	180°	1.5 times the dia., side or distance across flats	No. 2 20 min.	
					Steel bars of more than 25 in dia., side or distance across flats			No. 3 24 min.	

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Table 3. (Continued)

Classification	Symbol	Tension test				Bend test					
		Yield point or yield strength kgf/mm ² (N/mm ²)		Tensile strength kgf/mm ² (N/mm ²)	Elongation	Angle of bending	Inside radius	Test piece			
									Thickness of rolled steel (1) mm		
		6 max.	Over 16 to 40 incl.	Over 40	Dimensions of rolled steel mm	Test piece	%				
Class 3	SS 50	29 min. (284) min.	28 min. (275) min.	26 min. (255) min.	50 ~ 62 (490 ~ 608)	Steel plates and sheets, strips, flats and shapes of not more than 5 in thickness	No. 5	19 min.	180°	2.0 times the thickness	No. 1
						Steel plates and sheets, strips, flats and shapes of over 5 to 16 incl. in thickness	No. 1 A	15 min.			
						Steel plates and sheets, strips, flats and shapes of over 16 to 50 incl. in thickness	No. 1 A	19 min.			
						Steel plates and sheets, flat bars and shapes of more than 40 in thickness	No. 4	21 min.			
Class 4	SS 55	41 min. (402) min.	40 min. (392) min.	—	55 min. (539) min.	Steel bars of not more than 25 in dia., side or distance across opposite sides	No. 2	18 min.	180°	2.0 times the dia., side or distance across flats	No. 2
						Steel bars of more than 25 in dia., side or distance across opposite sides	No. 3	21 min.			
						Steel plates and sheets, strips, flats and shapes of not more than 5 in thickness	No. 5	16 min.			
						Steel plates and sheets, strips, flats and shapes of over 5 to 16 incl. in thickness	No. 1 A	13 min.			
Class 4	SS 55	41 min. (402) min.	40 min. (392) min.	—	55 min. (539) min.	Steel plates and sheets, strips, flats and shapes of over 16 to 40 incl. in thickness	No. 1 A	17 min.	180°	2.0 times the thickness	No. 1
						Steel bars of not more than 25 in dia., side or distance across flats	No. 2	13 min.			
						Steel bars of over 25 to 40 incl. in dia., side or distance across flats	No. 3	17 min.			

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Note ⁽¹⁾ In case of bar steel, the dia. of round bars, the side of square bars and the distance across flats of polygonal bars such as large square bars shall be applied.

- Remarks 1. The requirements described in Table 3 shall not apply to both ends of strips.
2. The yield point or yield strength of Class 1, Class 2 and Class 3 rolled steel over 100 mm in thickness, dia., side or distance across flats shall be not less than 17 kgf/mm² {167 N/mm²}, 21 kgf/mm² {206 N/mm²} and 25 kgf/mm² {245 N/mm²} respectively.
 3. The elongation of the No. 4 test piece for steel plates over 90 mm in thickness shall be obtained by reducing the value of 1 % from the values of elongation given in Table 3 for every increase of 25.0 mm or its fraction in thickness to the limit of 3 %.
 4. No. 3 test piece may be used in the bend test for the rolled steel not more than 5 mm in thickness.
 5. In this standard, the particulars in () are in accordance with the International System of Units (SI) and given for reference only.

$$1 \text{ N/mm}^2 = 1 \text{ MPa}$$

5. Appearance, Shape, Dimensions, Weight and Tolerance

The appearance, shape, dimensions, weight and tolerance of the rolled steel shall conform to the following standards.

JIS G 3191

JIS G 3192

JIS G 3193

JIS G 3194

Unless otherwise specified, the tolerance for the length of the steel plates and strips and the tolerance for the width of the cut-edged steel plates and strips shall conform to the tolerance A.

6. Test

6.1 Chemical Analysis

6.1.1 The general requirements and the sampling method for the chemical analysis shall conform to the specification in 3. of JIS G 0303.

6.1.2 The method of chemical analysis shall conform to one of the following standards:

JIS G 1211

JIS G 1213

JIS G 1214

JIS G 1215

JIS G 1253

JIS G 1256

JIS G 1257

6.2 Mechanical Test

6.2.1 The general requirements for the mechanical test shall conform to the specification in 4. of JIS G 0303. The sampling method of the test specimen shall conform to Group A and the number of test pieces and the sampling position to the following.

