

**BHARAT HEAVY ELECTRICALS LIMITED****HEEP HARIDWAR INDIA-PIN 249403****FAX NO: 0091 1334 226462****PHONE NO: 0091 1334 284658**Tender No.: **T/T206/15/1742W/1**

The Heavy Electricals Equipment Plant (HEEP) located in Haridwar, India is one of the major manufacturing plants of Bharat Heavy Electricals Ltd. The core business of HEEP includes design and manufacture of large steam and gas turbines, turbo generators and so on.

Sealed tenders with the Tender No. and opening date clearly super scribed on the cover are invited from the manufacturers (registered as well as unregistered) for the supply of the following items:-

SL	MATERIAL CODE ITEM DESCRIPTION	QUANTITY	UNIT	LOTNO	LOT DELIVERY QTY SCHEDULE
1	W90311604030 DRG: 01160456000 REV: 01 FINISHED MACHINED JOURNAL BEARING OF SIZE D250X180. AS PER CBOM 01160456000 AND DRAWINGS / STANDARDS OF 01160456000.	5	NO	1 2 3 4 5	1 30/04/18 1 30/06/18 1 31/08/18 1 31/10/18 1 31/12/18
2	W90311703089 DRG: 01170356000 REV: 01 FINISH MACHINED COMBINED JOURNAL AND THRUST BEARING OF SIZE D380X300. SUPPLY AS PER CBOM AND DRAWING NO. 01170356000.	5	NO	1 2 3 4 5	1 30/04/18 1 30/06/18 1 31/08/18 1 31/10/18 1 31/12/18
3	W90311818056 DRG: 01181807000 REV: 01 FINISHED MACHINED JOURNAL BEARING D530X475 AS PER CBOM 01181807000.APPLY SUITABLE RUST PREVENTIVE AND SUPPLY IN SEA WORTHY PACKAGE.	5	NO	1 2 3 4 5	1 30/04/18 1 30/06/18 1 31/08/18 1 31/10/18 1 31/12/18
4	W90311836011 DRG: 01183658000 REV: 01 FINISHED MACHINED JOURNAL BEARING OF SIZE D530X530 AS PER CBOM 01183658000 AND DRAWINGS/STANDARDS OF 01183658000	5	NO	1 2 3 4 5	1 30/04/18 1 30/06/18 1 31/08/18 1 31/10/18 1 31/12/18
5	W90311818048 DRG: 01181856000 REV: 01 FINISH MACHINED JOURNAL BEARING D475X425 AS PER CBOM 01181856000. APPLY SUITABLE RUST PREVENTIVE AND SUPPLY IN SEA WORTHY PACKAGE.	5	NO	1 2 3 4 5	1 30/04/18 1 30/06/18 1 31/08/18 1 31/10/18 1 31/12/18

1. VENDORS TO QUOTE BEST POSSIBLE DELIVERY.

2. PRE QUALIFICATION REQUIREMENT AS PER ANNEXURE-I.
3. REFERENCE DRAWINGG/DOCUMENTS ARE AS PER ANNEXURE -II.
4. QUALITY REQUIREMENT AS PER ANNEXURE III.
5. NON DISCLOSURE AGREEMENT AS PER ANNEXURE IV.

The tender documents can be downloaded from our web site www.bhel.com or www.bhelhwr.co.in or www.tenders.gov.in, after downloading the tender documents from web site, while submitting the tender as detailed in “**Instruction to Bidders**”, intending vendors must remit tender fee of Rs. 2,000.00 for indigenous vendors (or equivalent amount in foreign currency for foreign vendors) against each tender if documents (in hard copies) are required from BHEL. Vendors must also remit the requisite EMD Rs 2,00,000/- (Rupees Two Lacs only) in the form of Cash (as permissible under Income Tax Act) / Pay Order / Demand draft. In case of foreign bidders e-payment may also be accepted as EMD. **If EMD is not submitted along with offer, then the offer may not be considered.** Vendors registered with BHEL HEEP Haridwar with vendor codes M03647, M06125, M70051, M72420, M79082, M79104, M91018, M91020 and N16084 are exempted from submission of EMD.

Micro & Small Enterprises (MSEs) are exempted from submission of EMD & tender fees. Documents as detailed in GENERAL INSTRUCTIONS AND STANDARD TERMS & CONDITIONS (GISTC) hoisted on our website www.bhelhwr.co.in are to be submitted for availing exemption from submission of EMD & Tender Fees.

Central / State – PSUs / Government departments are exempted from submission of EMD subject to approval by BHEL management.

The date for opening of tender shall be 07.03.2018 Tenders will be received up to **1.45 P.M.** on **07.03.2018** and opened on the same day at 2.00 P.M. in the Tender Room. **Please note that tender received after due date & time (1.45 PM on 07.03.2018) will not be REPEAT will not be opened.** BHEL will not be responsible for any type of postal / courier delay.

Amendments/Corrigendum, if any, will be hosted on our web site only. Other terms and conditions will be as per tender documents. The total quantity may undergo change at the time of ordering.

Documents submitted with the offer/bid by the bidder (original supplier) shall be signed and stamped in each page by authorized representative of the bidder. Documents not signed and stamped in each page by the authorized signatory of the bidder, shall neither be accepted nor considered for evaluation of the bid.

Vendors operating from BHEL quarters, unauthorized colonies on BHEL land and Dharamshalas / hotels shall not be considered, hence such vendors need not apply.

Any vendor who is under hold (for the item)/ delisted/ banned with BHEL on date of opening of Part – 1 will not be allowed to quote for this tender. In case their offer is received, it may be out rightly rejected.

Please submit your offer only for the above requirement subject to our **GENERAL INSTRUCTIONS AND STANDARD TERMS & CONDITIONS (GISTC)**. Please visit our site www.bhelhwr.co.in for General Instructions and Standard Terms & Conditions (GISTC) for Tender Enquiries. **All the bidders/vendors must ensure compliance of these GISTC.**

BIDS shall be opened at 2.00 PM on the due date in the presence of authorized representative of the bidders who may like to be present. The authorized representative should bring authority letter from their parent company (Manufacturer) for the specific tender no. attending the bid opening.

Unregistered vendors may please visit our site www.bhel.com for filing up the Supplier Registration Form. Copy of filled Supplier Registration Form (SRF) may be submitted along with the offer.

KINDLY READ “INSTRUCTIONS TO BIDDERS.” QUOTATION NOT IN ACCORDANCE WITH THE INSTRUCTIONS ARE LIABLE TO BE DISQUALIFIED AND IGNORED.

INSTRUCTIONS TO BIDDERS FOR OPEN TENDER

DEFINITION

Registered Vendors - Are those who are registered with BHEL, Haridwar for Megawatt rating/ Size/ Weight of tendered items in respective material grade or machining of such items.

Un-registered Vendors - Are those who are not registered with BHEL, Haridwar for Megawatt rating/ Size/ Weight of tendered items in respective material grade or machining of such items.

ESSENTIAL INSTRUCTIONS

* Un-registered vendors may be approved by BHEL, if found suitable, on the basis of data furnished by them in Supplier Registration Form (SRF) for Foreign Vendors or Indigenous Vendors (as applicable).

* BHEL team may visit the vendor (s) works for verification of capability and capacity claimed in tender documents/offer (s).

