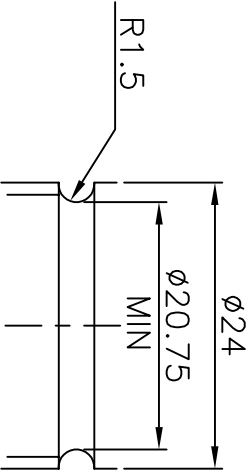
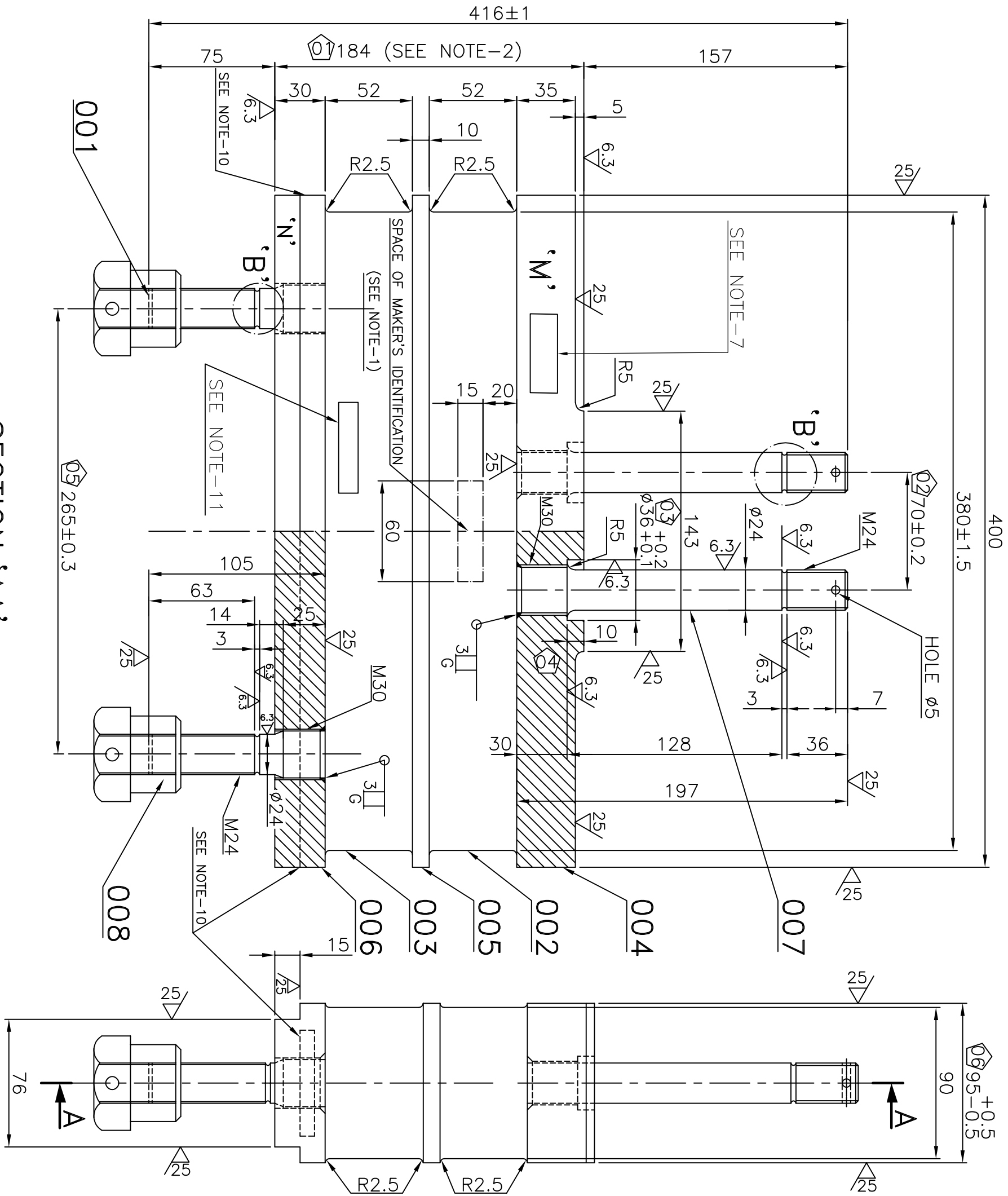