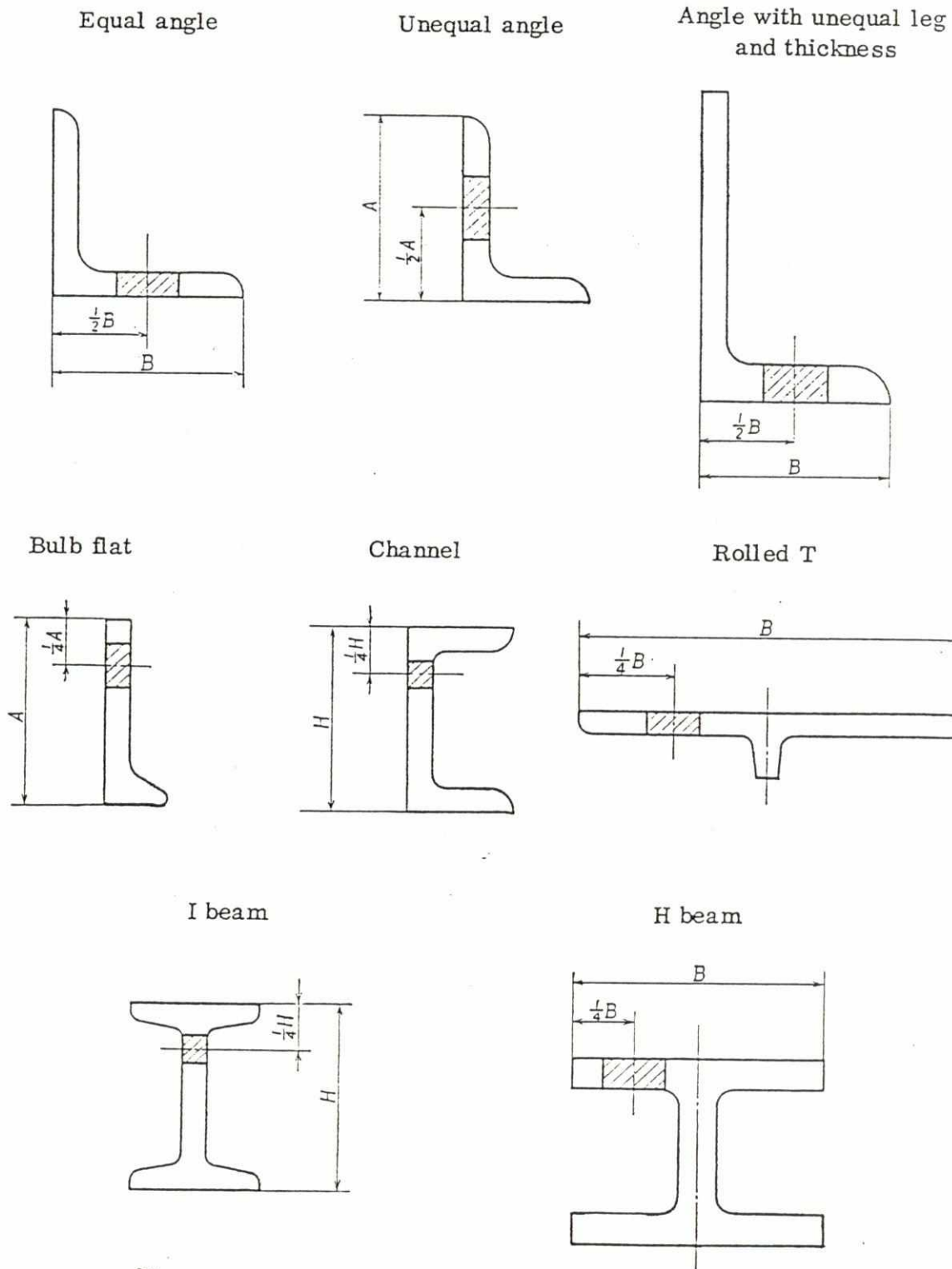
(1) Numbers of Test Pieces for the Tension Test and the Bend Test

- (a) Steel Plates and Flat Steels One test piece shall be sampled for each from the lots of steel plates and flat steels of the same heat where the maximum thickness is not more than twice the minimum thickness and two test pieces for each when the weight of the lot exceeds 50 tons.

- (b) Steel Strips and Plates Cut from Steel Strips One test piece shall be sampled for each from the lots of steel strips and plates cut from the steel strips of the same heat and thickness and two test pieces for each when the weight of the lot exceeds 50 tons.
- (c) Steel Bars One test piece shall be sampled for each from the lots of steel bars of the same heat and same section where the maximum dia., side or distance across flats are within two times the minimum dia., side or distance across flats and two test pieces for each when the weight of the lot exceeds 50 tons.
- (d) Steel Shapes One test piece shall be sampled for each from the lots of steel shapes of the same heat and section where the maximum thickness is within two times the minimum thickness and two test pieces for each when the weight of the lot exceeds 50 tons.
- (e) The number of rolled steel test pieces which are heat-treated shall conform to (a), (b), (c) and (d) for the same heat, cross section and heat treating conditions.
- (2) Sampling Positions of Test Pieces for the Tension Test and Bend Test
- (a) Steel Plates, Strips and Flat Steel The test pieces shall be sampled with their centers at a position $1/4$ of the width away from the edge. In case it is impossible to find the center of the test piece at the position $1/4$ of the width away from the edge, select the nearest position to such position.
- (b) Steel Shapes The sampling position shall conform to Figure 1. In case Figure 1 is not applicable, the nearest position to the position shown in Figure 1 shall be selected. In case of the H steel from which the test piece cannot be sampled as shown in Figure 1, follow the example of the I steel.

