

**Buyers Specific Additional Terms & Conditions in addition to GTC**

**Item Name: GSC Air Exhauster with Motor**

**Projects: Sagardighi WBPDC, Unit # 5, 660MW**

**A. SCOPE OF ENQUIRY**

E-bids on GeM are invited from bidders for the supply of **GSC Air Exhauster with Motor** for Unit#5, 660MW Sagardighi Project, as per requirement mentioned below:

Sl. No.	Project/ Address	Material Code & Item Description	Total Quantity	Date for Supply Completion
1	<b>Sagardighi WBPDC, Unit-5 660MW</b> Deputy General Manager, (I/C-Projects) STPS, P.O.-Manigram, Dist. Murshidabad PIN-742237, WEST BENGAL, INDIA	Material Code W90716121050 <b><u>GSC Air Exhauster with Motor</u></b> SPEC: HE 57008 REV: 11	02 Nos.	90 days from PO Placement or earlier

**B. EARNEST MONEY DEPOSIT (EMD): NIL**

**C. Buyers Specific Additional Terms & Conditions in addition to GTC**

Sl. No.	Terms	Description	Your confirmation
1.	Confirmation to compliance of GTC on GeM 4.0 (Ver-1.19)	General terms and conditions on GeM 4.0 (Version 1.19). Please submit signed & stamped copy of the same.	
2.	Prices Basis	Prices should be quoted on F.O.R. Destination basis i.e. up to Sagardighi Project including freight, packing & forwarding charges, GST etc. Please mention here the applicable GST rate included in the price quoted by you.	
3.	Evaluation criteria and currency	Evaluation will be done on the basis of total landed cost to BHEL, with cost involved for delivery up to BHEL Sagardighi project site (considering material cost, taxes & duties, Freight etc. & considering ITC).  Bidders to insure applicability of ITC on Gem portal.  <b>The evaluation currency for this tender shall be INR.</b>	
4.	Transit Insurance	Transit insurance shall be arranged by BHEL and not to be included in the prices.	
5.	Pre-Qualification Requirement	Please note that procurement shall be done only from the vendors who full-fill the PQR requirement and accepted by our engineering. Bidders are required to fill the required data along with supporting document for BHEL review and approval. Offers of only those vendors will be considered who qualify the PQR before opening of price-bids and approved by Sagardighi Customer.	
6.	Customer Approval	Bidder to submit their credentials (Company Profile, Supply experience with BHEL as well as other customer, End user certificate, Copy of ISO certification, Manufacturing and testing facilities etc.) for Customer approval.	
7.	Payment Terms	Payments shall be made to the Seller within 90 days of (PRC) after issue of consignee receipt-cum-acceptance certificate (CRAC) and on-line submission of bills. For Micro/ small & Medium (covered under MSME Act), payment will be made within 45 days & 60 days respectively from PRC after issue of consignee receipt-cum-acceptance certificate (CRAC) and on-line submission of bills. <b>Bidders to provide MSME / UDYAM certificate for payment schedule finalization.</b>	

8.	Technical Requirements	Material specification as per Spec HE57008 rev 11 only without any deviation.	
		Acceptance and Comply <b>Technical Delivery Condition Annexure-02.</b>	
		Vendor to submit Annex-1 and PQR with proper supporting documents.	
9.	Quality Requirements	Kindly submit endorsed quality plan "QA/BI/QP/2301/Sagardighi" along with enquiry. Please confirm that inspection shall be by BHEL TPIA (M/s Intertek or TUV) and end customer as per customer's approved quality plan & drawings.  Please note that BHEL will pay directly to BHEL's nominated TPI.	
		<b>Vendor to confirm that motor shall be procured from customer approved vendors only. Customer approved vendors for Motor are: -</b> 1. - CG Power and Industrial Solutions Ltd., 2. - Marathon Electric Motors India Ltd., 3.- ABB , 4. - Siemens , 5.- Kirloskar , 6. - Bharat Bijlee	
10.	Manufacturing clearance	In case of ordering, vendor has to take manufacturing clearance from BHEL before starting manufacturing of material. Kindly confirm.	
11.	Manufacturing Period	Kindly quote your minimum <b>delivery period in no. of weeks/months</b>  From the date of Manufacturing Clearance.....  Bidder should quote minimum manufacturing period. Bidder offer may be rejected, if not meet BHEL site requirement.	
12.	Document submission for approval from BHEL	Drawings/Data sheets/Documents/ Quality Plan etc. as called for in the specifications shall be submitted for approval to BHEL within <b>10 days</b> of purchase order. Approved documents/QP are to be followed by the supplier without any price implication. Any delay in delivery on account of late submission of drawings/data sheets/QAP/documents shall be to vendors account. BHEL will arrange the approval of the drawings/data sheets/ documents within <b>10 days</b> of their receipt provided those are complete in all respect. Delays in approval shall be dealt on merit basis.	
13.	Liquidated Damages	If the Seller/Service Provider fails to deliver any or all of the Goods/Services within the original/re-fixed delivery period(s) specified in the contract, the Buyer will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, @ 0.5% of the contract value of delayed quantity per week or part of the week of delayed period as pre-estimated damages not exceeding 10% of the contract value of delayed quantity without any controversy/dispute of any sort whatsoever.	
		<b>The date of LR (Lorry Receipt) would be treated as the date of delivery for penalty purposes</b>	
		In case of any deviation to the above penalty clause, BHEL reserves the right to load the offers to the extent to which it is not agreed by vendors (at offered value).	
14.	MDCC clause	Please note that, material shall be dispatched only after issue of Material dispatch clearance certificate (MDCC) end customer. For issue of MDCC, vendors are required to submit all test certificates (TC) and inspection report of third party (IR) to BHEL. After review & acceptance of the quality document, BHEL will forward the same to end customer for issuance of MDCC. Material shall be dispatched within 7 days from the the date of issuance of MDCC.	
15.	Reverse Auction	Bid to RA will be conducted as per GeM GTC clause (4-XIII-u-2).	
16.	Packing	Please comply the following instructions- <b>NOTE 1:</b> Each Individual package of shipment shall be clearly marked for identification as follows:	

		<p>Project name: Sagardighi WBPL, Unit # 5, 660 MW</p> <p>Address of the consignee</p> <p>Package no. BHEL/HWR/BOI/ 1826-1830 reserve for Box identity.</p> <p><b>NOTE 2:</b> Following documents to be enclosed with despatch documents- Storage and Preservation Manual for site Operation and Maintenance Manual for site Pre-commissioning check-list (if commissioning is in vendor's scope), Test Certificates &amp; Guarantee Certificates Items nomenclature on vendor packing list to be exactly same as on PO</p> <p><b>NOTE 3:</b> Warranty/ Guarantee expiry date should be clearly mentioned on the packages with "RED PAINT"</p>	
17.	<b>Guarantee</b>	<p>Kindly confirm that all equipment shall be guaranteed for a minimum period of 18 months from the date of supply or 12 months from the date of commissioning, whichever is earlier. Buyer to submit guarantee certificate mentioning above guarantee period.</p> <p>Please note that offers with guarantee period lesser than above mentioned guarantee period may result in rejection of the offer.</p>	
18.	<b>Arbitration:</b>	<p>In case of any dispute arising out of as in connection with this contract, the same shall be referred to arbitration under Arbitration &amp; Conciliation Act 1996 of a sole arbitrator who shall be appointed by mutual consent of the parties. The seat &amp; venue of arbitration shall be Haridwar.</p> <p>The proceedings shall be conducted in English. The Governing law of contract shall be the substantive law of India.</p>	
19.	<b>Risk Purchase:</b>	<p>In case of abnormal delays (beyond the maximum late delivery period as per Penalty clause) in supplies /defective supplies or non-fulfillment of any other terms and conditions given in Purchase Order, BHEL may cancel the Purchase Order in full or part thereof, and may also make the purchase of such material from elsewhere /alternative source at the risk and cost of the supplier. BHEL will take all reasonable steps to get the material from alternate source at optimum cost. If bidder does not agree to the above Risk Purchase Clause, BHEL reserves the right to reject the offer. In case for compelling reasons BHEL accepts the offer without acceptance of this clause by the bidder and in the eventuality of Risk Purchase, appropriate action will be taken as per BHEL extant rules. This will be without prejudice to any other right of BHEL under the contract.</p>	
20.	<b>Firm prices</b>	Price will remain firm and fixed during entire execution of tender/supply.	
21.	<b>Bidder Contact details</b>	<p>Contact details of your representative: Mobile no. &amp; Email id (minimum 2 person)</p> <ol style="list-style-type: none"> <li>1.</li> <li>2.</li> </ol>	

