


INVENTOR: [illegible] BY: [illegible]



STYLE NO.		
SL. NO.	DESCRIPTION	STYLE NO.
001	MACHINED	BP90094586177

- |   |  |             |  |  |  |             |  |   |  |                |  |
|---|--|-------------|--|--|--|-------------|--|---|--|----------------|--|
| 28  |  | CARD TYPE-3 |  | 28   |  | CARD TYPE-1 |  | 28  |  | CARD TYPE-2    |  |
| ADDITIONAL INFORMATION<br>SIMILAR COME IN / 433022001 |  |             |  | TYPE OF PRODUCT<br>OR<br>NAME OF CUSTOMER/PROJECT<br>AG 3101AY   |  |             |  |   |  |                |  |
| STATUS OF DRAWING                                     |  |             |  |  |  |             |  |   |  |                |  |
| DISTRIBUTION OF PRINTS<br>Q/C 1 TNY 1<br>FVM 4 TAM 4  |  |             |  |  BHARAT HEAVY ELECTRICALS LTD<br>BHOPAL |  |             |  | DRN. NAME / SIGN DATE<br>CHD. AGD / 2002 10-10<br>APPD. M VERMA / GARGI 11-1-03 |  |                |  |
| REV   |  | DATE        |  | ALTERED BY   |  | DEPT        |  | TIME  |  | GRADE OF UNIT  |  |
| 01  |  | 10-03-03    |  | CHEVY  |  | ELECT       |  | 10:05   |  | PUNAM / 2002 F |  |
| ON TABLE  |  | CONG        |  | TOOL LIST & GAUGE L/S  |  | WIRE NOT ON |  | SCALE   |  | WEIGHT (Kg)    |  |
|   |  |             |  |  |  |             |  | N.T.S.  |  | 9.00           |  |
|   |  |             |  | REF. TO ASSY. DRG.<br>04334022001  |  |             |  | DRAWING NO.<br>1433.0222005   |  |                |  |
|   |  |             |  | TITLE<br>FAN ASSY (MACHINED)<br>MODIFIED WITH REDUCED DIA.   |  |             |  | CARD NO.<br>1433.0222005  |  |                |  |
|   |  |             |  |  |  |             |  | NO. OF SHEETS   |  |                |  |