* The tenders shall be submitted in three parts in separate sub-envelopes clearly super scribing type of bid, tender no., due date and the name of vendor with full contact details.

❖ **Part I –**

- Tender fee (if hard copy insisted from BHEL)
- Earnest Money Deposit
- Documents as detailed in GISTC by MSE Supplier for availing benefits intended for MSE suppliers.
- Duly filled Non-Disclosure Agreement (Annexure IV)
- Information required as per Prequalifying requirement (Annexure I) and necessary documents.

❖ **Part II –**

- Techno- Commercial Bid - it should be replica of price bid (copy of price bid without price part).
- Quality plan in requisite format as per scope of inspection detailed in Annexure III.

❖ **Part III –**

- Price Bid.


All the sub-envelopes (Part-I, Part- II & Part-III) to be put in a single covering envelope indicating tender no., due date and the name of vendor, e-mail id, with full contact details. Offer should be complete in all respect (i.e. Part-I, Part- II & Part-III). BHEL may decide to ignore the offer in case of submission of incomplete offer.

*Late Delivery penalty shall be applicable @ 0.5% per week to a maximum of 10% of the unexecuted portion of the order is applicable.

* BHEL reserves the right to split the finally decided quantity tentatively in the ratio **60:40** {ordering for tentatively 60% quantity on L1 bidder and balance 40% quantity to be countered offered to next higher bidders sequentially and ordering on bidder accepting counter offer first. If none of next higher bidders accepts counter offer, then ordering on L1 bidder for complete quantity}.

- Any additional drawing & document if required, may be obtained through email from akhilkumar.gupta@bhel.in .

** Please submit your offer according to General Instructions and Standard Terms & Conditions (GISTC) for Tender Enquiries. Please visit our site www.bhelhwr.co.in for GISTC. All the bidders/vendors must ensure compliance of these GISTC . GISTC can also be referred by login to B2B Portal for Vendors.

 HARIDWAR	Mandatory Technical Pre-Qualification Requirements (PQR) for Procurement of Finish Component / Assembly	PQR-Journal Brg.& Thrust Bearing Rev. No. 00 Page 1 of 1
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**PQR for Procurement of Finish Machined Journal Bearing and Journal & Thrust Bearing
used in Super-Critical Steam Turbine against Indent no. 20151742**

Date:-19/08/2017

Following are the mandatory pre-qualification requirements for finish machined journal bearing and Radial Thrust Bearing.

Offers of vendor not meeting the requirements given below shall not be considered.

- 1) Vendor must have in-house centrifugal babbitting and machining facilities to manufacture enquiry items. Detail of in-house centrifugal babbitting facility and machining facilities are to be submitted. **Outsourcing of babbitting and machining is not permitted.**
- 2) The vendor should have experience of manufacturing and supplying fully finish machined babbitted bearing having **dovetail groove** to Power Equipment Manufacturer (Turbine/Generator/Exciter) for **200MW and above rating. Vendor must have supplied at least 5 nos. of dovetail groove babbitted Bearings of nominal dia. (inner diameter) ≥ 250 mm in the last 7 years.**

In support of the above, the vendor has to furnish detail of five finish machined babbitted bearing having **dovetail groove** in the format below:


Sl. No.	Inner dia. Bearing	Weight	Name and Address of customer	Year of supply
01				
02				
03				
04				
05				

Vendor has to submit documentary evidence in support of above experience like purchase order /Disapatch note etc. At least three (3) test certificates including NDT reports from above list are to be submitted. The correlation of test certificate with purchase order referred in support of experience has to be ensured by vendor.


- 3) Vendor to confirm that delivery of bearing shall be as per BHEL Technical Delivery Conditions document no. **TDC-F-11604/11703/11818/11836/-** and all the requirements mentioned in TDC should be met in totality. Vendor to submit signed & Stamped copy of TDC along with offer.
- 4) Vendor to submit Supplier/Vendors declaration (**TDC-F-11604/11703/11818/11836/-** Page 12 of 12) against each material code along with offer.


(Sujeet Kumar)

(Dy. Manager/MTE)


(Alok Kumar Singh)

(Sr.Manager, STE-TE)


(Ritesh Kumar)

(Dy. Manager, STE-TE)

**Fully Assembled Finish Machined Babbitted Journal Bearing & Radial Thrust Bearing
for Super Critical Steam Turbine**

Material Code: W90311604030, W90311703089, W90311818056, W90311836011, W90311818048

“Journal Bearing & Radial Thrust Bearing for supercritical steam turbine in completely finish machined & assembled condition is to be supplied as per details and technical requirements furnished in assembly drawing no. and its associated sub-assembly drawings as per CBOM.

Table-1

Sr. No.	Material code	Description	Drawing no.
1	W90311604030	Finish Machined Journal Bearing Dia. 250 x 180	01160456000
2	W90311703089	Finish Machined Radial Thrust Bearing Dia. 380x300	01170356000
3	W90311818056	Finish Machined Journal Bearing Dia. 530X475	01181807000
4	W90311836011	Finish Machined Journal Bearing Dia. 530 x 530	01183658000
5	W90311818048	Finish Machined Journal Bearing Dia. 475X425	01181856000


I. Scope of work / supply:

The supplier to confirm to adhere the following points while submitting the offer:


- 1) Scope of supply shall be as per BHEL drawing no. mentioned against each material code in Table-1, along with all components including materials as per respective Combined Bill of material (CBOM). Scope includes procurement of materials, forgings, all stage operation including pre-machining, babbitting, final machining of component and assembly of bearing as per drawing requirements. Supplier to take note of it & confirm the final supply of items as per respective BHEL CBOM, Drawings, Specification and Technical requirements in totality.
- 2) Machining should be carried out taking care of every technical requirements of each item (drawings & standards) covered in CBOM.
- 3) All tools and technological items required for the manufacture of the Journal Bearing Assembly are to be arranged by the vendor.
- 4) One set of drawings and standards shall be furnished to the supplier for submitting the offer. List of drawings / standards is enclosed at Annexure-I. All dimensions in drawings are in millimeter (mm). *Drawings and documents furnished to supplier*

Supplier Name:

Sign & Seal of Supplier:


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should be treated as BHEL property. Strict confidentiality is to be maintained and under no circumstances these documents or copy of these should be transferred to the third party without express permission of BHEL. On completion of supply, all documents must be returned to BHEL.

- 5) Supplier should confirm categorically that they shall meet all technical requirements listed in the drawings and specifications. Deviation if any should be referred to BHEL for concurrence before placement of purchase order.
- 6) Supplier must ensure all technical requirements indicated in the drawings / standards including :
 - (a) Surface finish (Ra value indicated in microns).
 - (b) Sizes and tolerances.
 - (c) Geometrical accuracies' e.g. run-outs, concentricity, parallelity, perpendicularity etc.
 - (d) Dimensions shown within  on drawings are Critical to Quality (CTQ).
- 7) Supplier to ensure following technological necessity / process control during manufacturing to achieve controlled distortion and dimensional accuracy:-
 - (a) Identification of each and every item as per drawing.
 - (b) Use of technological supports / fixtures.
 - (c) Proper handling during machining, shifting, assembly and transportation.
- 8) Drawing & documents specified in the Annexure-I may undergo minor revisions, however, quantum of machining will remain same. If any drawing undergoes revision it shall be communicated to supplier at the earliest.
- 9) Drawings given in Annexure-I are of major items. For entire list of items and quantity thereof, refer respective CBOM No.
- 10) Complete set of detail drawings and standards will be furnished to supplier along with the Purchase Order. Supplier may seek any other cross referred document, if required.
- 11) Vendor to comply the BHEL manufacturing standard HW0652098 for manufacturing of the bearing shell.
- 12) The supplier shall furnish details of the machining facilities to be employed for machining of the bearing in-house or at their sub-contractor's works and get approval from BHEL.