**Please note:** During techno-commercial clarification, vendor to provide required documents/ clarification within 2-3 days of request. Such vendor Offer may be rejected in case of delay or un-complete documents submission.

**SPECIAL NOTE FOR BIDDERS:**

Following documents are an integral part of this tender enquiry and endorsed copies of these documents (duly signed and stamped on each page, as a token of acceptance)

1. Please submit signed & Stamped copy (each page) of duly filled of confirmation column of "Buyers Specific Additional Terms & Conditions in addition to GTC (Annexure-A)" and its clause wise supporting documents where required.
2. Please submit signed & stamped copy of PQR & Annex-1 with proper filled information and related supporting documents as mentioned in PQR & Annex-1.
3. Please submit signed & stamped copy (each page) of BHEL Technical standard HE 57008 Rev 11.
4. Please submit endorsed copy of Quality Plan "QA/BI/QP/2301/Sagardighi".

**PRE QUALIFICATION REQUIREMENTS (PQR) for Air Exhauster with Motor (Type-E)**  
**(Mat Code: W90716121050); Indent no : 20202826 01**

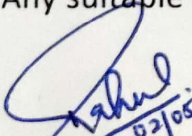
Pre-Qualification Requirements for the procurement of Air Exhauster with Motor (Type-E) are as below:

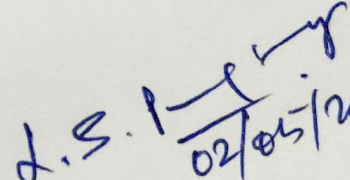
1. Bidder/ Vendor should have designed, manufactured and supplied equipment of the type and minimum equipment rating as stipulated below:

Type of equipment	Equipment Rating
Centrifugal Exhauster/ Blower directly coupled with motor	Flow 0.4 m <sup>3</sup> /sec (minimum) with head 250 mmWC (minimum) for dry air and motor rating 3 HP (minimum)

2. In support of the above Clause 1, bidder/vendor to submit following documents:

- Un-priced copy of Purchase Order for exhauster coupled with motor stipulated in the Table of clause 1.
- Duly filled "DETAILS OF EQUIPMENT" for which purchase order copy as per clause 2.i is furnished (Format as per Annexure-1).
- Any suitable dispatch document.

  
(Rahul Kr Chandra)  
Dy. Manager/HXE

  
(Lokesh Singh Pangtey)  
Manager/ HXE





## ANNEXURE-1: DETAILS OF EQUIPMENT

Bidder's Name and Address :  
XXXXXXX

To  
BHEL, HEEL, RANIPUR,  
Haridwar-249403

Details of manufacture of proven equipments.

S. No.	Item Description
<b>A.</b>	<b>CENTRIFUGAL EXHAUSTER/BLOWER DIRECTLY COUPLED WITH MOTOR</b>
1.00.00	Name, Address & Telephone No. of the manufacturer
1.01.00	Name and location of the Plant where the exhauster is installed
1.02.00	Client Name and its Address, Fax No. & Tel.Nos.
1.03.00	Name and Designation of the responsible person in Client's Organisation
1.03.00	PO No. and Date
1.04.00	Date of Commissioning of System/Package

Signature of authorized signatory...

1.05.00	(a)	Whether the System/Equipments are in Successful Operation for a minimum period of two (2) years prior to the date of enquiry	Yes/No
	(b)	Whether the system/equipments are in successful operation as prior to date of enquiry	Yes/No
1.06.00	Brief Technical Particulars of the System/Package/Equipments :		
	(i)	Designed by	
	(ii)	Manufactured by	
	(iii)	Fan Type	
	(iv)	Design Standard	
	(v)	Whether Directly coupled with motor	Yes/No
	(vi)	Working medium being handled by Exhauster	
	(vii)	Operating Temperature of working medium	
	(viii)	Density of working medium (kg/m <sup>3</sup> )	
	(ix)	Head developed by exhauster at above density(mmWC)	
	(x)	Flow rate of working medium (m <sup>3</sup> /sec)	
	(xi)	Diameter of impeller after machining (mm)	
	(xii)	HP rating of Exhauster motor	
	xiii)	Make of Motor	
	xiv)	Power absorbed by motor	
	(xv)	Profile of blades of impeller (Straight/ Backward curved/ Forward curved)	
	(xvi)	Whether Counter Flanges supplied with Exhauster	Yes/No

**Technical Delivery Condition | Air Exhauster for Sagardighi 660MW Project**

Following are the additional technical delivery condition for the supply of Air Exhauster for Sagardighi 660 MW Project (Indent no 20202826\_ Rev01)

- I. Following requirements of LT motor of air exhausters shall be complied
  - A. General Standard, type and rating
    1. Motors shall be general purpose, constant speed, squirrel cage, three/single phase, induction type.
    2. All motors shall be either totally enclosed fan cooled (TEFC) or totally enclosed tube ventilated (TETV) or closed air circuit air cooled (CACA) or closed air water cooled (CACW) type. Temperature rise shall be limited to 70 deg C by resistance method.
    3. All motors shall be rated for continuous duty. They shall also be suitable for long period of inactivity.
    4. All LT motor shall conform to minimum efficiency performance standards (MEPS) of IE3 mentioned in IS: 12615
    5. The motor name-plate rating at 50°C shall have at least 15% margin for LT system, over the input power requirement of the driven equipment at rated duty point and also covering the maximum load demand of the driven equipment under entire operating range, including voltage and frequency variations, unless stated otherwise in driven equipment specification or in general electrical specification.
    6. The motor characteristics shall match the requirements of the driven equipment so that adequate starting, accelerating, pull up, break down and full load torques are available for the intended service. The direction of rotation of motor and its cooling fan should be properly matched with the driven equipment
    7. The motor shall be provided with insulated bearing on one side.
  - B. Performance
    1. Motor shall run continuously at rated output over the entire range of voltage and frequency variations as given in the annexure.
    2. The motor shall be capable of operating satisfactorily at full load for 5 minutes without injurious heating with 75% rated voltage at motor terminals.
  - C. Specific Requirements
    1. Enclosure for the motor and the cable box shall conform to the degree of protection IP-55.
    2. The motor shall be self-ventilated type, either totally enclosed fan cooled (TEFC) or closed air circuit air cooled (CACA).
    3. All insulated winding shall be of copper
    4. LT motor shall have class F or higher insulation with temperature limited to 120 °C.
    5. Noise level shall not exceed 85 db (A)
    6. Peak amplitude of vibrations shall be limited within the values prescribed in IS: 12075 /IEC 60034-14
  - D. Motor Terminal Box
    1. Motor terminal box shall be detachable type, made of cast iron or pressed steel and located in accordance with Indian Standards clearing the motor base- plate/ foundation.
    2. Terminal box for all LT motors shall be diagonally split type and shall have the same degree of protection as motor.