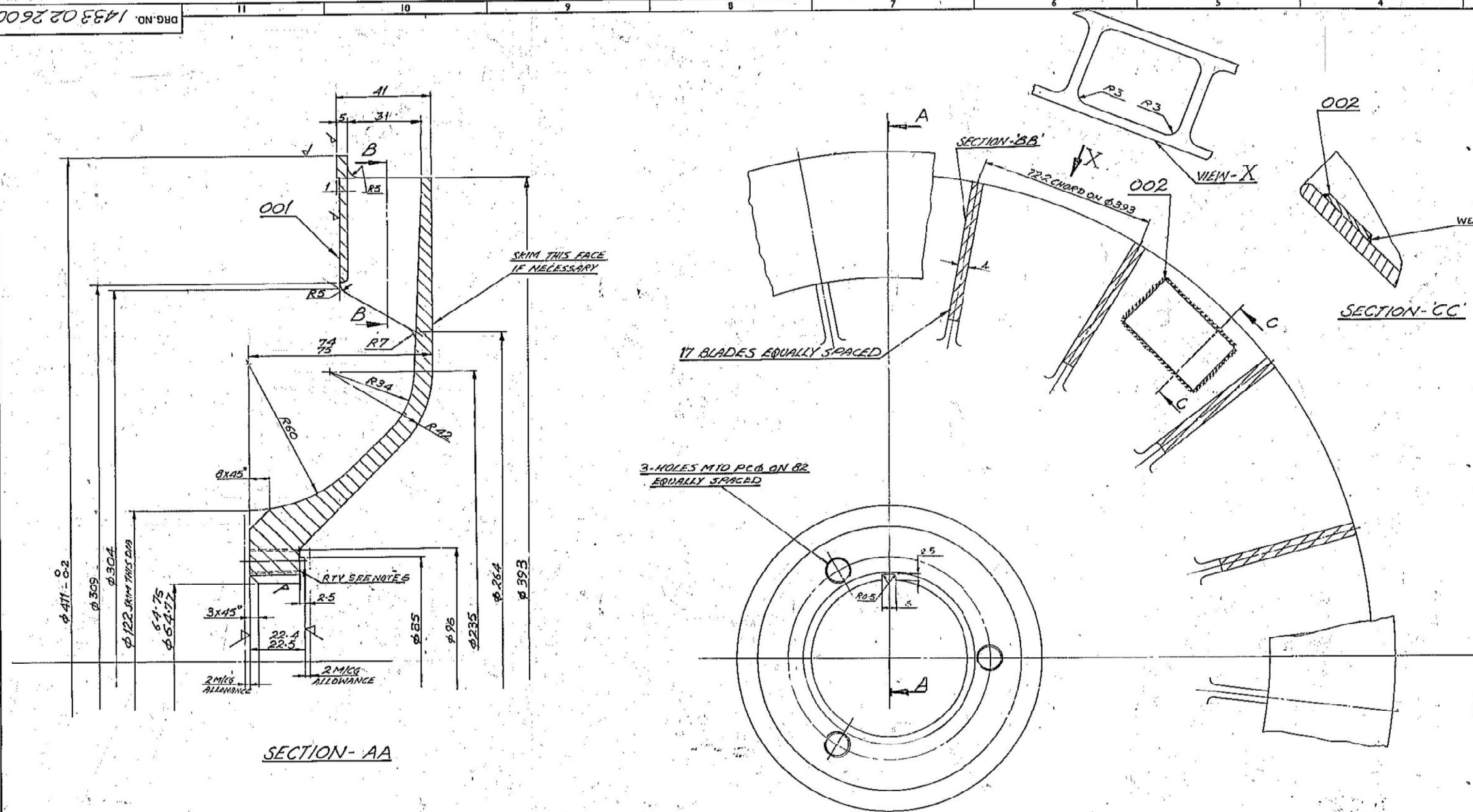
GAUGE LIST					
LIMIT	NOM SIZE	SYMBOL	NO	ITEM	TYPES
22.4/22.5			1402701	001	SNAP
41.1-8.2			1402702	001	CALLIPER
64.75"/64.77"			1455908	001	LIMIT RUL


NOTE -

1. BALANCE WT. IT. 002 TO BE MADE FROM EITH. ER  
 $25 \times 40 \times 3 \text{ LG} = 24 \text{ GM.}$   
 $25 \times 40 \times 4.5 \text{ LG} = 36 \text{ GM.}$   
 $25 \times 40 \times 6 \text{ LG} = 48 \text{ GM.}$
2. THIS MACHINED DRAWING SHOULD BE USED FOR CASTING BY ALLOWING SUITABLE MACHINING ALLOWANCES.
3. FAN TO BE STATICALLY BALANCED
4. CASTING TOLERANCES TO BE IN LINE WITH AA0230402 CLASS 4.
5. ALTERNATIVELY FAN ASSY. CAN BE FABRICATED AND MACHINED AS PER DRAWING NO. 24330226001.
6. RTV TO BE APPLIED TO BLIND THESE 3 EXTRACTION HOLES.

[illegible]


← CARD TYPE-3		← CARD TYPE-1		← CARD TYPE-2													
ADDITIONAL INFORMATION SIMILAR COMPT DRG. 1430217001		TYPE OF PRODUCT OR NAME OF CUSTOMER / PROJECT		AG-2702AZ													
STATUS OF DRAWING		WDM2															
DISTRIBUTION OF PRINTS OK 1 TAM 3 TNS 3		BHARAT HEAVY ELECTRICALS LTD. BHOPAL		<table><tr><td>DRN.</td><td>NAME</td><td>SIGN</td><td>DATE</td></tr><tr><td>CHD.</td><td>B.P.S.</td><td><i>[Signature]</i></td><td>9-2-91</td></tr><tr><td>APPD.</td><td>K.S.N.M.</td><td><i>[Signature]</i></td><td>16-2-91</td></tr></table>		DRN.	NAME	SIGN	DATE	CHD.	B.P.S.	<i>[Signature]</i>	9-2-91	APPD.	K.S.N.M.	<i>[Signature]</i>	16-2-91
DRN.	NAME	SIGN	DATE														
CHD.	B.P.S.	<i>[Signature]</i>	9-2-91														
APPD.	K.S.N.M.	<i>[Signature]</i>	16-2-91														
REV. 1 DATE 14-10-91 CHECKED <i>[Signature]</i> DEPT. TIME CODE 405		GRADE OF UN.TOL. DIM. C/M/E 14413528		SCALE 1:1 WEIGHT (Kg) 11.050 REF. TO ASSY. DRG. 04334026001													
TOOL & GAUGE 1:1 WERE NOT ON HAND FOR IT COI PART NO. 245448 USE ON TCN. 197-104		TITLE FAN ASSY		DRAWING NO. 1433 02 26 001 SHEET NO. 01 / NO. OF SHEETS 01													