L00C0515742 ON GRD

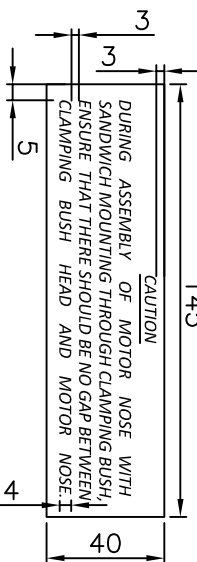


DETAIL OF -B

CHARACTERISTIC TEST	
MATERIAL OF DAMPER	A06 (JISK6386)
COMPRESSIVE SPG	8 (1500 KG.F) - 8 (500KG.F)
CONSTANT	6±1.0 KGf/CM ²
MODULUS OF STATICAL SHEARING ELASTICITY	6±1.0 KGf/CM ²
ELONGATION (MIN)	>400 %
COMPRESSIVE PERMA-NENT STRAIN (FOR COMPRESSION RATIO)	<25% (25%)
TENSILE STRENGTH	>150 KGf/CM ²

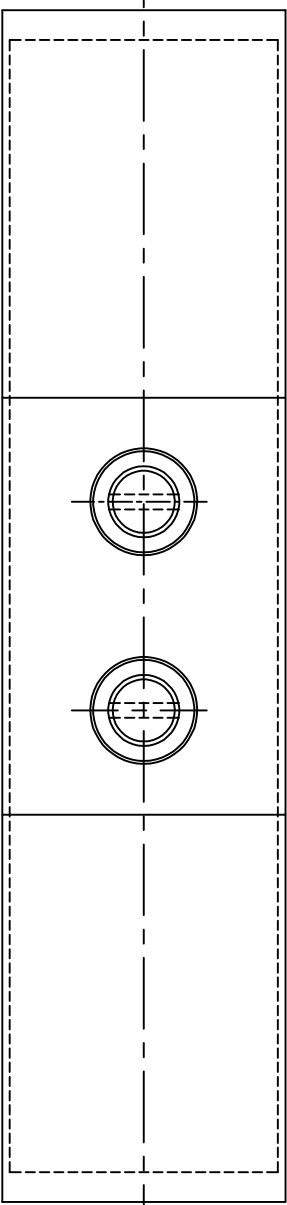
NOTES:-

- MAKERS IDENTIFICATION MARK TO BE MOULDED ON THE FLEXING ELEMENT, RUBBER IT. 001 IN THE RAISED LETTERS OF HEIGHT 0.5 MM AS SHOWN.
- VARIATION OF TOLERANCE = 184±1.6 MM. (MEAN) (184±0.8 MM)
- BOND/SHEAR TEST :- CLAMP STEEL END PLATE 'M' IN A FIXTURE VERTICALLY. APPLY VERTICAL LOAD ON THE TOP OF THE END PLATE 'N'. DEFLECT THE MOULDING EQUAL TO THE WIDTH OF THE UNIT (i.e. 95 MM). REPEAT THE TEST BY REVERSING THE UNIT AND ALSO BY CLAMPING END PLATE 'N' AND APPLY LOAD ON END PLATE 'M'. RUBBER DAMPER SHOULD NOT SHOW PEELING OFF OR ANY OTHER DEFECT.
- APPLY RUST PREVENTIVE ON SPECIAL BOLTS. IT 001 & 007 ALSO PROTECT THESE ITEMS WITH A SUITABLE PLASTIC SLEEVE TO AVOID DAMAGE OF THREADS DURING TRANSHIPMENT.
- ITEMS 001 AND 008 SHOULD MATCH FOR PROPER ASSEMBLY.
- ALL 06 NOS. "◇" MARKED DIMENSIONS ARE CRITICAL TO QUALITY (CTQ) & SL. NO. OF CTQ DIMENSIONS ARE INSCRIBED IN ◇ e.g. 09.
- 'IM3601' TO BE PUNCHED AT THE LOCATION SHOWN.
- ITEM 002 TO 006 TO BE BONDED TOGETHER.
- ITEM TO BE COMMISSIONED WITHIN 2 YEARS FROM DATE OF MANUFACTURING, HENCE PROCUREMENT PLANNING TO BE DONE ACCORDINGLY TO COMPLY THIS REQUIREMENT.
- SUPPLIER'S IDENTIFICATION MARK AND MONTH, YEAR OF MANUFACTURING TO BE PUNCHED AT THE LOCATION SHOWN (AT BOTH ENDS).
- WATER PROOF STICKER TO BE STICK AT BOTH FACES, HAVING FOLLOWING NOTE:-



SECTION 'AA'

VAR.NO.	DESCRIPTION	ST.NO.
00	MULTIPLE BONDED SANDWICH MOUNTING	BP9094850281



REV.	DATE	ALTERED	A.J.	REV.	DATE	ALTERED	A.J.
09	12.09.23	APPROVED	A.S.	08	28.08.23	APPROVED	A.S.
ZONE	NOTE-11 ADDED.			ZONE	NOTE-11 DELETED.		