3. Terminals shall be stud or lead wire type, substantially constructed and thoroughly insulated from the frame.
4. Motor terminal box shall be furnished with suitable cable lugs and double compression brass glands to match Owner's cable. All threads shall be ISO metric thread only.
5. The gland plate for single core cable shall be non-magnetic type.

**E. Grounding**

1. The frame of each motor shall be provided with two separate and distinct grounding pads complete with tapped hole, GI bolts and washer
2. The grounding connection shall be suitable for accommodation of ground conductors as follows:
  - i. Motor above 90 kW 50 x 6 mm GI Flat
  - ii. Motor above 30 kW upto 90 kW 35 x 6 mm GI Flat
  - iii. Motor above 5 kW upto 30 kW 25 x 3 mm GI Flat
  - iv. Motor upto 5 kW 8 SWG GI Wire
  - v. The cable terminal box shall have a separate grounding pad.

**F. Rating Plate**

1. In addition to the minimum information required by IS, the following information shall be shown on motor rating plate:
  - i. Temperature rise in °C under rated condition and method of measurement.
  - ii. Degree of protection.
  - iii. Bearing identification no. and recommended lubricant.
  - iv. Location of insulated bearings.

**G. Accessories**

1. Motor shall have drain plugs so located that they will drain the water, resulting from the condensation or other causes from all pockets of the motor casing
2. Motor weighing 25 kg. or more shall be provided with eye bolt or other adequate provision of lifting.
3. The motor shall be designed to permit easy access for drilling holes through motor feet or mounting flange for installation of dowel pins after assembling the motor and driven equipment.

**H. Motor bearing shall be only as per WBPDC approved vendor list only**

**I. Painting**

1. Air Exhauster for Gland Steam Condenser and motor shall be painted by paint shade no RAL9002, details of painting are as below

Coating systems	No. of coats	Dry film thickness (DFT) per coat micro m	Total DFT (Micro m)	Final Paint Shade
Primer	2	35	70	
Intermediate	1	70	70	
Finish	2	30	60	Grey
Touch Up				

**II. Other requirements**





1. All welding shall be subjected to dye penetration test and UT/RT.
2. Exhauster Performance Curve to be provided with different density of air.

3. Editable files of all submitted documents (data sheet, AutoCAD GA drawing) to be provided on placement of order.
4. GA drawing of air exhauster and motor to be provided.





III. Any additional details required by customer shall be provided by bidder during document approval by customer after PO placement.






दिनांक एवं हस्ताक्षर SIGN & DATE		उत्पाद मानक (हीप - हरिद्वार) PRODUCT STANDARD (HEEP HARIDWAR)		HE 57008													
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समूची सूची संख्या को अधिकृत	SUPERSEDES INVENTORY NO.	<b>AIR EXHAUSTER WITH MOTOR (RADIAL VENTILATOR)</b> <div style="border: 1px solid black; padding: 5px; text-align: center;">             BASED ON BHEL'S OWN EXPERIENCE           </div>															
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.		1.0 SCOPE :  This specification covers the design, manufacture, performance requirements, testing and supply conditions of Air Exhauster with motor for sucking air steam mixture from gland steam condenser in a thermal power station.															
		1.1 DESIGNATION :  While raising purchase indent, mention the type (see Table-1, Page-6) e.g. Air Exhauster with Motor - Type A to HE 57008.															
		2.0 TECHNICAL DATA :  2.1 EXHAUSTER DATA : 2.1.1 Medium to be handled : Air steam mixture 2.1.2 Suction temperature : See Table - 1. 2.1.3 Maximum Temperature : 100 °C 2.1.4 Total pressure : See Table - 1 2.1.5 Flow volume : See Table - 1 2.1.6 Density of air steam mixture : See Table - 1 2.1.7 Housing position : See Figure - 1															
		2.2 MOTOR DATA:  2.2.1 Rated output : To be indicated by the supplier. 2.2.2 Ambient Temperature : 50 °C 2.2.3 Supply : 415 Volts, 3Phase, 50C /s. 2.2.4 Type of enclosure : Totally enclosed fan cooled 2.2.5 Type of protection : IP 54 (IS:4691) 2.2.6 Mounting : As per figure 1 2.2.7 Starting : Direct on line 2.2.8 Voltage Variation : +/- 10% Frequency Variation : +/- 5% Combined voltage & frequency variation : +/- 10% 2.2.9 Insulation Class : B 2.2.10 Efficiency Class of motor : Premium Efficiency Class IE3 conforming to IS 12615 or IEC:60034-30															
स्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रयोग एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग जो कि कंपनी के हित में हानिकारक हो न किया जाए	हस्ताक्षर एवं दिनांक SIGN & DATE	<table border="1" style="width: 100%;"> <tr> <td>नाम NAME</td> <td>दिनांक एवं हस्ताक्षर SIGNATURE &amp; DATE</td> </tr> <tr> <td>TSX</td> <td>D.K. Mandal</td> </tr> <tr> <td>अनुवादक TRANSLATED BY</td> <td>TARUN BANSAL</td> </tr> <tr> <td>निर्माणकर्ता WORKED BY</td> <td>ROHIT BANSAL</td> </tr> <tr> <td>जाचकर्ता CHECKED BY</td> <td>SHASHI KANT</td> </tr> <tr> <td>पर्यवेक्षणकर्ता SUPERVISED BY</td> <td>S.K. BAVEJA, AGM (HXE &amp; PED)</td> </tr> </table>				नाम NAME	दिनांक एवं हस्ताक्षर SIGNATURE & DATE	TSX	D.K. Mandal	अनुवादक TRANSLATED BY	TARUN BANSAL	निर्माणकर्ता WORKED BY	ROHIT BANSAL	जाचकर्ता CHECKED BY	SHASHI KANT	पर्यवेक्षणकर्ता SUPERVISED BY	S.K. BAVEJA, AGM (HXE & PED)
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समूची सूची संख्या INVENTORY NO.	P-5718 REV. NO. 11 Dt. 14/10/16 CA: HXE-1603	SUPERCEDES 12/10/16	6/3/88														