Supplier Name:

Sign & Seal of Supplier:

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- 13) Vendor to provide manufacturing plan indicating activities for manufacturing of Bearing shell , with description of facilities (like make, model, specification , accuracy etc.) employed to carry out the activities.
- 14) BHEL may be allowed to visit vendor's/sub-contractors manufacturing facilities if necessary.

II. Material:

- 1) Material of items / components shall be as per BHEL specification given in respective CBOM No. Vendor to confirm with offer. Any deviation in material from CBOM shall be informed at the time of offer for BHEL acceptance only. **BHEL may accept or reject the proposed alternate material.**
- 2) Vendor to note that '**No Deviation in material will be allowed after placement of order**'.
- 3) **For Indian Vendors:** Forging Shell & Bearing Liner as per BHEL specification HW19361 & AA19332 and casting as per BHEL specification HW19793 are to be procured from BHEL approved sources as per the list provided with enquiry. Refer Annexure III.

For Foreign Vendors: Forging & Casting shall be as per BHEL drawing and specification.
- 4) List of materials specified in the CBOM and their equivalent National / International material grades with their standards has been given in Annexure II. Vendor to submit signed and stamped Annexure II with offer.

In case vendor wishes to use material other than the specified material in Annexure II, vendor to submit proposed material in Annexure II with a copy of their material specification (English language only) along with the offer for approval.


BHEL reserves the right to accept or reject it.
- 5) These finalized grades shall be part of Quality Plan / Purchase Order.

III. Babbitting:

The vendor should have in-house babbitting facility. Babbitting of the Bearing shells shall be done by Centrifugal Casting process. Vendor shall submit details of in house

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babbitting facilities covering details like size and weight of bearing which can be babitted by vendor, furnaces & oven details to manufacture enquiry items.

Babbitt material as per specification HW12897 shall be used. Source of babbitt material and at least one test certificate of babbitt material to be submitted.

Inspection and acceptance of babitted bearing shall be done as per BHEL specification HW0850195.

IV. Quality Requirements:


- 1) All dimensions and technical requirements as per BHEL drawings are to be complied with and recorded by vendor's quality control (QC) and to be submitted to BHEL for acceptance as per agreed stages.
- 2) Quality Plan to be submitted to BHEL along with offer for approval. BHEL reserves the right to identify customer hold points (CHPs) in Quality Plan which will be witnessed by BHEL / BHEL nominated agency and beyond which work will not proceed without clearance from BHEL.
- 3) No flaws like cracks etc. should open up during machining. However, if any flaw opens up during machining, supplier shall immediately intimate to BHEL, the detail and location of flaw and corrective action proposed. Further machining will be carried out only after approval by BHEL.
- 4) Any non-conformity to any dimension or technical requirement is to be informed to BHEL on document duly certified by vendors QC for the approval of BHEL. Vendor shall proceed with the work only after decision given by BHEL on the non-conformity. BHEL reserves the right for rejection of non-conformity and will be final and binding on vendor.

V. Procedure Qualification:

NDT (Non Destructive Testing) shall be carried out by personnel qualified by ASNT / ISNT or equivalent.

Supplier Name:

Sign & Seal of Supplier:

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VI. Inspection at Vendors Work:

- 1) All the stage inspections should be followed as per Quality Plan / Assembly Requirements and its record should be kept by the supplier.
- 2) After finish machining detailed dimension report along with filled up log sheets should be submitted to BHEL for final clearance.
- 3) Inspection of the job at supplier's works shall be carried out by BHEL / Agency Authorized by BHEL for which adequate prior notice (minimum 4 weeks) shall be given by the supplier.

VII. Painting & conservation:

All surfaces must be protected against rust / corrosion by steam washable rust preventive such as Tectyle 506 manufactured by M/s Volvoline, Germany or equivalent suitable for at least six months. Paint is not allowed on any surface.

VIII. Packing:

Finish machined completely assembled "Journal Bearing / Combined Journal & Thrust Bearing" shall be suitably packed in Sea-worthy packing. Packing should be suitable to protect against any damage to all surfaces during handling and transportation.

IX. Test Certificates:

Three hard copies and one soft copy on CD of all test certificates like Material test certificate, NDT (Non Destructive Test) reports, Dimensional reports, Painting report etc. are to be submitted to BHEL.

Supplier Name:

Sign & Seal of Supplier:



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ANNEXURE-I

Sl.no	Material code	Description w.r.t. Scope of Supply & Respective Drawing Numbers
1	W90311604030	<p>Journal Bearing Dia. 250 x 180</p> <p>Scope of supply – CBOM No. 01160456000</p> <p>Drawings – 01160456100, 21160456999, 31181456104, 21160456013, 41160401021, 31160401022, 31160401025, 41160456025, 41160456027</p> <p>Standard - HW19361, HW12897, AA10622, HW10683, HW7123196, ST24002, AA19332, AA10119, AA10740, HW10673, AA7123123, ST01011, ST05023,</p> <p>Acceptance Standard- HW0980802 & HW0850195.</p> <p>Quality Plan & Manufacturing Processes to be Approved By BHEL</p>
2	W90311703089	<p>Radial Thrust Bearing Dia. 380 x 300</p> <p>Scope of supply – CBOM No. 01170356000</p> <p>Drawings – 01170356100, 01170356901, 21170356101, 41170356102, 41170301008, 31170301019, 31170301090, 31170301091, 41170301092, 31170301030, 31170301031, 31170301040, 31170301041, 31170301050, 31170301051, 41170356006, 31170301002, 41170301003, 31170301004, 41170301102, 11170356200, 21170356201</p> <p>Standard – HW19793, AA10622, AA10218, AA12101, HW10181, AA7123123, HW7123196, AA10208, AA10740, AA19361, HW12897, AA10212, AA7123125, ST24001, ST24002, ST42005, ST01031, ST03002, ST05004</p> <p>Acceptance Standard- HW0980802 & HW0850195.</p> <p>Quality Plan & Manufacturing Processes to be Approved By BHEL</p>
3	W90311818056	<p>Journal Bearing Dia. 530X475</p> <p>Scope of supply – CBOM No. 01181807000</p> <p>Drawings – 01181807100, 21181807999, 31181456104, 21181456106, 41181456107, 41181456108, 41181456114, 41181456118</p> <p>Standard - HW19361, HW12897, AA10622, HW10683, HW7123196, ST24002, AA19332, AA10119, AA10740, HW10673</p> <p>Acceptance Standard- HW0980802 & HW0850195.</p> <p>Quality Plan & Manufacturing Processes to be Approved By BHEL</p>