[illegible]


	<b>CORPORATE PURCHASING SPECIFICATION</b>			AA10112		
				Rev No.07		
				PREFACE SHEET		
<b>BRIGHT STEEL BARS AND SECTIONS (STANDARD QUALITY)</b>						
FOR INTERNAL USE ONLY REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS						
<b>Equivalent/Comparable Standards:</b>						
1) INDIAN : IS : 9550 – 2001						
<b>Probable / Suggested Suppliers and Grades:</b>						
Refer plant vendors list						
<b>User Plants and Replaced Plant Specifications/References:</b>						
1) HEP, BHOPAL : PS10112, BP10172 2) HEEP, HARDWAR : 0500.053 3) HPEP, HYDERABAD : HY0210299						
<b>Revisions:</b> CI 27.2.d of MOM of MRC-S&GPS				<b>APPROVED:</b> INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC(S&GPS)		
Rev No.07	Amd No.	Reaffirmed	Prepared	Issued	Dt. of 1 <sup>st</sup> Issue	
Dt:15-06-2005	Dt:	Year:2019	14 HEP, Bhopal	Corp.R&D	September 1976	

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	<b>CORPORATE PURCHASING SPECIFICATION</b>	AA10112 Rev No. 07 PAGE 1 of 4			
<b>BRIGHT STEEL BARS AND SECTIONS (STANDARD QUALITY)</b>					
<b>1 GENERAL:</b>  This specification governs the quality requirements of Bright Steel Bars and Sections of standard quality, such as I-beams and equal angles required in very small sections.					
<b>2 APPLICATION:</b>  Bars are used in the manufacture of threaded and machined components for general engineering purposes. Sections are used as stator spacer plate vents in generators.					
<b>3 CONDITION OF DELIVERY:</b>  <div style="margin-left: 20px;"> <b>3.1</b> Round Bars - Class 4, surface quality.                      Up to 50 mm diameter - Cold drawn.                       Above 50mm diameter - Cold drawn or Hot rolled, turned and polished                 </div> <div style="margin-left: 20px;"> <b>3.2</b> Rectangular/Square/Hexagonal Bars - Class 3, surface quality.                      All sizes - Cold drawn.                 </div> <div style="margin-left: 20px;"> <b>3.3</b> Sections - Class 4, surface quality.                      All sizes - Cold drawn                 </div> <div style="margin-left: 20px;"> <b>3.4</b> Bars and sections shall be straight, with their ends sheared, square and true and shall have a smooth surface.                 </div> <div style="margin-left: 20px;"> <b>3.5</b> The bars and sections shall be given a clear temporary rust preventive (TRP) coating to avoid corrosion during transit and storage.                      Black TRP coating is not acceptable.                       Clear TRP used shall be free from pungent smell.                       The following clear TRP's are suggested:                     <div style="margin-left: 20px;">                         a) Servo RP 150 - M/s Indian Oil Corporation                          b) HE - 1612 - M/s. BHEL, Bhopal                          c) Rustilo DW-901 - M/s. Indrol Lubricants and Specialties Ltd.                          d) Rustpro Special - M/s. Tide water oil co.                          e) Any other clear TRP conforming to IS: 1154                     </div> </div>					
<b>4 COMPLIANCE WITH NATIONAL STANDARDS:</b>  The material shall comply with the requirements of the following National standards and also meet the requirements of this specification.  IS: 9550-2001 : Bright steel bars					
<b>Revisions:</b> CI 27.2.d of MOM of MRC-S&GPS		<b>APPROVED:</b> INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC(S&GPS)			
Rev No.07	Amd No.	Reaffirmed	Prepared	Issued	Dt. of 1 <sup>st</sup> Issue
Dt:15-06-2005	Dt:	Year:2019	16 HEP, Bhopal	Corp.R&D	September 1976