REV.	DATE	ALTERED	A.J.	REV.	DATE	ALTERED	A.J.
05	25.07.22	APPROVED	A.S.	04	05.07.22	APPROVED	A.S.
ZONE	NOTE-8 ADDED.			ZONE	NOTE-7 ADDED.		

VAR00	REMARKS	VAR. ITEM NO.	DESCRIPTION	DRAWING NO.	VAR.	IT. NO.	MAT'L. CODE	MAT'L. SPECN.	QTY.	ZONE
002	SEE NOTE-5	008	SPECIAL NUT	34451503006	001				KG 0.6	
002	SEE NOTE-4	007	SPL. BOLT						KG 2.0	
001		006	PLATE						KG 1.2	
001		005	10 X 105 X 400						KG 3.3	
001		004	45 X 105 X 400						KG 15.0	
001	SEE NOTE-9 (REGARDING PROCUREMENT)	003	DAMPER (MOULDING)						KG 1.2	
001	SEE NOTE-4 AND 5	001	SPL. BOLT						KG 1.0	
002		001	440 X 105						KG 1.0	

ADDITIONAL INFORMATION

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

IM3601AZ



BHARAT HEAVY ELECTRICALS LTD. BHOPAL

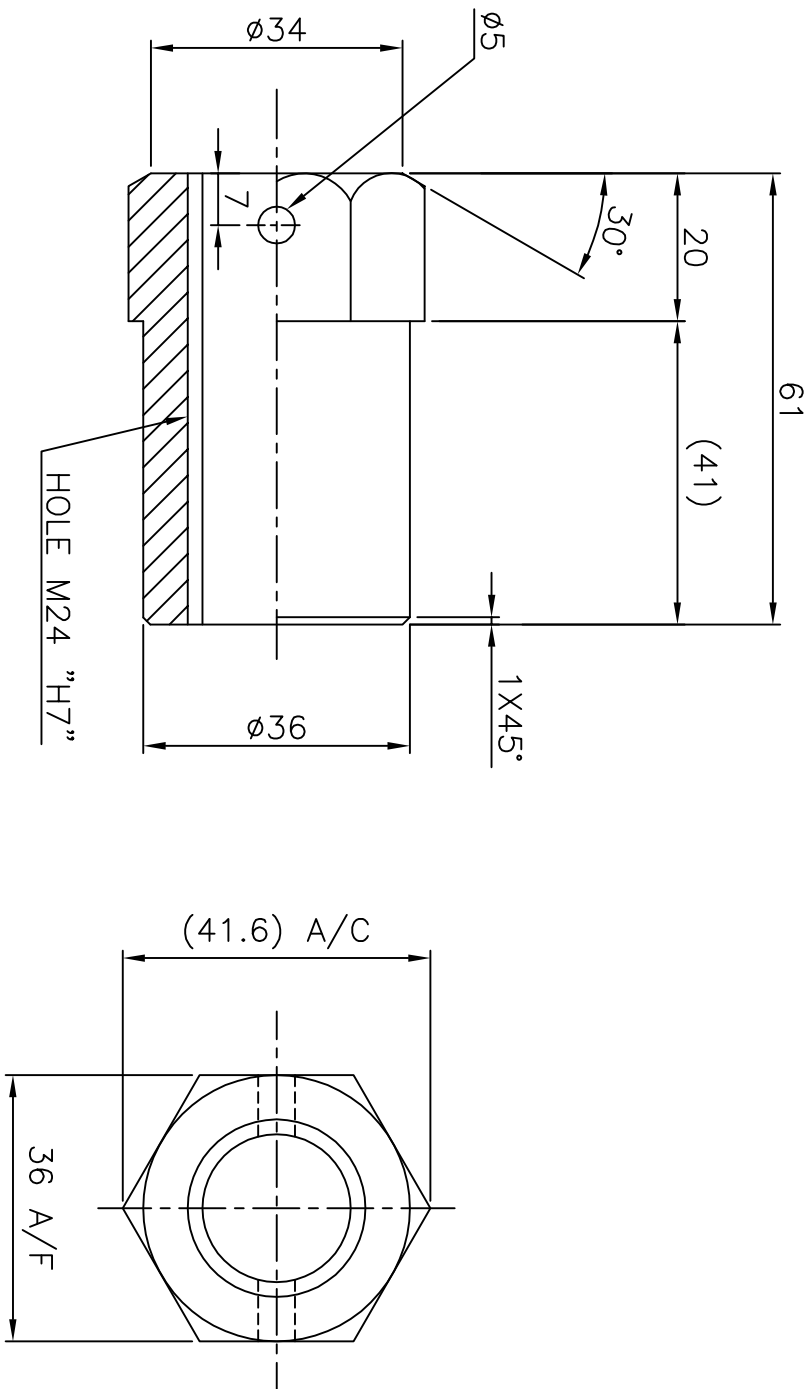
DRN.	NAME	SIGN.	DATE	NO. OF
A.J.HARIA			25.08.11	VAR.
D.K.			26.08.11	00