Supplier Name:

Sign & Seal of Supplier:

Sl.no	Material code	Description w.r.t. Scope of Supply & Respective Drawing Numbers
4	W90311836011	<p>Journal Bearing Dia. 530X530</p> <p>Scope of supply – CBOM No. 01183658000</p> <p>Drawings -01183658100, 21183658999, 31181456104, 21181456106, 41181456107, 41181456108, 41181456114, 41181456118</p> <p>Standard - HW19361, HW12897, AA10622, HW10683, HW7123196, ST24002, AA19332, AA10119, AA10740, HW10673</p> <p>Acceptance Standard- HW0980802 & HW0850195.</p> <p>Quality Plan & Manufacturing Processes to be Approved By BHEL</p>
5	W90311818048	<p>Journal Bearing Dia. 475 x 425</p> <p>Scope of supply – CBOM No. 01181856000</p> <p>Drawings – 01181856100, 21181456999, 31181456104, 21181456106, 41181456107, 41181456108, 41181456114, 41181456118,</p> <p>Standard – HW19361, HW12897, AA10622, HW10683, HW7123196, ST24002, AA19332, AA10119, AA10740, HW10673, ST05023, ST01011</p> <p>Acceptance Standard- HW0980802 & HW0850195.</p> <p>Quality Plan & Manufacturing Processes to be Approved By BHEL</p>

Supplier Name:

Sign & Seal of Supplier:



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ANNEXURE-II**Equivalent Material Grades:**

Sr. No.	BHEL Material Specification & Description	Equivalent National / International Material Grades	Equivalent Proposed by vendor, if any.	Mandatory requirement for Equivalent material grades.
1	AA10622: Alloy Steel Bar	20CrMoVTiB410, DIN EN 10269-1999 Alternatively HW10673 (Material no. 1.7709) is also acceptable.		
2	AA19332: Carbon Steel Forging Class-3	IS:2004-1991 Gr:3 (30C8)		
3	HW12897: Tin Based antifriction bearing alloy	Babbitt as per HW12897 is only acceptable. Any other alternate is not acceptable.		
4	AA10740: Austenitic stainless steel sheets, plates and strips, solution annealed.	ASTM A240M TYPE 321/ JIS G4305-2005 Grade 321/ IS:6911Gr:X04Cr18Ni10T i/ EN10088-2 Gr X6CrNiTi18-10		
5	AA10119: Structural Steel Weldable Quality.	DIN EN10025 Gr S275J2G3/ IS 2062 Grade E250-BR		Plates above 12 mm are to be Normalized.
6	HW19361: Steel Forging For Bearing Liners / Shells	Item as per HW19361 is only acceptable. Any other alternate is not acceptable		
7	HW10683: Steel Bar (Material No.1.4923)	X22CrMoV12-1, EN10269		
8	HW10673: Heat resistant steel bars. (Material No.1.7709)	21CrMoV5-7, EN10269		
9	Copper (Cu) for ST24002			
10	Steel as per Property Class 8.8 for HW7123196	Screw, 8.8, ISO 4762		
11	Steel as per Property Class 12.9 for AA7123123	Screw, 12.9, ISO 4762 or IS2269		
12	HW19793: Nodular Graphite Iron Casting	Casting as per HW19793 is only acceptable. Any other alternate is not acceptable		


Supplier Name:**Sign & Seal of Supplier:**

Sr.No.	BHEL Material Specification & Description	Equivalent National / International Material Grades	Equivalent Proposed by vendor, if any.	Mandatory requirement for Equivalent material grades.
13	AA10218: Hot Rolled / Forged Carbon Steel Bar	11SMnPb30 / 40C8		
14	AA12101: Cold Rolled Brass Sheet	IS:410 / CuZn37		
15	HW10181: Carbon steel plates	S355J2G3, EN10025 Part-2		
16	AA10212: Cold drawn steel bars	IS2048 Type-B, *-C45+C		
17	Steel as per Property Class 8.8 for AA7123125	Screw, 8.8, DIN7984		
18	15Mo3	16Mo3		

Note: Item / Materials specified in CBOM and not covered in Annexure II if any, shall be as per BHEL
Combined Bill of Material.

Supplier Name:

Sign & Seal of Supplier:

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ANNEXURE-III

BHEL APPROVED SOURCE FOR FORGINGS OF AA19332 & HW19361


- 1) Mackeil Ispat And Forgings Ltd.
- 2) Star Wire (India) Ltd.
- 3) Kisaan Steels (Pvt.) Ltd.
- 4) CHW Forge (P) Ltd.
- 5) Good Luck Engineering Co.
- 6) Ghaziabad Forgings Pvt Ltd.
- 7) R. D. Forge.
- 8) Bharat Heavy Electricals Ltd.
- 9) Vishnu Forge Industries Ltd.
- 10) Ring Forgings Pvt Ltd.
- 11) Ghaziabad Ispat Udyog Ltd.
- 12) Vikrant Forge Limited.
- 13) Bay-Forge Limited.

BHEL APPROVED SOURCE FOR CASTING OF HW19793

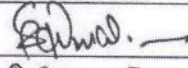
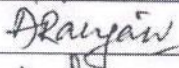

- 1) ISGEC Heavy Engineering Ltd.
- 2) Hindustan Udyog Ltd.
- 3) Uppal Ferrocast Pvt. Ltd.
- 4) Southern Alloy Foundries Pvt. Ltd.
- 5) R V Casting & Engineering.
- 6) Walchandnagar Industries Ltd.

Supplier Name:

Sign & Seal of Supplier:

 HARIDWAR	Technical Delivery Condition for Procurement of Fully Assembled Supercritical Bearings	TDC-F-11604 /11703 /11818/11836 Rev. No. 00 Page 11 of 12
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RECORDS OF CHANGES					
Sl. No.	Para No. / Annexure No.	Doc. No. / Rev. No.	Reissue Rev. No.	Revision Date	Nature Of Change

TTX	Dilip Kumar		03.05.2017.
MTE	Ashish Ranjan		03.05.2017
STE	Dinesh Gond		03.05.2017
Department	Name	Signature	Date

Supplier Name:

Sign & Seal of Supplier:

Suppliers / Vendors Declaration

We hereby confirm that item “.....”

Drawing no.....

Material code

CBOM.....

shall be supplied in finish machined condition as per BHEL drawing and material fulfilling all given Technical requirement & Specification as stated in drawing & Technical Delivery Condition (TDC-F-11604 /11703 /11818/11836) in totality.

Supplier Name:

Sign & Seal of Supplier:

0009S-9C81 L-0

B-B(A11)
2:5

(A9) A

A-A(A3)

M24x42/55*1
FOR LOAD SHACKLE2x M20x26/37*1
FOR FIXING THE COUNTERPART IN ORDER
TO MANUFACTURE THE TORUS SURFACE

(0,53-0,57)*

* Theoretical clearance on joint level.