दिनांक एवं हस्ताक्षर SIGN & DATE				<b>उत्पाद मानक (हीप - हरिद्वार)</b> <b>PRODUCT STANDARD (HEEP - HARIDWAR)</b>		<b>HE 57008</b>										
सामग्री सूची संख्या को अधिकृतित करता		SUPERSEDES INVENTORY NO		पृष्ठ का Page 2 of 11												
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company		<p>2.3 GENERAL REQUIREMENT :</p> <p>2.3.1 The exhausters shall be supplied in pairs for each set , such that when two units ( per set) are installed with motor fan axis coinciding in one line (horizontal), one unit shall be a mirror image of the other. (Refer Figure - 2).</p> <p>2.3.2 Vibration of the equipment shall be limited to the maximum displacement of 50 microns. The measurement procedure shall be broadly as per IS: 12075.</p> <p>2.3.3 Noise level shall not be more than 85 dB at a distance of 1 meter. Noise level test shall carried out generally as per IS: 12065.</p> <p>2.3.4 Dynamic balancing of the impeller shall be done generally as per ISO: 1940 of the balance quality grade G6.3.</p> <p>2.3.5 The impeller shall be zinc sprayed. (Minimum thickness 60 micron).</p> <p>2.3.6 All the parts of the exhauster and motor shall be of corrosion resisting material or shall suitably and durably protected against corrosion.</p> <p>2.3.7 Suitable foundation on bolts (M16 x110) along with nut (M16), lock nut (M16) Spring washer 4 nos. (each) shall be supplied by the vendor for mounting of the equipment on foundation.</p> <p>2.3.8 Dimensional details shall be as per Figure -1</p> <p>2.3.9 Each fan exhauster shall be performance test at supplier's works as per IS: 4894.</p> <p>2.3.10 In the event of placement of order, General Arrangement drawing of the exhauster unit shall be got approved before starting manufacturing of Air Exhauster.</p> <p>3.0 DESIGN, MANUFACTURE &amp; WORKMANSHIP :</p> <p>3.1 The protective measure of exhauster shall be as per of IS 4894. In assembled condition, live parts shall not be accessible with the standard test finger (see IS: 1401).</p> <p>3.2 The welding of the equipment shall be carried out by a qualified welder as per ASME Sec-IX.</p> <p>3.3 The motor shall have delta type stator winding connection.</p> <p>3.4 Minimum voltage required under starting up conditions to bring exhauster up to rated speed shall be 85% of rated voltage.</p> <p>3.5 Before starting manufacturing of Air Exhauster , the vendor shall get its detailed drawing approved by BHEL, which shall include detailed dimensions and bill of material.</p> <p>3.6 Permissible variation in dimensions mentioned in Table-II shall be as follows:</p> <table border="0" style="margin-left: 40px;"> <tr> <td>i) Nominal dimension</td> <td>: From 30 mm – 120 mm</td> <td>: +/- 2 mm</td> </tr> <tr> <td>ii) - do -</td> <td>: From 121 mm – 315 mm</td> <td>: +/- 2 mm</td> </tr> <tr> <td>iii) - do -</td> <td>: From 316 mm - 1000 mm</td> <td>: +/- 3 mm</td> </tr> </table> <p>3.7 To cater for continuous operational requirement at the power station, the air exhauster and motor shall be of proven design.</p> <p>3.8 All flanged connections (inlet and outlet) shall be supplied with matching counter flanges in bolted condition along with fasteners to permit trouble free assembly of inter connecting pipelines.</p> <p>4.0 MATERIAL :</p> <p>The material of construction used should satisfy the operational stresses, i.e. mechanical, thermal and chemical. It should be certified by the supplier that the material quoted by them in the part list has been used and is suitable for intended service requirements.</p>						i) Nominal dimension	: From 30 mm – 120 mm	: +/- 2 mm	ii) - do -	: From 121 mm – 315 mm	: +/- 2 mm	iii) - do -	: From 316 mm - 1000 mm	: +/- 3 mm
i) Nominal dimension	: From 30 mm – 120 mm	: +/- 2 mm														
ii) - do -	: From 121 mm – 315 mm	: +/- 2 mm														
iii) - do -	: From 316 mm - 1000 mm	: +/- 3 mm														
स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रयुक्त एवं अप्रयुक्त रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।		दिनांक एवं हस्ताक्षर SIGN & DATE 														
सामग्री सूची संख्या INVENTORY NO. <b>P-5718</b>		REV.NO. 11		SUPERSEDES		निर्माणकर्ता WORKED BY TARUN BANSAL SD/- 										
						जांचकर्ता CHECKED BY ROHIT BANSAL SD/- 										



दिनांक एवं हस्ताक्षर SIGN & DATE		<b>उत्पाद मानक (हीप - हरिद्वार)</b> <b>PRODUCT STANDARD (HEEP - HARIDWAR)</b>		HE 57008	
				पृष्ठ का Page 3 of 11	
SUPERSEDES INVENTORY NO. सामग्री सूची संख्या को अधिकृत किया जाएगा	5.0 DATA REQUIRED WITH THE BID / OFFER: Supplier to furnish the following data / documents in duplicate along with the offer : 5.1 The general arrangement drawing & catalogue / literature relevant to the product. 5.2 Part lists 5.3 Data sheets duly filled in formats attached with this specification. Foundation drawing along with embossment details of the foundation bolts etc. 5.4 The list of recommended spares required for a period of 5 years.				
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	6.0 IDENTIFICATION : 6.1 The fan exhaustor with motor assembly should have name plate of corrosion resistant material and must include the following information : 6.1.1 Name of equipment. 6.1.2 Model No. 6.1.3 Motor rating. 6.1.4 Name of supplier 6.1.5 BHEL specification No He 57008. 6.1.6 Identification SI No. 1 or 2, as shown in Figure-2 6.1.7 Power factor. 6.1.8 Weight of the equipment. 6.2 The direction of rotation should be embossed on the equipment at an easily locating position.				
स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रयोग एवं अनुपयोग रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।	7.0 INSPECTION AND TESTING: 7.1 The final inspection shall be carried out by BHEL'S representative. A notice of minimum 4 weeks shall be given by supplier for witnessing tests / checks for each lot of air-exhauster with motor. Representative shall have free access to the supplier's works for the purpose of inspection and testing of the air exhauster with motor, and vendor shall provide him all necessary help in carrying out the inspection. Approval of tests / inspection and there by issue of test certificates, or waiver of inspection by the purchaser shall not relieve the vendor of his responsibilities and obligations under contract for safe and satisfactory performance of the fans. 7.2 Tests listed under clause 7.3 shall be carried out as per procedures laid down in IS : 4894. If facilities for any of the tests mentioned below does not exist with the supplier, then relevant test certificates issued by approved test laboratories / institutes shall be supplied in original. Supplier shall supply all test certificates as listed in clause no 7.3. 7.3 Minimum tests / checks to be carried out on air exhauster, are given below.				
हस्ताक्षर एवं दिनांक SIGN & DATE 					
सामग्री सूची संख्या INVENTORY NO. P-5718	REV.NO. 11		निर्माणकर्ता WORKED BY TARUN BANSAL	SD/- 	
			जांचकर्ता CHECKED BY ROHIT BANSAL	SD/- 	