MULTIPLE BONDED SANDWICH MOUNTING

SHIT NO.	01	No. OF SHIT	01
24451503007			09

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

DRAWING NO. 34451503006





NOTE:-

1. $\nabla_{ALL}^{25} OVER$

TOOL LIST		
IT.	TOOL NO.	DESCRIPTION
0001	1410611	DRILL JIG FOR Ø5 HOLE

[illegible]

	<h1 style="margin: 0;">CORPORATE PURCHASING SPECIFICATION</h1>	<div style="border-bottom: 1px solid black; padding: 2px;">AA10108</div> <div style="border-bottom: 1px solid black; padding: 2px;">Rev No. 11</div> <div style="padding: 2px;">PAGE 1 of 2</div>			
<h2 style="margin: 0;">STRUCTURAL STEEL-STANDARD QUALITY</h2> <h3 style="margin: 0;">(PLATES, SECTIONS, STRIPS, FLATS & BARS)</h3> <h4 style="margin: 0;">(ORDERING DESCRIPTION)</h4>					
<p>1.0 GENERAL:</p> <p>This specification governs the quality requirements of structural steel plates, strips, flats, bars and sections such as angles, beams, channels and tees etc. of IS: 2062 – 2011, Gr: E250, Quality A</p> <p>2.0 APPLICATION:</p> <p>For general engineering purpose.</p> <p>3.0 CONDITION OF DELIVERY:</p> <p>Plates, Bars & Sections: Hot rolled in straight lengths without twists & Bends</p> <p>4.0 COMPLIANCE WITH NATIONAL STANDARDS:</p> <p>Material shall comply with the requirements of IS: 2062 – 2011, Gr: E250, Quality A</p> <p>Material offered to EN 10025-2:2004 Gr. S275JR is also acceptable. The tolerance on dimensions for plates shall comply with EN 10029.</p> <p>5.0 DIMENSIONS AND TOLERANCES:</p> <p>5.1 DIMENSIONS:</p> <p>5.1.1 Sizes</p> <p>Material shall be supplied to the dimensions specified on BHEL Order.</p> <p>5.1.2 Length</p> <p>Unless otherwise specified, hot rolled bars and sections shall be supplied in 3 to 6 metres length.</p> <p>5.2 Tolerances:</p> <p>5.2.1 The tolerances on hot rolled material shall comply with IS: 1852. However, no plate shall be under the specified thickness at any point.</p>					
Revisions: As per Cl. No. 38.1 of MOM of MRC-S&GPS		APPROVED: INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC(S&GPS)			
Rev No.11	Amd No.	Reaffirmed	Prepared	Issued	Dt. of 1 st Issue
Dt:22-02-2014	Dt:	Year:	6 HPEP, Hyderabad	Corp.R&D	July, 1976

AA10108	<h1 style="text-align: center;">CORPORATE PURCHASING SPECIFICATION</h1>	
Rev No. 11		
PAGE 2 of 2		

5.2.2 Straight for hot rolled bars:

Unless otherwise specified, the permissible deviation in straightness shall not exceed 5 mm in any 1000 mm length.

6.0 HARDNESS (BRINELL):

When tested in accordance with IS: 1500, the material shall show a brinell hardness in the range of 120-156 HB.

Note: Hardness test shall be conducted only when tensile test cannot be performed.

7.0 TEST CERTIFICATES:

Unless otherwise specified, three copies of test certificates shall be supplied.

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 test certificate shall bear the following information.

AA10108 Rev.11 / IS:2062 Grade: E250 Quality A / EN 10025-2 Gr. S275JR,

BHEL order no., Melt no. Size, Results of chemical analysis and Mechanical tests, Supplier's name, Identification no. TC no., Signature of competent authority etc.

8.0 PACKING AND MARKING:

Plates shall be transported suitably to avoid damage during transit.

For plates below 10 mm thick, each pile (preferably of 16 plates) and each plate 10 mm thick & over shall be marked with melt no. AA10108, BHEL order no., Supplier's name, Identification no., Size & weight on any one corner and encircled with paint preferably of white colour.

9.0 REFERRED STANDARDS (Latest publications including amendments):

1) IS: 1500 2) IS: 1852 3) EN 10029

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CORPORATE PURCHASING SPECIFICATION

AA10218

Rev No.07

PAGE 1 of 4

HOT ROLLED / FORGED CARBON STEEL BARS - H & T

1.0 GENERAL:

This specification governs the quality requirements of Hot Rolled / Forged Carbon Steel Bars, Hardened and Tempered.