RA5302

AA10112	<b>CORPORATE PURCHASING SPECIFICATION</b> 
Rev No. 07	
PAGE 2 of 4	

**5 DIMENSIONS AND TOLERANCES:**

**5.1 Sizes:**  
Bars shall be supplied to the dimensions specified in BHEL order.

**5.2 Tolerances:**

**5.2.1 Rectangular/Square/Hexagonal/Flat Bars:**  
Unless otherwise specified, tolerances on dimensions shall be as follows:  
For drawn round bars and turned bars h10 to table 2 of IS:9550  
For hexagonal and square drawn bars upto and including 80mm h11 and above 80mm h12 according to table 2 of IS:9550  
For drawn flats in accordance with table 3 and 4 of IS:9550  
For ground products in accordance with table 1 and 2 of IS:9550

**5.2.2 Sections:**  
As specified in BHEL order/drawing.

**5.3 Length:**  
Bar and sections shall be supplied in lengths of 2.5 to 4.5 meters with maximum 10% of shorts of not less than 1.5 meters.

**5.4 Straightness:**  
Unless otherwise agreed to, the permissible deviation shall not exceed 1.5mm in any one meter length. Bars and sections shall be free from twists and bends.

**6 MATERIAL:**  
The rolled bars used for purpose of producing the bright bars shall be such, so as to ensure freedom from segregation, piping and other harmful defects.

**7 MANUFACTURE:**  
Steel shall be manufactured by the open-hearth, electric, basic oxygen or a combination of these processes.

**8 FREEDOM FROM DEFECTS:**  
All finished steel bars and section shall be sound and free from internal and surface defects. They shall be bright and clean.


**9 SURFACE CONDITION:**

**9.1 Round Bars and Sections:**  
Shall be entirely free from cracks and other surface defects.

**9.2 Rectangular/Square/Hexagonal Bar-Type '3' Finish:**  
Shall comply with IS: 9550, Class 3 of table 5.

**10 CHEMICAL COMPOSITION:**  
The melt analysis of steel and the permissible variation in the composition of the material form the melt analysis shall be as follows:



	<b>CORPORATE PURCHASING SPECIFICATION</b>	AA10112 Rev No. 07 PAGE 3 of 4
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Element	Melt analysis percent, max	Permissible variation percent
Carbon	0.25	± 0.02
Sulphur	0.040	+ 0.005
Phosphorus	0.040	+ 0.005

**11 TEST SAMPLES:**

One sample for chemical and tensile test shall be selected from finished steel for every 20,000 kg or part thereof, with a minimum one per heat.

**12 MECHANICAL PROPERTIES:**

When tested in accordance with IS:1608, the test pieces shall show the following properties:

**12.1 Rectangular/Square/Hexagonal/Section - Cold Drawn:**

Tensile Strength : 440 N/mm<sup>2</sup>, min

Elongation on  $5.65\sqrt{S_0}$  gauge length : 8 – 20%

**12.2 Round Bars:**

**12.2.1 Bars upto 50mm Diameter – Cold Drawn**

Tensile Strength : 440 N/mm<sup>2</sup>, min

Elongation on  $5.65\sqrt{S_0}$  gauge length : 8 – 20%

**12.2.2 Bars above 50mm Diameter:**

Cold drawn or hot rolled, turned and polished.

Property	Hot rolled, turned and polished		Cold drawn
Tensile strength, min.	: 410 N/mm <sup>2</sup>		440 N/mm <sup>2</sup>
Elongation on $5.65\sqrt{S_0}$ gauge length	: 23%, min	OR	8-20%

**13 TEST CERTIFICATES:**

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

In addition, to the above, 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:

AA10112; Rev. No. 07 :

BHEL order No,

Supplier's Reference:

Name

Identification No.

Melt No.

Results of Tests:

Dimensional inspection.

Results of Chemical analysis and mechanical tests.






36<sup>th</sup>

Year:04-11-2011



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 It must not be used directly or indirectly in any way detrimental to the Interest of the company.