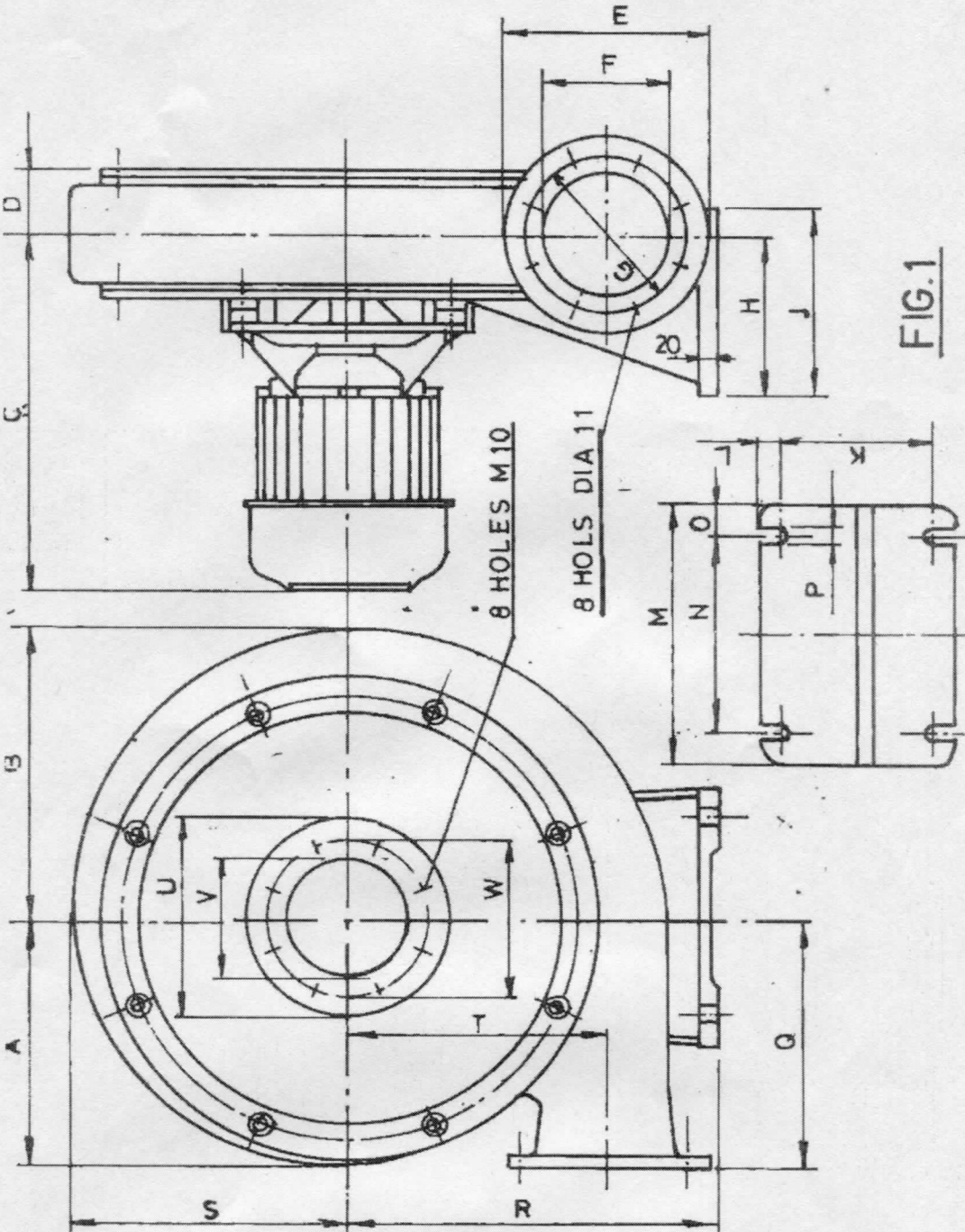



दिनांक एवं हस्ताक्षर SIGN & DATE 	<b>उत्पाद मानक (हीप - हरिद्वार)</b> <b>PRODUCT STANDARD (HEEP - HARIDWAR)</b>		HE 57008	
			पृष्ठ का Page 4 of 11	
SUPERSEDES INVENTORY NO.	7.3.1 AIR EXHAUSTER: i. Air delivery test to meet the requirement of clause 2.3.9. ii. Vibration test, to meet the requirement of clause 2.3.2. iii. Noise level test, to meet the requirement of clause 2.3.3. iv. Dimensional Check v. Material check: Material certificate shall be as per approved drg. / material list by BHEL. vi. Fan speed (Acceptance test). vii. Balancing of rotating parts to meet the requirements of clause 2.3.4 viii. 100% soap bubble test shall be carried out for no leakage of Casing & Gasket joints at design pressure. 7.3.2 : MOTOR: (a) TYPE TESTS: i. Temp. rise test. ii. Full load test. (b) ROUTINE TESTS i. High voltage test. ii. Insulation resistance test. iii. Earthing continuity test iv. Electrical input test.			
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	7.4 TOLERANCE ON RATINGS : The difference between the observed test results and the ratings assigned by the manufacturer shall not exceed the tolerances given below : a) Air delivery (-) 10 % b) Electrical input (+) 10% c) Speed (+/-) 10 % d) Deficiency (-) 15%.			
स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत भारती इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।	8.0 DOCUMENTS REQUIRED ALONG WITH SUPPLY OF EXHAUSTER UNIT SET : 8.1 Certified copies of test results of tests listed under paragraph 7.2 & 7.3 in 5 copies. 8.2 Dimensional drawings showing erection details in 5 nos. 8.3 Operating and maintenance manual in 5 nos. 8.4 Packing lists. 8.5 Final data sheets on the format enclosed with this specification in 5 nos.. 8.6 Guarantee certificate: The supplier shall guarantee trouble free operation of the equipment for a minimum period of one year after installation and undertake to replace / repair the damaged components free of cost with in the guarantee period. 8.7 A copy each of the above-referred documents, along with one reproducible of item at clause 8.2 shall be dispatched separately to BHEL, Hardwar before dispatch of consignment.			
क्रमांक 1-5718	REV.NO. 1	निर्माणकर्ता WORKED BY TARUN BANSAL	SD/- 	
सामग्री सूची संख्या INVENTORY NO.		जांचकर्ता CHECKED BY ROHIT BANSAL	SD/- 	







दिनांक एवं हस्ताक्षर SIGN & DATE 	<b>उत्पाद मानक (हीप - हरिद्वार)</b> <b>PRODUCT STANDARD (HEEP - HARIDWAR)</b>		HE 57008										
			पृष्ठ	का									
सामग्री सूची संख्या को अंकित किया गया INVENTORY NO.			Page	5 of 11									
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<b>स्वत्वाधिकार एवं गोपनीय</b> इस परलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रयोग एवं अनुपयोग रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।													
दिनांक एवं हस्ताक्षर SIGN & DATE 	9.0 INTER CHANGEABILITY : The motor of the exhaustor of a particular size and model and set of blades shall be Changeable such that the performance of the equipment remains within specified limits.												
	10.0 QUALITY PLAN : Quality Plan shall be submitted along with the offer for approval. Prior approval of Quality Plan is necessary before manufacturing.												
	11.0 PAINTING : The equipment is to be painted with the paints given below after cleaning the surfaces by shot blasting etc., giving a clean dry and metallic finish.												
	11.1 INTERNAL SURFACES : Inner chamber of the exhaustor are to be preserved with steam Washable preservation oil/ paint having viscosity of 38 centistokes at 40° c.												
	11.2 OUTER SURFACES : Outer surfaces of exhaustor shall be painted as per following details : <ul style="list-style-type: none"> <li>I. Inland conditions: Process a) and c) as per details below to be used for inland application with final DFT as 100 microns.</li> <li>II. Sea Condition : Process a),b) and c) as per details below to be used with final DFT as 100 microns.             <ul style="list-style-type: none"> <li>a) Priming : Epoxy resin based 2 pack Zinc Phosphate with DFT 50 microns.</li> <li>b) Intermediate : TiO<sub>2</sub> pigmented epoxy resin intermediate paint.</li> <li>c) Finish : Epoxy resin based finish paint.</li> </ul> </li> </ul>												
	12.0 DESPATCH :												
	12.1 The exhaustor units shall be directly dispatched to the site as described in the Purchase Order.												
	12.2 All openings to be suitably blanked with blanking plates/counter flanges as specified in Cl. 3.8.												
	12.3 All loose items to be packed separately in a small box and kept inside the main packing box for the exhaustor units.												
	12.4 Packing should be sea worthy and must be able to protect the equipment in tropical climate.												
	12.5 Following information should be painted on the packing box : <ul style="list-style-type: none"> <li>a) Name of the equipment.</li> <li>b) BHEL Purchase Order No.</li> <li>c) BHEL Specification No. HE-57008.</li> </ul>												
	13.0 LIST OF CROSS REFERRED STANDARDS AND SPECIFICATIONS : <table border="0" style="width: 100%;"> <tr> <td>a) ASME - IX</td> <td>b) ISO - 1940</td> <td>c) IS - 1401</td> </tr> <tr> <td>d) IS - 4691</td> <td>e) IS - 4894</td> <td>f) IS - 12065</td> </tr> <tr> <td>g) IS - 12075</td> <td>h) IS- 12615</td> <td>i) IEC:60034-30</td> </tr> </table>				a) ASME - IX	b) ISO - 1940	c) IS - 1401	d) IS - 4691	e) IS - 4894	f) IS - 12065	g) IS - 12075	h) IS- 12615	i) IEC:60034-30
a) ASME - IX	b) ISO - 1940	c) IS - 1401											
d) IS - 4691	e) IS - 4894	f) IS - 12065											
g) IS - 12075	h) IS- 12615	i) IEC:60034-30											
सामग्री सूची संख्या INVENTORY NO.	REV.NO. 	निर्माणकर्ता WORKED BY	TARUN BANSAL	SD/- 									
P-52218		जांचकर्ता CHECKED BY	ROHIT BANSAL	SD/- 									