2.0 APPLICATION:

For general engineering purposes.

3.0 CONDITION OF DELIVERY:

Hot Rolled / forged hardened and tempered.

Note: Sizes up to 100mm in hot rolled
>100 to 180mm in hot rolled or forged
above 180mm in forged

The ends of bars shall be reasonably square and true.

The bars shall be supplied in straight lengths without twists and bends.

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

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

IS: 5517 – 1993,

Gr:40C8

Hardened & Tempered

Steel for Hardening and Tempering

5.0 DIMENSIONS AND TOLERANCES:

5.1 Sizes:

The bars shall be supplied to the dimensions specified on BHEL order.

5.2 Tolerances:

5.2.1 For Forged bars:

The tolerances shall be + 8 mm - 0mm.

5.2.2 Tolerances on hot rolled bars shall comply with those of Grade 2 of IS: 3739: reproduced below:

Revisions:

Cl 24.4.19 of MOM of MRC-S&GPS

APPROVED:

INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC(S&GPS)

Rev No.07

Amd No.

Reaffirmed

Prepared

Issued

Dt. of 1st Issue

Dt:15-01-2002

Dt:

Year:2020

10 HEP, Bhopal

Corp.R&D

September, 1976

AA10218

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CORPORATE PURCHASING SPECIFICATION



Round and Square Bars:

<u>Nominal size, mm</u>		<u>Tolerance, mm</u>	
Over	Up to & Including	Permissible deviation	Out of round/ square
--	25	± 0.50	0.50
25	50	± 0.75	0.75
50	80	± 1.00	1.00
80	100	± 1.25	1.25
100	125	± 1.50	1.50
125	160	± 2.00	2.00
160	200	± 2.50	2.50
200	250	± 3.00	3.00

5.2.3 On Straightness:

Unless otherwise agreed to, the permissible deviation in straightness, shall not exceed the following limits in any 1000 mm length of the bar.

Up to & incl. 40 mm size of bars - 6 mm

Above 40 mm size of bars - 5 mm

5.3 Length:

Bars shall be supplied in 3 to 6 metres length or in multiples with maximum of 10% shorts down to 1 metre.

Forged bars shall be supplied in length of 1.5 to 3 metres.

6.0 MANUFACTURE:

Material shall be manufactured from fully killed steel.

7.0 HEAT TREATMENT:


The recommended heat treatment is as follows:

Harden in oil / water from a temperature of 830 – 860°C.

Temper at a suitable temperature between 550 – 660°C.

8.0 FREEDOM FROM DEFECTS:

The bars shall be sound, straight and free from internal and surface defects, such as seams, laps, cracks or any other defects which may impair the end use.