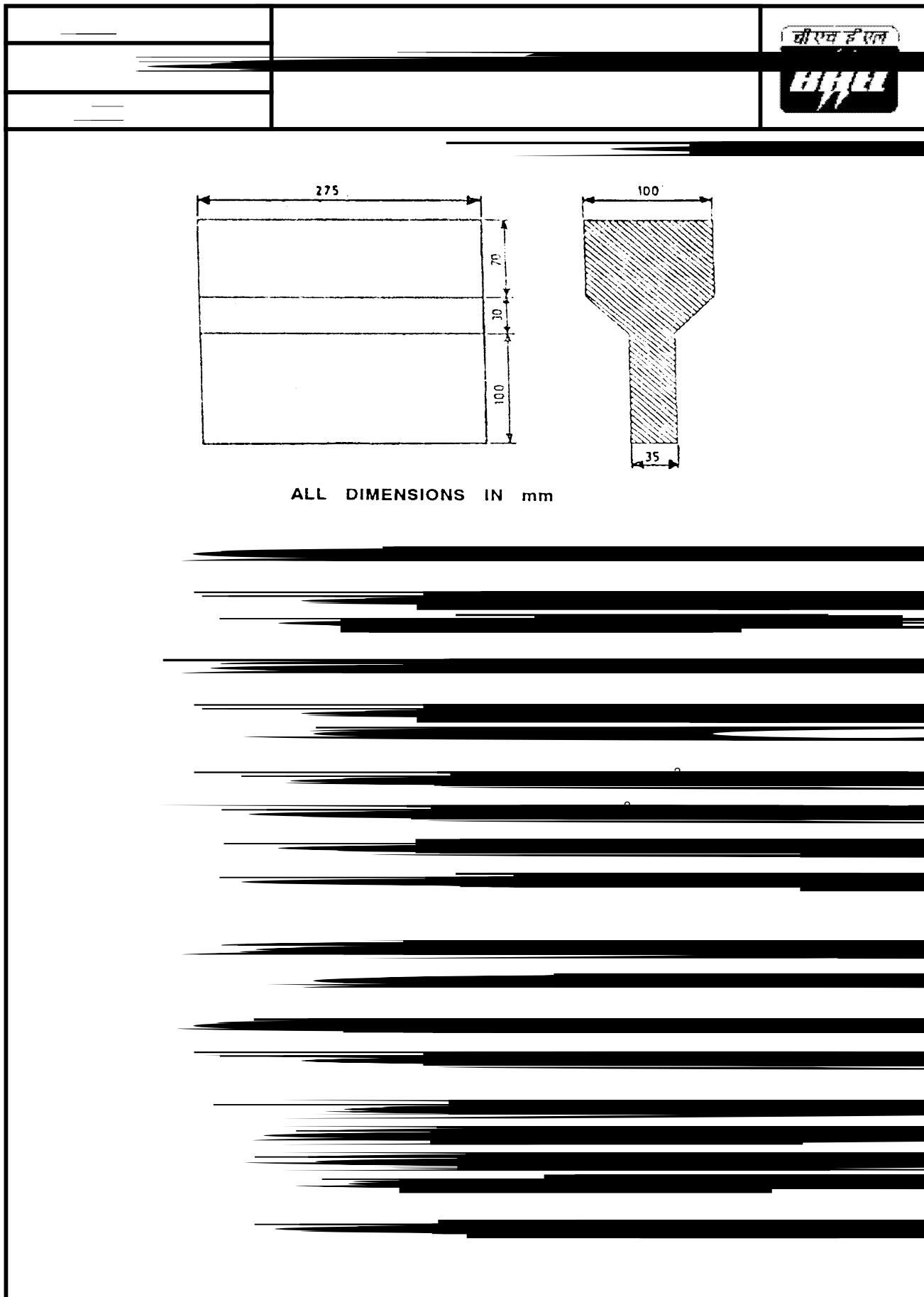
<div>वीएस ईएल</div> <div></div>					
		Year;04-11-2011			