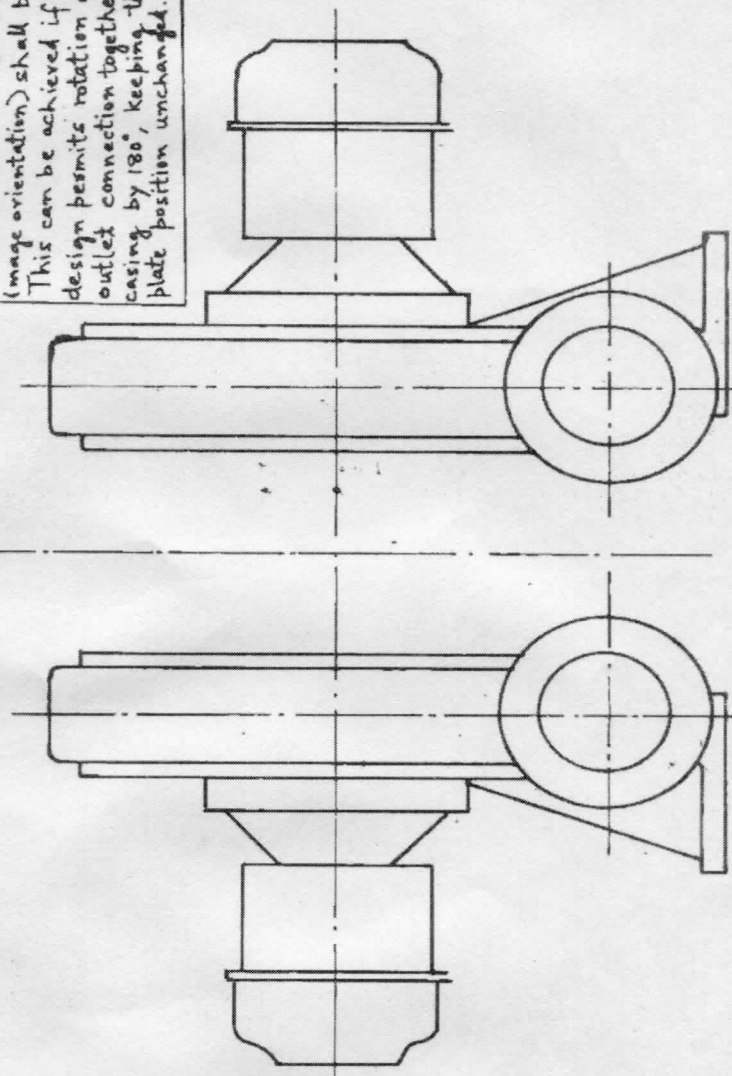






सामग्री सूची संख्या INVENTORY NO. <b>R-5918</b>	उत्पाद मानक (हीप - हरिद्वार) HE 57008	उत्पाद मानक (हीप - हरिद्वार) PRODUCT STANDARD (HEEP - HARIDWAR)	HE 57008	
			पृष्ठ का Page 6 of 11	
दिनांक एवं हस्ताक्षर SIGN & DATE <b>11/2/16</b>	स्वत्वधिकार एवं गोपनीय The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.	सामग्री सूची संख्या को प्रमाणित करता है SUPERSEDES INVENTORY NO.	दिनांक एवं हस्ताक्षर SIGN & DATE	
TABLE-1				
PARAMETERS	UNIT S	TYPE		
SUCTION TEMPERATURE	$^{\circ}\text{C}$	A	B	C
HEAD DEVELOPED	$\text{mmW/C}$	310	306	410
FLOW VOLUME	$\text{M}^3/\text{se C.}$	0.3	0.4	0.3
DENSITY OF AIR STEAM MIXTURE AT SUCTION TEMPERATURE AND 85% RH	$\text{Kg/M}^3$	0.923	0.846	0.780
		0.923	0.846	0.780
		0.3	0.4	0.3
		310	306	410
		70	80	84
		A1	B1	C1
		70	80	84
		310	306	410
		0.3	0.4	0.3
		0.923	0.846	0.780
		0.923	0.846	0.780
		0.3	0.4	0.3
		310	306	410
		70	80	84
		A	B	C
		310	306	410
		0.3	0.4	0.3
		0.923	0.846	0.780
		0.923	0.846	0.780
		0.3	0.4	0.3
		310	306	410
		70	80	84
		A	B	C
		310	306	410
		0.3	0.4	0.3
		0.923	0.846	0.780
		0.923	0.846	0.780
		0.3	0.4	0.3
		310	306	410
		70	80	84
		A	B	C
		310	306	410
		0.3	0.4	0.3
		0.923	0.846	0.780
		0.923	0.846	0.780
		0.3	0.4	0.3
		310	306	410
		70	80	84
		A	B	C
		310	306	410
		0.3	0.4	0.3
		0.923	0.846	0.780
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		310	306	410
		70	80	84
		A	B	C
		310	306	410
		0.3	0.4	0.3
		0.923	0.846	0.780
		0.923	0.846	0.780
		0.3	0.4	0.3
		310	306	410
		70	80	84
		A	B	C
		310	306	410
		0.3	0.4	0.3
		0.923	0.846	0.780
		0.923	0.846	0.780
		0.3	0.4	0.3
		310	306	410
		70	80	84
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		310	306	410
		0.3	0.4	0.3
		0.923	0.846	0.780
		0.923	0.846	0.780
		0.3	0.4	0.3
		310	306	410
		70	80	84
		A	B	C
		310	306	410
		0.3	0.4	0.3
		0.923	0.846	0.780
		0.923	0.846	0.780
		0.3	0.4	0.3
		310	306	410
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		310	306	410
		70	80	84
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		310	306	410
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		A	B	C
		310	306	410
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		0.3	0.4	0.3
		310	306	410
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		310	306	410
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		70	80	84
		A	B	C
		310	306	410
		0.3	0.4	0.3
		0.923	0.846	0.780
		0.923	0.846	0.780
		0.3	0.4	0.3
		310	306	410
		70	80	84
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		310	306	410
		0.3	0.4	0.3
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		A	B	C
		310	306	410
		0.3	0.4	0.3
		0.923	0.846	0.780
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		0.3	0.4	0.3
		310	306	410
		70	80	84
		A	B	C
		310	306	410
		0.3	0.4	0.3
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		0.923	0.846	0.780
		0.3	0.4	0.3
		310	306	410
		70	80	