	<h1>CORPORATE PURCHASING SPECIFICATION</h1>	AA10218 Rev No.07 PAGE 3 of 4																										
9.0 CHEMICAL COMPOSITION:																												
<p>The melt analysis of steel and the permissible variation in the composition of the finished product from the melt analysis shall be follows:</p>																												
<table border="1"> <thead> <tr> <th data-bbox="288 436 552 562" rowspan="2">Element</th> <th colspan="2" data-bbox="552 436 906 495">Melt analysis percent</th> <th data-bbox="906 436 1350 562" rowspan="2">Permissible variation, percent, in product analysis</th> </tr> <tr> <th data-bbox="552 495 746 562">Min.</th> <th data-bbox="746 495 906 562">Max.</th> </tr> </thead> <tbody> <tr> <td data-bbox="288 562 552 629">Carbon</td> <td data-bbox="552 562 746 629">0.35</td> <td data-bbox="746 562 906 629">0.45</td> <td data-bbox="906 562 1350 629">± 0.02</td> </tr> <tr> <td data-bbox="288 629 552 696">Silicon</td> <td data-bbox="552 629 746 696">0.10</td> <td data-bbox="746 629 906 696">0.35</td> <td data-bbox="906 629 1350 696">± 0.03</td> </tr> <tr> <td data-bbox="288 696 552 763">Manganese</td> <td data-bbox="552 696 746 763">0.60</td> <td data-bbox="746 696 906 763">0.90</td> <td data-bbox="906 696 1350 763">± 0.04</td> </tr> <tr> <td data-bbox="288 763 552 831">Sulphur</td> <td data-bbox="552 763 746 831">---</td> <td data-bbox="746 763 906 831">0.035</td> <td data-bbox="906 763 1350 831">+ 0.005</td> </tr> <tr> <td data-bbox="288 831 552 898">Phosphorus</td> <td data-bbox="552 831 746 898">---</td> <td data-bbox="746 831 906 898">0.035</td> <td data-bbox="906 831 1350 898">+ 0.005</td> </tr> </tbody> </table>	Element	Melt analysis percent		Permissible variation, percent, in product analysis	Min.	Max.	Carbon	0.35	0.45	± 0.02	Silicon	0.10	0.35	± 0.03	Manganese	0.60	0.90	± 0.04	Sulphur	---	0.035	+ 0.005	Phosphorus	---	0.035	+ 0.005		
Element		Melt analysis percent			Permissible variation, percent, in product analysis																							
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Sulphur	---	0.035	+ 0.005																									
Phosphorus	---	0.035	+ 0.005																									
10.0 TEST SAMPLES:																												
10.1 One sample shall be taken from each melt for chemical analysis. One sample shall be taken from each heat treatment batch for testing of mechanical properties. Test pieces for mechanical tests shall be taken in the longitudinal direction of the piece																												
10.2 For ruling section up to & including 40mm, the test piece shall be machined coaxially from the test bars. For ruling section above 40mm the longitudinal axis shall be atleast 12.5 mm from surface of the test bars. Test methods for determining mechanical properties shall be as per IS:1598 (For IZOD impact test)/IS:1757 (For impact test in ISO-V Charpy) and IS:1608 (For tensile test).																												
10.3 For ruling section above 200mm, tensile test sample can be taken in tangential or transverse direction																												
11.0 MECHANICAL PROPERTIES (In Hardened and Tempered Condition)																												
<table border="1"> <thead> <tr> <th data-bbox="280 1563 512 1709">Ruling section, mm</th> <th data-bbox="512 1563 719 1709">Tensile strength, N/mm²</th> <th data-bbox="719 1563 943 1709">0.2%/PS/YS N/mm² min</th> <th data-bbox="943 1563 1150 1709">Y.E $5.65\sqrt{S_0}$ min</th> <th data-bbox="1150 1563 1358 1709">* IZOD impact J, min</th> </tr> </thead> <tbody> <tr> <td data-bbox="280 1709 512 1776">≤ 30</td> <td data-bbox="512 1709 719 1776">700 - 850</td> <td data-bbox="719 1709 943 1776">480</td> <td data-bbox="943 1709 1150 1776">17</td> <td data-bbox="1150 1709 1358 1776">35 (30)</td> </tr> <tr> <td data-bbox="280 1776 512 1843">> 30</td> <td data-bbox="512 1776 719 1843">600 - 750</td> <td data-bbox="719 1776 943 1843">380</td> <td data-bbox="943 1776 1150 1843">18</td> <td data-bbox="1150 1776 1358 1843">41(35)</td> </tr> </tbody> </table>	Ruling section, mm	Tensile strength, N/mm ²	0.2%/PS/YS N/mm ² min	Y.E $5.65\sqrt{S_0}$ min	* IZOD impact J, min	≤ 30	700 - 850	480	17	35 (30)	> 30	600 - 750	380	18	41(35)													
Ruling section, mm	Tensile strength, N/mm ²	0.2%/PS/YS N/mm ² min	Y.E $5.65\sqrt{S_0}$ min	* IZOD impact J, min																								
≤ 30	700 - 850	480	17	35 (30)																								
> 30	600 - 750	380	18	41(35)																								
* Average of 3 samples applicable for sizes above 16 mm ruling section only. Values in bracket are in ISO – V Charpy.																												

AA10218	<h2 style="margin: 0;">CORPORATE PURCHASING SPECIFICATION</h2>	
Rev No.07		
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12.0 ULTRASONIC TEST:

12.1 Each bar above 100 mm shall be tested ultrasonically in accordance with BHEL Standard AA0850118 to ensure freedom from internal defects. The norms of acceptance shall be as per category 2 of the above standard.

12.2 Optional tests: If specified on order, each bar > 40 to 100mm shall be tested ultrasonically in accordance with BHEL standard AA0850118 to ensure freedom from internal defects and the norms of acceptance shall be as per category 2.

13.0 TEST CERTIFICATES:

Three copies of test certificates shall be supplied, unless otherwise stated on the order.

In addition, the supplier shall ensure to enclose one copy of the test certificate along with their despatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information:

BHEL References:
AA10218; (Rev. No. 07)
BHEL order No,

Supplier's References:
Name:
Identification No:
Melt No:
Details of heat treatment:

Result of Tests:
Dimensional inspection:
Results of chemical analysis, mechanical and & Ultrasonic tests.

14.0 PACKING AND MARKING:

The material shall be suitably packed in bundles hession wrapped to prevent sagging, corrosion and damage during transit.

A suitable clear temperature rust preventive shall be applied on all the bars.