$M_0 = 80 \text{ Nm}$ $F_0 = 535 \text{ kN}$
THE TIGHTNESS F_0 AND THE TIGHTENING TORQUE M_0
OF THE TENSIONING ELEMENTS ARE CONSIDERABLE
FOR THE TIGHTENING OF THE JOINT SCREWS.
TIGHTENING WITHOUT LUBRICANTS (DRY OR WITH TURBINE OIL)

Arrangement Drg. for
Bearing Pedestal (LP-LP)
PGMA:11832

LEFT

RIGHT

C (J8)

PARALLEL KEY

Arrangement Drg. for
Bearing Pedestal (LP-LP)
PGMA:11832

THE SUPPORT PIECE AND THE SHIM
SHIM HAVE TO BE SREWED TO THE BEARING SHELL
AND MANUFACTURED TOGETHER

CONNECTION WITH BEARING PEDESTAL

Arrangement Drg. for
Bearing Pedestal (LP-LP)
PGMA:11832

13 TO 16
These shims are not to be used for centering of bearing
with pedestal during final assembly at site. Maximum no.
of shims restricted to 4 only

SEE TR 6

BOTTOM

C-C(D7)

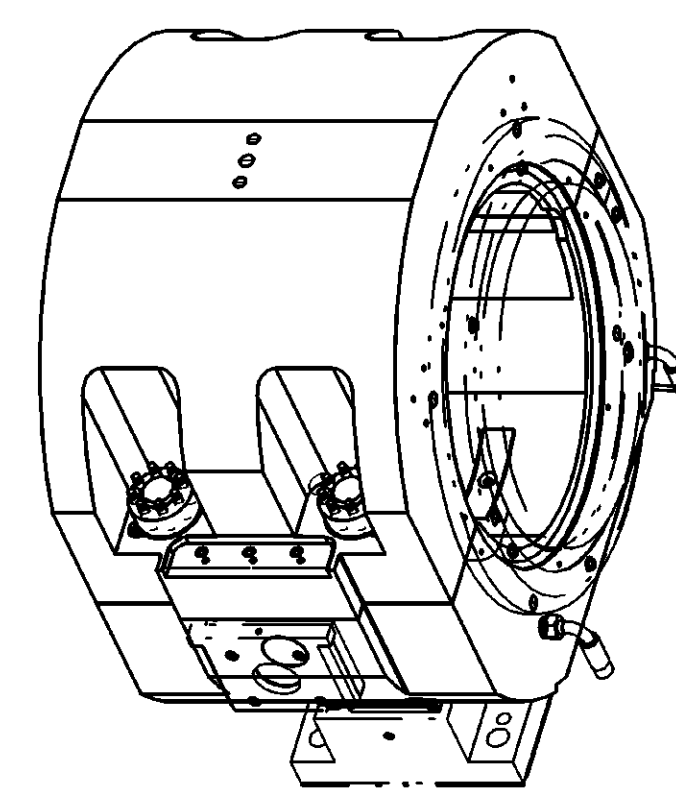
17,18

6 TO 11
These shims are not to be used for centering of bearing
with pedestal during final assembly at site. Maximum no.
of shims restricted to 4 only

Arrangement Drg. for
Bearing Pedestal (LP-LP)
PGMA:11832 $\frac{1}{2} = 1/8$

... CHECK DIMENSION

GEOMETRY OF BEARING IS VALID FOR
VISCOSITY GRADES ISO VG32 AND ISO VG46
INLET TEMPERATURES 45°C AND 50°C
TECHNICAL DELIVERY CONDITION - TLV2660
DELIVERY SPECIFICATION




1:10

D-D(E11)
2:5

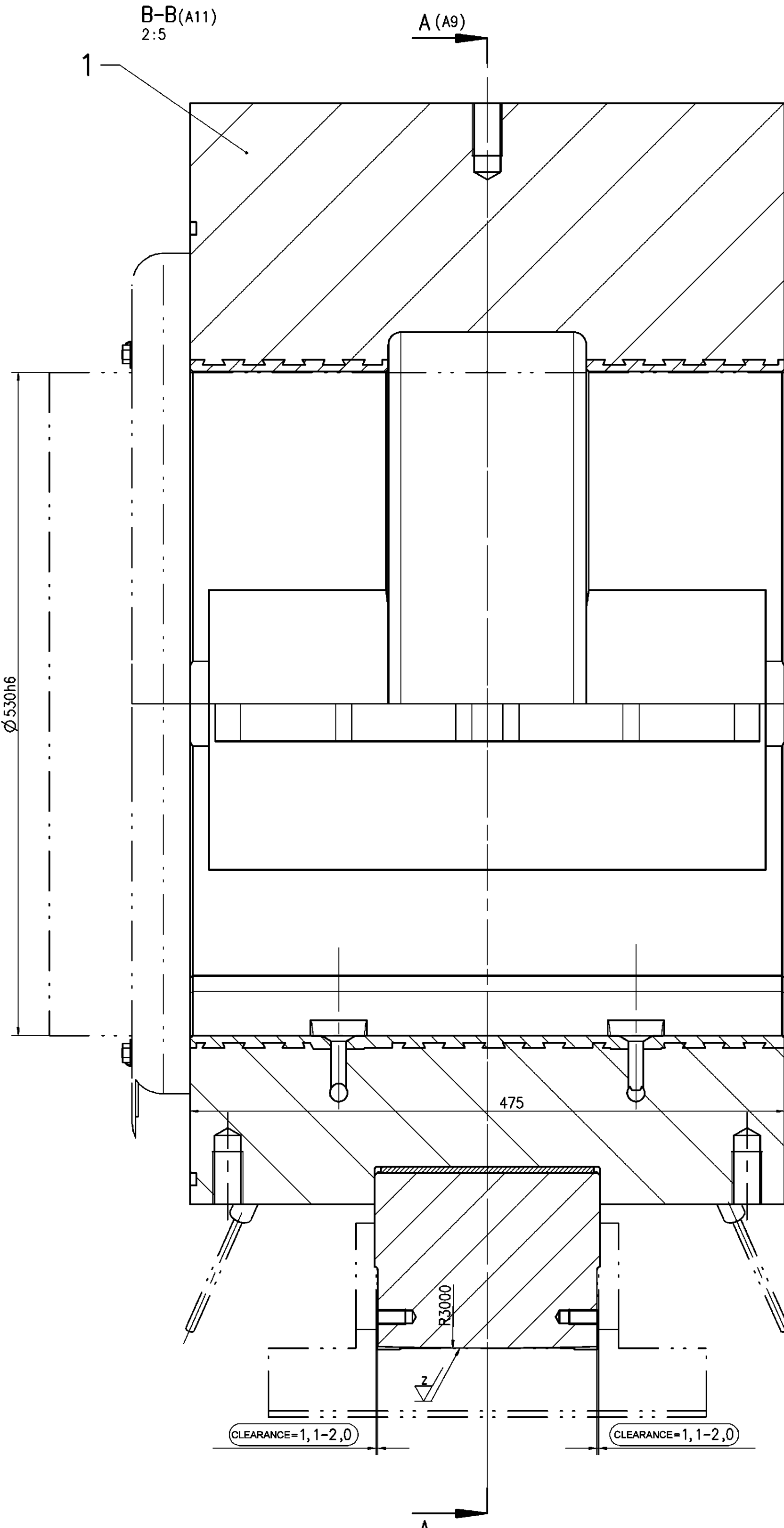
THERMOCOUPLES
INSTALLED ACC. TO DIRECTION
OF ROTATION