दिनांक एवं हस्ताक्षर SIGN & DATE		<b>उत्पाद मानक (हीप - हरिद्वार)</b>		HE 57008	
SUPERSEDES INVENTORY NO.  सामग्री सूची संख्या को अतिरिक्तित्व करण		<b>PRODUCT STANDARD (HEEP - HARIDWAR)</b>		पृष्ठ का Page 7 of 11	
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<b>स्वाधिकार एवं गोपनीय</b> इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है। इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।					
हस्ताक्षर एवं दिनांक SIGN & DATE 					
सामग्री सूची संख्या INVENTORY NO. P-57-18	REV.NO. 11		निर्माणकर्ता WORKED BY	TARUN BANSAL	SD/- 
			जांचकर्ता CHECKED BY	ROHIT BANSAL	SD/- 



दिनांक एवं हस्ताक्षर SIGN & DATE 	<b>उत्पाद मानक (हीप - हरिद्वार)</b> <b>PRODUCT STANDARD (HEEP - HARIDWAR)</b>						<b>HE 57008</b>			
							पृष्ठ का Page 8 of 11			
SUPERSEDES INVENTORY NO. सामग्री सूची संख्या को अधिकृत किया	<b>DIMENSIONAL DETAIL OF FIGURE-1</b> <b>DIMENSIONAL DETAIL OF FIGURE-1</b>									
<b>COPYRIGHT AND CONFIDENTIAL</b> The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.	SL NO	TYPE DIMENSION	A	B	C	A1	B1	C1	D	E
	01	A	≈212	≈263	≈263	≈300	≈300	≈360	≈360	≈360
	02	B	≈268	≈318	≈318	≈350	≈350	≈425	≈425	≈425
	03	C	≈445	≈450	≈425	≈540	≈540	≈560	≈540	≈540
	04	D	72	80	80	115	115	135	135	135
	05	E	φ 216	φ234	φ234	φ234	φ234	φ274	φ280	φ280
	06	F	φ140	φ160	φ160	φ160	φ160	φ200	φ200	φ200
	07	G (PCD)	φ182	φ200	φ200	φ200	φ200	φ240	φ240	φ240
	08	H	172	180	180	180	180	210	243	243
	09	J	200	200	200	243	243	243	343	343
	10	K	164	164	164	207	207	207	307	307
	11	L	18	18	18	18	18	18	18	18
	12	M	250	280	280	364	364	364	464	464
	13	N	190	220	220	304	304	304	404	404
	14	O	30	30	30	30	30	30	30	30
	15	P	18	18	18	18	18	18	18	18
	16	Q	215	270	270	320	320	380	400	400
	17	R	330	390	390	440	440	530	530	530
	18	S	≈240	≈284	≈284	≈325	≈325	≈390	≈390	≈390
	19	T	220	267	267	310	310	370	370	370
	20	U	φ216	φ234	φ234	φ234	φ234	φ274	φ280	φ280
	21	V	φ140	φ160	φ160	φ160	φ160	φ200	φ200	φ200
22	W (PCD)	φ182	φ200	φ200	φ200	φ200	φ240	φ240	φ240	
स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रयुक्त एवं आरक्षण रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।	दिनांक एवं निर्माण SIGN & DATE 									
	सामग्री सूची संख्या INVENTORY NO. P-5718		REV.NO. 11		निर्माणकर्ता WORKED BY TARUN BANSAL					
				जांचकर्ता CHECKED BY ROHIT BANSAL						

सामग्री सूची संख्या INVENTORY NO. <b>P-5718</b>	REV.NO. <b>11</b>		निर्माणकर्ता WORKED BY <b>TARUN BANSAL</b>	जांचकर्ता CHECKED BY <b>ROHIT BANSAL</b>	SD/- <b>TS</b>	SD/- <b>KS L</b>
हस्ताक्षर एवं दिनांक SIGN & DATE <b>11/2/16</b>	स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग जो कि कम्पनी के हित में हानिकारक हो न किया जाए।	COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.	सामग्री सूची संख्या को अधिकृत किया गया। SUPERSEDES INVENTORY NO.	दिनांक एवं हस्ताक्षर SIGN & DATE	HE 57008 पृष्ठ का Page 9 of 11	
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  <p><b>उत्पाद मानक (हीप - हरिद्वार)</b></p> <p><b>PRODUCT STANDARD (HEEP - HARIDWAR)</b></p> </div> <div style="text-align: right;"> <p>HE 57008</p> <p>पृष्ठ का Page 9 of 11</p> </div> </div> <div style="text-align: center; margin-top: 20px;"> <p><b>AIR EXHAUSTERS TO BE SUPPLIED IN PAIRS AS PER ORIENTATION* BELOW</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; font-size: small;"> <p>* Air Exhausters suitable for flexible orientation (in addition to mirror-image orientation) shall be preferred. This can be achieved if the design permits rotation of air outlet connection together with casing by 180°, keeping the bed plate position unchanged.</p> </div>  </div> <p style="text-align: right; font-size: large;"><b>FIG-2</b></p> </div>						

दिनक एवं हस्ताक्षर SIGN & DATE		उत्पाद मानक (हीप - हरिद्वार)		HE 57008	
		PRODUCT STANDARD (HEEP - HARIDWAR)		पृष्ठ Page 10	का of 11
SUPERSEDES INVENTORY NO.	DATA SHEET				
सामग्री सूची संख्या की अधिकृतित करना	A. FAN				
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	1. Name of manufacturer				
	2. Model No.				
	3. Position				
	4. Flow dry air $M^3 / sec$				
	5. Pressure difference k p a				
	6. Flow steam mixture $m^3 / sec$				
	7. Mixture temp				
	8. Pressure difference k p a (with air steam mixture)				
	9. Density of mixture $kg / m^3$				
	10. Density of medium during test $kg / m^3$				
	11. Power absorbed K W				
	12. Speed RIM				
	13. Weight of rotating part kg				
	14. Weight of fan exhauster kg				
	15. Moment of inertia $kg m^2$				
	16. Standard and degree of rotor balancing				
	17. Static or Total Efficiency				
स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।	B. MOTOR:				
दिनक एवं हस्ताक्षर SIGN & DATE 	1. Model No.				
	2. Rating K W				
	3. Rated voltage				
	4. Frequency 50 Hz				
	5. Speed R P M				
	6. Degree of protection				
	7. Rated current amp				
सामग्री सूची संख्या INVENTORY NO. P-527/18	REV.NO. 11	निर्माणकर्ता WORKED BY TARUN BANSAL		SD/- 	
		जांचकर्ता CHECKED BY ROHIT BANSAL		SD/- 	



दिनांक एवं हस्ताक्षर SIGN & DATE		उत्पाद मानक (हीप - हरिद्वार)		HE 57008	
		PRODUCT STANDARD (HEEP - HARIDWAR)		पृष्ठ Page 11	का of 11
SUPERSEDES INVENTORY NO.  समीची सूची संख्या को अधिकारित करता	8. Power factor 9. Starting current Amp 10. Temp. Rise over 50 °C ambient, °C 11. Class of insulation 12. Rated torque - NM 13. Starting torque -NM 14. Weight of rotating part, Kg 15. Weight of motor - Kg 16. Moment of inertia K g-m <sup>2</sup> . 17. Efficiency Class of motor  C. ASSEMBLY: 1. Weight, Kg 2. Foundation bolts & nut – Yes 3. Drawing No.				
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स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।					
दिनांक SIGN & DATE 	1/2/16				
समीची सूची संख्या INVENTORY NO. 155318	REV.NO. 11			निर्माणकर्ता WORKED BY TARUN BANSAL	SD/- 
				जांचकर्ता CHECKED BY ROHIT BANSAL	SD/- 