Each bar \geq 50 mm shall be stamped with 'AA10218'.

Bars below 50 mm shall be bundled together and tied with wire at 3 to 4 places along the length of the bars.

A metal label shall be securely attached to each bundle and shall bear the following information:

AA10218 : HOT ROLLED / FORGED CARBON STEEL BARS - H & T
BHEL Order No:
Consignment/Identification No:
Melt No:
Size and Weight:
Supplier's Name:

15.0 REFERRED STANDARDS (Latest publications including amendments):

1. IS: 1598	2. IS: 1608	3. IS: 1757
4. IS: 3739	5. IS: 5517	6. AA0850118



CORPORATE PURCHASING SPECIFICATION

AA10501

Rev No. 14

PAGE 1 of 4

1.5% NICKEL-CHROMIUM-MOLYBDENUM HOT ROLLED/FORGED STEEL BARS- H & T

1.0 GENERAL:

This specification governs the quality requirements of 1.5% Nickel-Chromium-Molybdenum Hot rolled/forged Steel Bars, Gr: 40Ni6Cr4Mo3 in Hardened and Tempered condition.

2.0 APPLICATION:

For the manufacture of bolts, studs and various components of machines.

3.0 CONDITION OF DELIVERY:

Hot Rolled / Forged; Hardened and tempered.

Note: Sizes up to 100mm in hot rolled
>100 to 180mm in hot rolled or forged
above 180mm in forged

The ends of bars shall be reasonably square and true.

The bars shall be supplied in straight lengths without twists and bends.

4.0 COMPILANCE WITH NATIONAL STANDARDS:

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

IS: 5517 – 1993 Gr: 40Ni6Cr4Mo3, Type: J
Hardened & Tempered

Steels for Hardening and Tempering -
Specification

5.0 DIMENSIONS AND TOLERANCES:

5.1 Sizes: Bars shall be supplied to the dimensions specified on the order.

5.1.1 Length: Unless otherwise specified, hot rolled bars shall be supplied in 3 to 6 metres length or in multiples with maximum 10%, shorts down to 1 metre.

Forged bars shall be supplied in lengths of 1.5 to 3.0 metres

Revisions:

Revised as per email dt 18.12.08 from Shri Gopal Bhatt from Bhopal.

APPROVED:

INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC(S&GPS)

Rev No.14

Amd No.

Reaffirmed

Prepared

Issued

Dt. of 1st Issue

Dt:18-12-2008

Dt:

Year:2020

16 HEP, Bhopal

Corp.R&D

April, 1977

AA10501

Rev No. 14

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CORPORATE PURCHASING SPECIFICATION



5.2 Tolerance:

5.2.1 Hot rolled bars: The bars shall not vary from specified diameter or distance across flats by more than $\pm 2\frac{1}{2}$ %.

5.2.2 Forged bars: The tolerance on the forged bars shall be as follows.

<u>Diameter, mm</u>	<u>Tolerance, mm</u>
50 mm to 175 mm	+ 8.0 mm
Above 175 mm	+ 12.5 mm

Note: (Hot rolled & forged bars).

Insignificant surface defects in the form of dent and ripple marks are permissible provided their depth does not exceed half the tolerance on each size.

6.0 MANUFACTURE:

Material shall be manufactured from fully killed steel.

7.0 HEAT TREATMENT:

The recommended heat treatment is as follows:

Harden in oil / water from a temperature of 830 – 850°C.

Temper at a suitable temperature between 550 – 660°C.


8.0 FREEDOM FROM DEFECTS:

The bars shall be sound, straight and free from internal and surface defects, such as seams, laps, cracks or any other defects which may impair the end use.

9.0 CHEMICAL COMPOSITION:

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

Element	Melt analysis percent		Permissible variation, percent, in product analysis
	Min.	Max.	
Carbon	0.35	0.45	± 0.02
Silicon	0.10	0.35	± 0.03
Manganese	0.40	0.70	± 0.04
Nickel	1.25	1.75	± 0.05
Chromium	0.90	1.30	± 0.05
Molybdenum	0.20	0.35	± 0.03
Sulphur	---	0.035	+ 0.005
Phosphorus	---	0.035	+ 0.005