M16 IN THE UPPER AND LOWER PART FOR
MOVING AND MOUNTING FRAME
FOR BEARING SHELL

GMS No./ C.B.O.M				STATUS OF Dwg		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				STEAM TURBINE					
APPROVED DATE		NAME		SIGN		DATE									
TTX		S SARKAR		-SG-											
<div><div></div><div>BHARAT HEAVY ELECTRICALS LTD. RANIPUR, HARDWAR</div></div>															
						ORCH		NAME		SIGN		DATE			
						DRN		APZAL		-SDA-		28.03.2012			
						DMD		RITESH K		-SDA-		29.03.2012			
						APP		D.K.RAY		-SDA-		04-04-2012			
												REF. TO ASSY. DRG.			
REV 01		DATE 24.08.15		ALTERED CHECKED		AUSOP MITTAL		DEPT CODE		STE CODE		SCALE 1:2.5			
								WEIGHT (KG)		1945					
		7.10.06.15 & 8.06.15						CARD CODE		DRAWING NO. 0-11836-58000		22.24			
		AS PER C/A NO. STE-15-F0308								SHEET NO. 1		No. OF SHEETS 1			

00020-81811-0

$M_t = 80 Nm$ $F = 535 kN$
THE TIGHTNESS F_t AND THE TIGHTENING TORQUE M_t OF THE TENSIONING
ELEMENTS ARE CONSIDERABLE FOR THE TIGHTENING OF THE JOINT SCREWS.
TIGHTENING WITHOUT LUBRICANTS (DRY OR WITH TURBINE OIL)

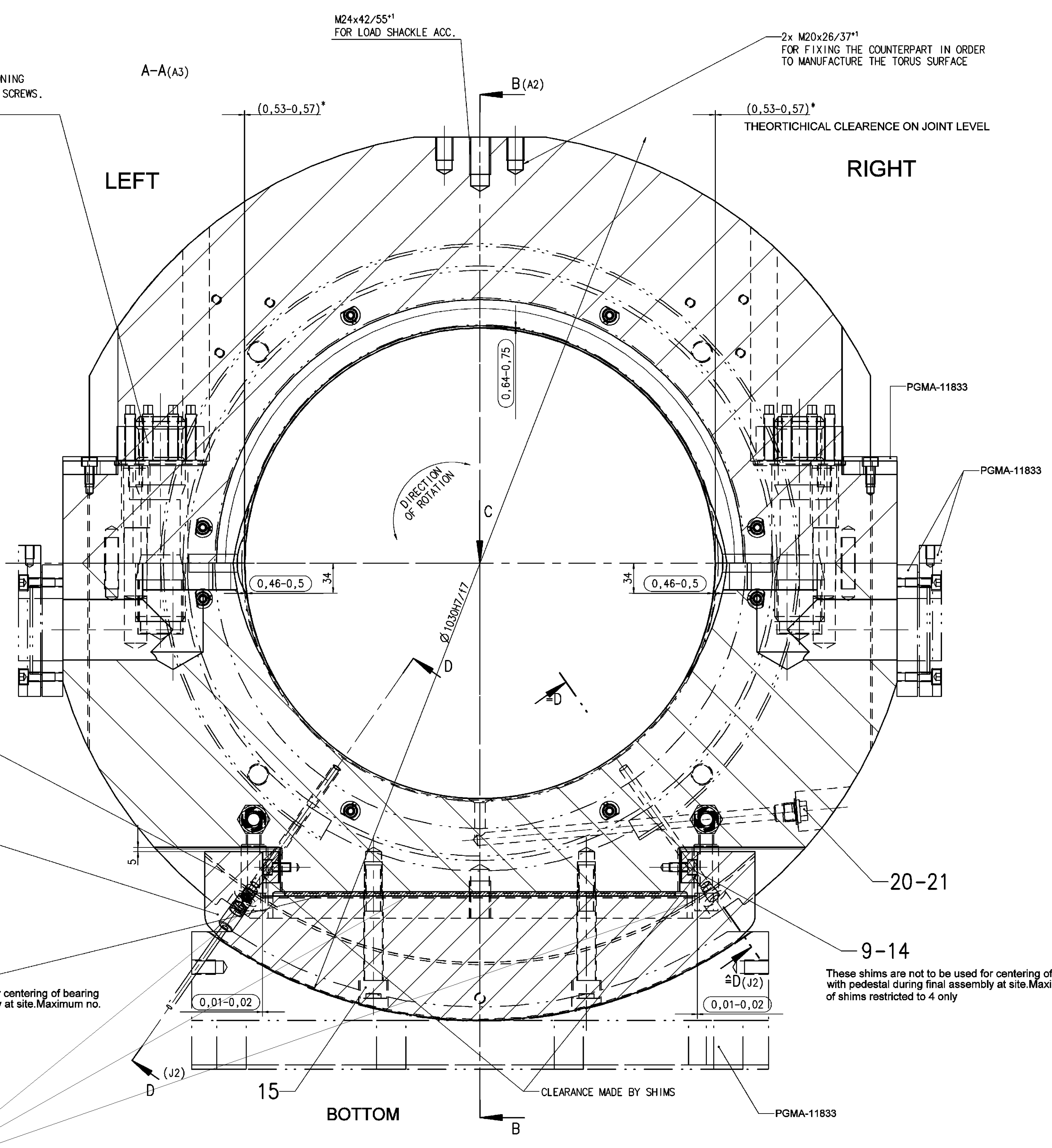
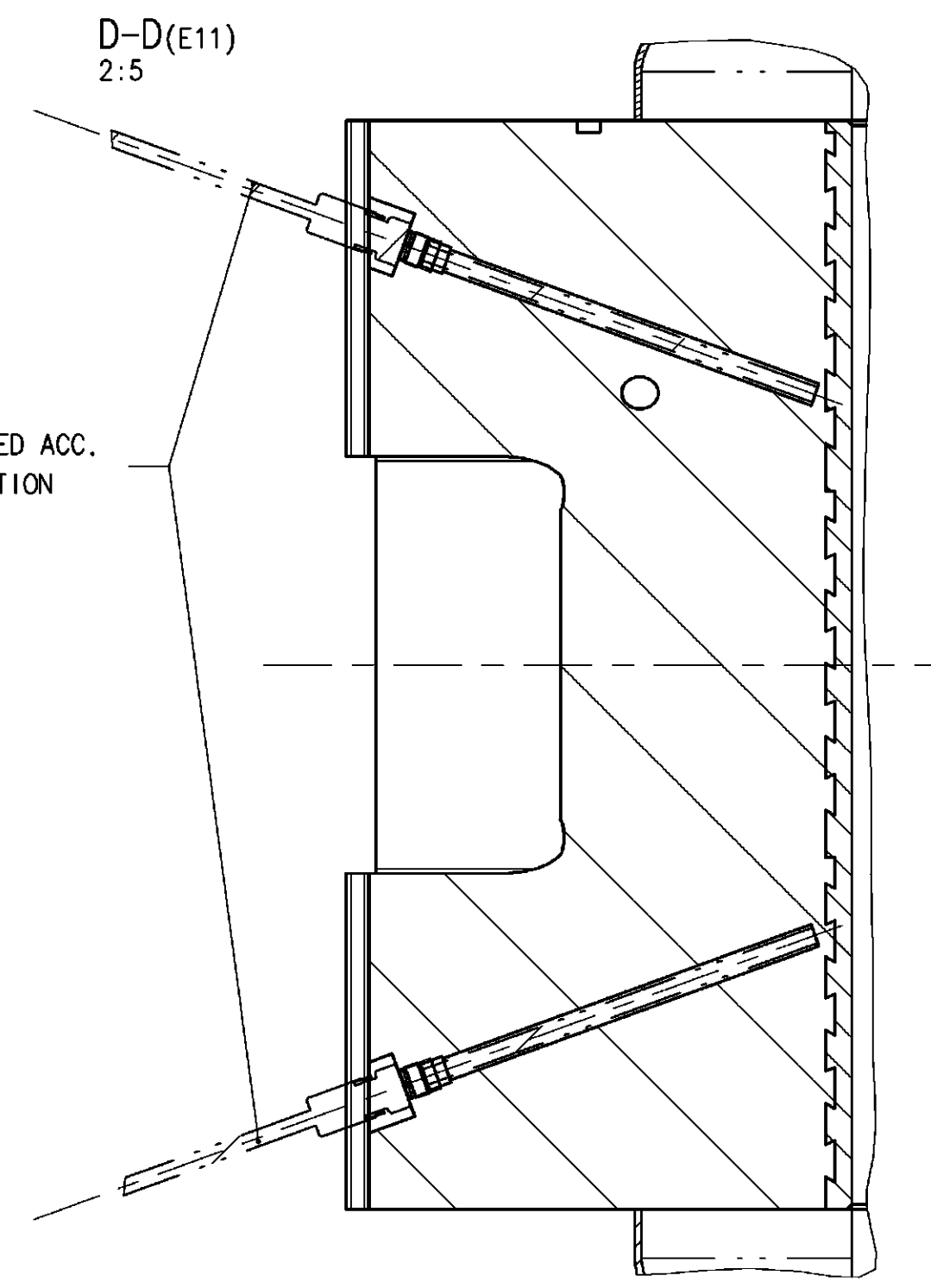