MANUFACTURER NAME & ADDRESS:					STANDARD QUALITY PLAN					Customer: BHEL, HEEP, Haridwar Project: Sagardighi Thermal Power Project PO: Manigram, Dist. Murshidabad, West Bengal - 742237				
					Item	Air Exhaster with Motor				QP NO.: QA/BI/QP/2301/Sagardighi				
									03.03.2022					
					Sheet 1 of 2									
S. No.	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Reference Document	Acceptance Norms	Format of Records	Agency			Remarks		
1	2	3	4	5	6	7	8	9	D	M	B	N	11	
1.0	Raw Material													
1.1	Casing, Impeller, Blades & Base Frame/Plate (and other components as per material list approved by BHEL)	Chemical Composition Mechanical Properties Size	Major	Chemical Mechanical Measurement	1/Heat  100%	Ordering specification/BHEL approved Dwg. & Data Sheet	HE 57008	Test Report	√	P	V	V	NABL TC shall be submitted for verification  -Refer note-4&5	
1.2	Nuts & Bolts	Trade Mark & Property Class	Major	Visual	100%	IS:1367	As Per Vendor's Procedure	IR	√	P	V	V		
1.3	AC Induction Motor Motor Make: ABB	Routine & Type tests certificate Efficiency class - IE3 Degree of protection, Characteristic curve	Major	Review	100%	BHEL Specification CI.7.3.2	IS 12615 or IEC 60034- 30	TC	√	P	V	V		
2.0	Inprocess Inspection													
2.1	Casing, Motor Bracket, Base Frame & Inlet Casing	Quality of Welds	Major	DPT	100%	BHEL Specification	ASME VIII	IR	√	P	V	V	Note: 1	
2.2	Impeller	Dimensions	Major	Measurement	100%	BHEL APPD DWG	BHEL APPD DWG	IR	√	P	-	V		
		Dimensions after machining	Major	Measurement	100%	BHEL APPD DWG	BHEL APPD DWG	IR	√	P	-	V		
		Dynamic Balancing	Major	Measurement	100%	ISO:1940	ISO:1940 GR6.3	IR	√	P	V	V		
2.3	Assembly of Fan	Internal Clearance between Impeller & Casing	Major	Measurement	100%	BHEL APPD DWG	BHEL APPD DWG	IR	√	P	V	W		
3.0	Final Inspection													
3.1	Counter Flange	Physical Verification	Major	Visual	100%	BHEL APPD DWG	HE 57008	COC	√	P	W	W		
3.2	Complete Assembly	Overall Dimension	Major	Measurement	100%	BHEL APPD. DWG.	HE 57008	IR	√	P	W	W		
3.3		Thickness of Zinc coating of Impeller	Major	Measurement	100%	BHEL Spec.	HE 57008	IR	√	P	V	V		
3.4		Leakage test of casing & Gasket joints at Design Pressure	Major	Leak Test (Soap solution)	100%	BHEL Spec.	HE 57008	TC	√	P	W	W	Design Pressure - 624 mmWG	
3.5		Performance test (including air delivery, pressure & power consumption)	Major	Perofmance	100%	IS : 4894	HE 57008	TC	√	P	W	W		
Note: 1. Welding to be done by qualiaified welder as per ASME IX WPS and PQR to be checked by inspecting Agency.														
MANUFACTURER/ SUBCONTRACTOR		LEGEND: I RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER/SUBCONTRACTOR B: BHEL/ BHEL NOMINATED INSPECTION AGENCY N: WBPDCI/WBPDCI Appointed TPIA INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION						FOR CUSTOMER USE		APPROVED BY				

MANUFACTURER NAME & ADDRESS:					STANDARD QUALITY PLAN					Customer: BHEL, HEPP, Haridwar Project: Sagardighi Thermal Power Project PO: Manigram, Dist. Murshidabad, West Bengal - 742237					
					Item	Air Exhaster with Motor					QP NO.: QA/BI/QP/2301/Sagardighi				
					Sheet 2 of 2										
S. No.	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Reference Document	Acceptance Norms	Format of Records	Agency			Remarks			
1	2	3	4	5	6	7	8	9	D	M	B	N	11		
3.6		Fan speed (Acceptance test)	Major	Electrical	100%	BHEL Spec.	HE 57008	TC	√	P	W	W			
3.7		Fan speed, Smooth running & Direction of Rotation	Major	Visual	100%	BHEL Spec.	HE 57008	IR	√	P	W	W			
3.8		Noise Level	Major	Measurement	100%	IS:12065	IS:12065	IR	√	P	W	W	85 dB Max		
3.9		Vibration	Major	Measurement	100%	IS:12075	IS:12075	IR	√	P	W	W	50 Microns		
3.10		Appearance including paint thickness (DFT)	Major	Visual & Measurement	100%	BHEL Spec./BHEL Appd. DWG	BHEL Spec./BHEL Appd. DWG	IR	√	P	V	W			
3.11		Compliance of technical requirement	Major	--	100%	BHEL Spec.	BHEL Spec./BHEL Appd. DWG.	COC	√	P	V	V			
4.0	Packing														
4.1		Soundness of Packing against Transit Damage	Major	Physical	100%	BHEL Spec./Vendor STD.	BHEL Spec./Vendor STD.	IR	√	P	V	V			
Note: 1. Welding to be done by qualified welder as per ASME IX WPS and PQR to be checked by inspecting Agency.															
MANUFACTURER/ SUBCONTRACTOR		LEGEND: I RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER/SUBCONTRACTOR B: BHEL/ BHEL NOMINATED INSPECTION AGENCY N: WBPDCI/WBPDCI Appointed TPIA INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION						FOR CUSTOMER USE		APPROVED BY					

**Note:**

1. All instruments to be used for testing/ inspection shall have valid 'calibration certificates' to be verified by agencies, manufacturer and the contractor. 2. All pages of the inspection documents shall be numbered in chronology with the QAP clauses, duly mentioning the corresponding QAP clause no's at the top of each page 3. One 'index' page containing the document descriptions, their page no's & QAP cl no's shall be attached upfront the inspection documents. 4. Each of the raw materials (as per approve. Drg./technical data sheet) TC's should be marked-up at the particular cast/ batch/ heat no. of the material used for equipment mentioning the part/component that raw material is used for , NABL TC shall be submitted for verification 5. NABL Lab reports correlatable to heat numbers shall be provided for reviewing the material test certificates. 6. Any lab-TC duly endorsed by manufacturer & supplier shall be submitted from NABL accredited lab only if in-house calibrated measuring instruments are not available. 7. For any 'heat treated' component (as applicable), the corresponding 'graph' to be submitted for review 8. Painting can be done only after inspection clearance, as per customer's approved paint specification / schedule. if mentioned. Otherwise manufacturer's standard shall be followed. 9. Original manufacturer's TC's (duly endorsed by agencies/ manufacturer & supplier) shall be submitted for all bought- out items, and sourced from customer's approved 'make list ' mentioned in approved drg/data sheet for review by customer/consultant. Otherwise manufacturer's standard make shall be followed. 10. Motor shall be procured from WBPDCI approved source