	<h2 style="margin: 0;">CORPORATE PURCHASING SPECIFICATION</h2>	<div style="border-bottom: 1px solid black; padding: 2px;">AA10501</div> <div style="border-bottom: 1px solid black; padding: 2px;">Rev No.14</div> <div style="padding: 2px;">PAGE 3 of 4</div>																																				
<p>10.0 TEST SAMPLES:</p> <p>10.1 One sample shall be taken from each melt for chemical analysis.</p> <p>10.2 One sample shall be taken from each heat treatment batch for testing of mechanical properties. Test pieces for mechanical tests shall be taken in the longitudinal direction of the piece.</p> <p>For ruling section up to & including 40mm, the test piece shall be machined coaxially from the test bars. For ruling section above 40mm the longitudinal axis shall be at least 12.5 mm from surface of the test bars.</p> <p>Test methods for determining mechanical properties shall be as per IS: 1598 (For IZOD impact test)/IS: 1757 (For impact test in ISO-V Charpy) and IS: 1608 (For tensile test) or any other reputed International Standard.</p> <p>10.3 For ruling section above 200mm, tensile test samples can be taken in tangential or transverse direction.</p> <p>11.0 MECHANICAL PROPERTIES (In Hardened and Tempered Condition):</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="text-align: left;">Ruling section, mm</th> <th style="text-align: left;">Tensile strength, N/mm²</th> <th style="text-align: left;">0.2%/PS/YS N/mm² min</th> <th style="text-align: left;">%E $5.65\sqrt{S_0}$ min</th> <th style="text-align: left;">* IZOD impact J, min</th> <th style="text-align: left;">Hardness ** BHN</th> </tr> </thead> <tbody> <tr> <td>up to 30</td> <td>1200, min</td> <td>1000</td> <td>10</td> <td>30 (25)</td> <td>360 – 420</td> </tr> <tr> <td>> 30 to = 63</td> <td>1100 – 1250</td> <td>880</td> <td>11</td> <td>41 (35)</td> <td>330 – 390</td> </tr> <tr> <td>> 63 to = 100</td> <td>1000 – 1150</td> <td>800</td> <td>13</td> <td>48 (42)</td> <td>300 – 350</td> </tr> <tr> <td>>100 to = 150</td> <td>900 – 1050</td> <td>700</td> <td>15</td> <td>55 (50)</td> <td>270 – 300</td> </tr> <tr> <td>>150</td> <td>800 – 950</td> <td>600</td> <td>16</td> <td>55 (50)</td> <td>240 – 285</td> </tr> </tbody> </table> <p>* Average of 3 samples applicable for sizes above 16 mm ruling section only. Values in bracket are in ISO - V Charpy.</p> <p>** Hardness shall be reported for information only.</p> <p>12.0 ULTRASONIC TEST:</p> <p>12.1 Each bar above 100 mm shall be tested ultrasonically in accordance with BHEL standard AA0850118 to ensure freedom from internal defects.</p> <p>The norms of acceptance shall be as per category 2 of the above standard.</p> <p>12.2 Optional tests: If specified on order, each bar > 40 to 100 mm shall be tested ultrasonically in accordance with BHEL standard AA0850118 to ensure freedom from internal defects and the norms of acceptance shall be as per category 2.</p>			Ruling section, mm	Tensile strength, N/mm ²	0.2%/PS/YS N/mm ² min	%E $5.65\sqrt{S_0}$ min	* IZOD impact J, min	Hardness ** BHN	up to 30	1200, min	1000	10	30 (25)	360 – 420	> 30 to = 63	1100 – 1250	880	11	41 (35)	330 – 390	> 63 to = 100	1000 – 1150	800	13	48 (42)	300 – 350	>100 to = 150	900 – 1050	700	15	55 (50)	270 – 300	>150	800 – 950	600	16	55 (50)	240 – 285
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13.0 TEST CERTIFICATES:

Three copies of test certificates shall be supplied, unless otherwise stated on the order. 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 test certificate shall bear the following information:

BHEL References:

AA10501, Rev.No.14: 1.5% Nickel-Chromium-Molybdenum Hot Rolled/Forged Steel Bars- H&T
BHEL order No,

Supplier's References:

Name:

Identification No:

Melt No:

Details of heat treatment:

Result of Tests:

Dimensional inspection.

Results of chemical analysis, mechanical and & Ultrasonic tests.

14.0 PACKING AND MARKING

The bars shall be suitably packed in bundles to prevent corrosion and damage during transit.

Each bar equal to or greater than 50 mm in diameter or of equivalent cross sectional area shall be stamped with 'AA10501' and melt number on the side near the end or on the face.

Bars below 50 mm shall be bundled together and tied with wire at 3 to 4 places along the length of the bars.

A metal label shall be securely attached to each bundle and shall bear the following information:

AA10501: 1.5% Nickel-Chromium-Molybdenum Hot Rolled/Forged Steel Bars- H & T.

BHEL Order No.:

Consignment/Identification No.:

Melt No.:

Size and Weight:

Supplier's Name:

15.0 REFERRED STANDARDS (Latest Publications Including Amendments):

1. IS: 1598

2. IS: 1608

3. IS: 1757

4. IS: 5517

5. AA0850118