PGMA-11833

CONNECTION WITH BEARING CASING

PGMA-11833

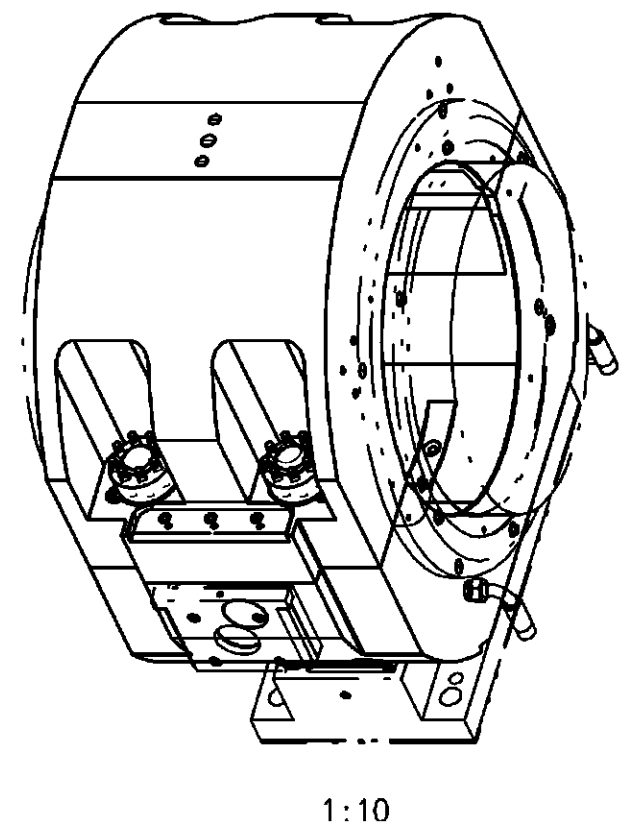
M16 IN THE UPPER AND LOWER PART FOR TRANSPORT
AND MOUNTING FRAME FOR BEARING SHELL.
PGMA-12084



LEFT

RIGHT

BOTTOM



1:10

Technical Requirements:

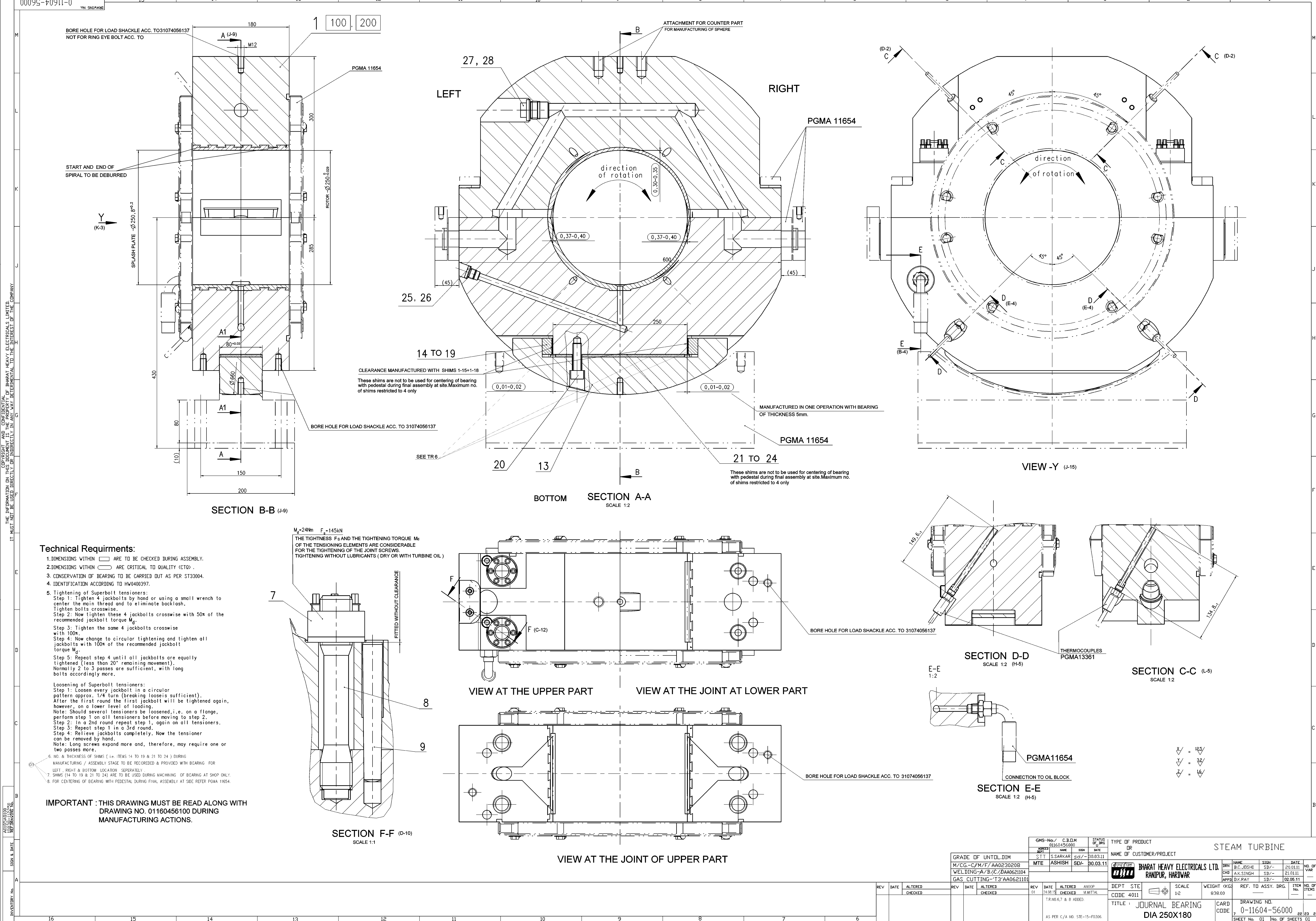
- DIMENSIONS WITHIN ARE TO BE CHECKED DURING ASSEMBLY.
- DIMENSIONS WITHIN ARE CRITICAL TO QUALITY (CTQ).
- CONSERVATION OF BEARING TO BE CARRIED OUT AS PER ST33004.
- IDENTIFICATION ACCORDING TO HW0400397.
- Tightening of Superbolt tensioners:
Step 1: Tighten 4 jackbolts by hand or using a small wrench to center the main thread and to eliminate backlash. Tighten bolts crosswise.
Step 2: Now tighten these 4 jackbolts crosswise with 50% of the recommended jackbolt torque M_t .
Step 3: Tighten the same 4 jackbolts crosswise with 100%.
Step 4: Now change to circular tightening and tighten all jackbolts with 100% of the recommended jackbolt torque M_t .
Step 5: Repeat step 4 until all jackbolts are equally tightened (less than 20° remaining movement).
Normally 2 to 3 passes are sufficient, with long bolts accordingly more.
Loosening of Superbolt tensioners:
Step 1: Loosen every jackbolt in a circular pattern approx. 1/4 turn (breaking loose is sufficient). After the first round the first jackbolt will be tightened again, however, on a lower level of loading.
Note: Should several tensioners be loosened, i.e., on a flange, perform step 1 on all tensioners before moving to step 2.
Step 2: In a 2nd round repeat step 1, again on all tensioners.
Step 3: Repeat step 1 in a 3rd round.
Step 4: Relieve jackbolts completely. Now the tensioner can be removed by hand.
Note: Long screws expand more and, therefore, may require one or two passes more.
- NO. & THICKNESS OF SHIMS (i.e. ITEMS 16 TO 19 & 9 TO 14) DURING MANUFACTURING / ASSEMBLY STAGE TO BE RECORDED & PROVIDED WITH BEARING FOR LEFT, RIGHT & BOTTOM LOCATION, SEPARATELY.
- SHIMS (16 TO 19 & 9 TO 14) ARE TO BE USED DURING MACHINING OF BEARING AT SHOP ONLY.
- FOR CENTERING OF BEARING WITH PEDESTAL DURING FINAL ASSEMBLY AT SITE REFER PGMA 11833.