The sampling positions of other shapes shall conform to the agreement between the purchaser and the manufacturer.

Fig. 1. Sampling Positions of Test Pieces for Tension Test and Bend Test of Steel Shapes



6.2.2 The tension test piece and the bend test piece shall conform to the following specifications:

- (1) No. 1 A, 2, 3, 4 or 5 test piece specified in JIS Z 2201.
- (2) No. 1, 2 or 3 test piece specified in JIS Z 2204.

6.2.3 The methods of the tension test and the bend test shall conform to the following standards:

JIS Z 2241

JIS Z 2248

7. Inspection

7.1 The results of inspection with respect to the chemical composition, yield point or yield strength, tensile strength, elongation, bending, appearance, shape, dimensions and weight shall conform to the specifications described in 3., 4. and 5.

7.2 The tension test of steel strips may be omitted when approved by the purchaser.

7.3 The performance of the tension test or the values of the tension test when the tension test piece is unavailable in the specified dimensions shall be in accordance with the agreement between the purchaser and the manufacturer.

7.4 Re-inspection The steel which has not been qualified in the tension test and the bend test may be re-tested in accordance with the specification in 4.4 of JIS G 0303 for determination of acceptance.

8. Marking

Each piece or group of rolled steel which has passed the inspection shall be marked with the following items by appropriate method, provided that the items may be partly omitted when approved by the purchaser.

- (1) Symbol indicating the class
- (2) Heat number or inspection number
- (3) Dimensions
- (4) Quantity or weight of each group of steel plates and strips
- (5) Name of manufacturer or abbreviation

10.

G 3101-1976

9. Report

The report shall conform to the specification in 8. of JIS G 0303.

In case of being in accordance with the Remark of Table 2, the result sheet shall contain the contents of alloy elements to be added.

Applicable Standards:

JIS G 0303-General Rules for Inspection of Steel

JIS G 1211-Methods for Determination of Carbon in Iron and Steel

JIS G 1213-Methods for Determination of Manganese in Iron and Steel

JIS G 1214-Methods for Determination of Phosphorus in Iron and Steel

JIS G 1215-Methods for Determination of Sulfur in Iron and Steel

JIS G 1253-Method for Photoelectric Emission Spectrochemical Analysis of Iron and Steel

JIS G 1256-Method for Fluorescent X-ray Analysis of Iron and Steel

JIS G 1257-Atomic Absorption Spectrochemical Analysis of Iron and Steel

JIS G 3191-Shape, Dimension, Weight and Tolerance for Hot Rolled Steel Bar and Bar-in-coil

JIS G 3192-Dimensions, Weight and Permissible Variations of Hot Rolled Steel Sections

JIS G 3193-Dimensions, Weight and Permissible Variations of Hot Rolled Steel Plates, Sheets and Strip

JIS G 3194-Shape, Dimension, Weight and Tolerance for Hot Rolled Flat Steel

JIS Z 2201-Tension Test Pieces for Metallic Materials

JIS Z 2204-Bend Test Pieces for Metallic Materials

JIS Z 2241-Method of Tension Test for Metallic Materials

JIS Z 2248-Method of Bend Test for Metallic Materials

G 3101-1976
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Japanese Text

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Divisional Council on Iron and Steel

Technical Committee on Rolled Steel

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BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL

QUALITY ASSURANCE PLAN FOR ROCKER WITH CLEAT

QUALITY PLAN NO. –QAP/QTm/VENDOR QAP/2025-26/ ROCKER WITH CLEAT REV 00 date: 02.02.2026
Reference Document- PO DRAWING/SPECIFICATION

Page : 1 of 1

SL. NO	COMPONENT	CHARACTERISTICS	TYPE OF CHECK	QUANTAM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	INSPECTION AGENCY	REMARKS
				TP	TP/A					
1)	Raw material	As per drawing and spec.	TC verification	100%	100%	As per specification mentioned in drawing	As per specification mentioned in drawing & spec	MTC	BHEL/TP/A	1. TC from NABL Lab & MILL TC to be submitted along with supply. 2. Supplier to get the raw material TC correlated with material TC.
2)	Dimension	Dimension	Measurement	100%	10%	As per drawing & specification	As per drawing & Specification	Supplier record	BHEL/TP/A	ALL CTQ dimension to be Witnessed
3)	Visual & Paint	Burr. Sharp edges, surface finish & Paint	visual	100%	10%	As per drawing & specification	As per drawing & Specification	Supplier record	BHEL/TP/A	Witness
4)	Identification making i.e. vendor name, PO & job serial no.	Visual	Visual	100%	10%	As per drawing & specification	As per drawing & Specification	Supplier record	BHEL/TP/A	Witness

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