SUPPLIERS'S NAME AND ADDRESS												
1. Customer :						6. Cast No. & Date :						
2. TC No. & Date :						7. Batch No. :						
3. PO No. :						8. Heat Code :						
4. Process of Melting :						9. Spec.. No. :						
5. Deoxidisation Process						10. Test Bar Size						
II. CASTING COVERED BY T.C.												
Sl. No.	Drawing No. & Item No.					Description	Quantity & Weight					
12. CHEMICAL COMPOSITION (PERCENT)												
Element	C	Si	Mn	S	P							
As per Min.												
Spec. Max.												
Actual Values.												
13. HEAT TREATMENT (To be accompanied by Recorder Chart, wherever called for)												
Condition	Temp. °C				Soaking Time. Hrs..				Cooling Medium			
14. MECHANICAL PROPERTIES												
	T.S. N/mm2	Y.S. 0.5/0.2% Proof N/mm2	% E on GL 5.65 SO	% R.A. Min	Hardness BHN Min. 3 Values	Impact Value, Joules	Bend					
As per Min.												
Spec. Max.												
Actual Values.												
15. Surface Finish (When called for in the order/drg)												
16. DIMENSIONAL INSPECTION												
17. NON-DESTRUCTIVE TESTS												
Nature of Test	Acceptance Level	Instrument used	Range	Results	Any other details							
Ultrasonic												
Radiographic												
Dye Penetrant/ Magnetic Particle												
18. OTHER TESTS, IF ANY (MICRO- Scopic, Hydraulic, Etc.)												
19. IDENTIFICATION ON CASTING AS PER CPS.												
<p>We hereby certify that the items mentioned above have been tested and inspected in our presence and are found to be in accordance with the drawings, specifications and purchase order.</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Signature &amp; Seal of the Inspecting Officer (Purchase Representative)</p> <p>Date :</p> </div> <div style="width: 45%;"> <p>Signature and Seal of the Chief of Quality Control Chief Metallurgist of the Supplier.</p> <p>Date :</p> </div> </div> <p><b>INSTRUCTION:</b></p> <p>a) If steel is produced by LD or Oxygen process, Nitrogen content should be furnished and shall not exceed 0.009%</p> <p>b) Test Certificates are to be furnished as per Purchase Order and Specifications, in A4 Size transparent paper.</p> <p>c) All the entries including signature should be in black ink.</p> <p>d) If testing is done by outside agencies, the original TCs shall be furnished.</p> <p>e) The actual Test Certificate may run into more than one A4 size paper, if needed, to facilitate filling up of details.</p>												



## **Duly filled Technical Pre-Qualification Requirements to be submitted along with the offer by vendor**

*[For uploading with enquiry]*

Ref No: TME/PQR/Armature Fan\_AG2702 Rev.00

Dated: 14/07/2025

### Technical Pre-Qualification Requirements (PQR) for "Armature Fan"

**Vendor should comply with the following clauses in order to qualify for supply of Armature Fan (duly filled PQR shall be submitted along with the offer by vendor):**

Cl. No.	Description	Vendor to comment		
		Complied / Not complied	Supporting relevant document to be submitted along with offer	Reference page no. of submitted document in vendor's offer
1.	Vendor shall supply Armature Fan as per drawing no. & description mentioned in the enquiry.	Yes/No	Not Required	
2.	Vendor should be a manufacturer and not a trader.	Manufacturer/ Trader	Not Required	
3.	Vendor should have past experience of successfully machining & supplying <b>fans/ impellers/ ventilators of minimum Ø400 mm</b> , in preceding 5 years from enquiry opening date.  Vendor to ensure that documents submitted against b) & c) shall correlate with the submitted P.O. copy against a).	Yes/No	a. PO copies. b. Drawing of supplied item. c. Supply proof i.e. invoice.	
4.	For verification of information furnished by vendor, additional documents, proofs etc. may be required by BHEL. Vendor to confirm providing the same.	Yes/No	Not Required	

#### **Notes:**

- Compliance of all the points in above T-PQR is mandatory. In absence of compliance of above & non-submission of documents required against the T-PQR, the vendor's offer is liable to be rejected.
- Information / compliance / documents submitted by vendor shall be authentic in all aspects. In case any deviation / false information / forged documents are observed, BHEL is free to initiate appropriate punitive proceeding against the supplier.

**Important:** This document is to be filled and submitted along with the offer. This document must be signed by authorized representative of the vendor and should contain the name of representative & seal of the company.