$\frac{Z}{\lambda} = 1.6$

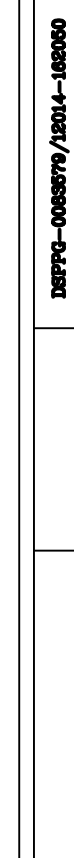
... CHECK DIMENSION

(GEOMETRY OF BEARING IS VALID FOR
VISCOSITY GRADES ISO VG32 AND ISO VG46
INLET TEMPERATURES 45°C AND 50°C)

GMS No/ C.B.O.M				STATUS OF PROJ				TYPE OF PRODUCT				STEAM TURBINE			
APPROV	DATE	NAME	SD	APPROV	DATE	NAME	SD	NAME OF CUSTOMER/PROJECT	NAME	SIGN.	DATE	NO. OF	VAR	NO. OF	ITEMS
TTX	22.2012	D.KUMAR	SD	MTE	1.2.2012	A.RANJAN	SD	NAME OF CUSTOMER/PROJECT	NAME	SIGN.	DATE	NO. OF	VAR	NO. OF	ITEMS
WELDING-A/B/C/D	AA0621104	WELDING-A/B/C/D	AA0621104	GAS CUTTING-T3/AA0621101	GAS CUTTING-T3/AA0621101	GAS CUTTING-T3/AA0621101	GAS CUTTING-T3/AA0621101	NAME OF CUSTOMER/PROJECT	NAME	SIGN.	DATE	NO. OF	VAR	NO. OF	ITEMS
REV	DATE	ALTERED	CHECKED	REV	DATE	ALTERED	CHECKED	DEPT	STE	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM	NO. OF	ITEMS
01	24.08.15	ALTERED	INITIAL	01	24.08.15	ALTERED	INITIAL	CODE	4011	1:2.5	1832	REF. TO ASSY. DRG.	ITEM	NO. OF	ITEMS
AS PER C/A NO. SITE-15-F0307.				T.R NO.6,7 & 8 ADDED.				TITLE:				DRAWING NO.			
								JOURNAL BEARING 530X475				0-11818-07000			
								CARD				22.23.24			
								SHEET No. 01				No. Of SHEETS 01			
												AD SIZE			



GRADE OF UNTOL.DIM				STATUS OF Dwg				TYPE OF PRODUCT			
M/CG-C/M/F/A06230208				01160456000				OR			
WELDING-A/B/C/DA0621104				S SARKAR SD/- 30.03.11				NAME OF CUSTOMER/PROJECT			
GAS CUTTING-T3/A0621101				MTE ASHISH SD/- 30.03.11				BHARAT HEAVY ELECTRICALS LTD.			
								RANIPUR, HARDWAR			
								DEPT STE			
								CODE 4011			
								SCALE 1:2			
								WEIGHT (KG) 838.00			
								REF. TO ASSY. DRG.			
								CARD CODE			
								DRAWING NO. 0-11604-56000			
								SHEET No. 01 No. OF SHEETS 01			



ANNEXURE III

1. VENDORS TO SUBMIT QUALITY PLAN IN ENCLOSED FORMAT ALONG WITH OFFER FOR BHEL APPROVAL.
2. SCOPE OF INSPECTION SHALL BE:
 - a. WITNESSING OF UT & DPT OF BONDING OF LINING TO THE SHELL, COMPLETE DIMENSIONAL CHECK INCLUDING CHECK OF FEELER GAUGE TIGHTNESS CHECK OF JOINT PLANES OF BEARING SHELL.
 - b. REVIEW OF MATERIAL TCS AND TCS OTHER INPROCESS CHECKS AS PER ORDERING DRAWING/SPECIFICATION.
3. FOR FOREIGN VENDORS INSPECTION BY THIRD PARTY INSPECTION AGENCY (LRS/BV/TUV) AS PER BHEL APPROVED QUALITY PLAN. VENDORS TO QUOTE THIRD PARTY INSPECTION AGENCY CHARGES IN THEIR OFFER AND THE SAME SHALL BE TO VENDORS ACCOUNT.
4. FOR INDIAN VENDORS INSPECTION BY BHEL NOMINATED AGENCY 'TUV' AS PER BHEL APPROVED QUALITY PLAN. PRICE SHALLBE LOADED AS DETAILED IN GISTC ON ACCOUNT OF THIRD PARTY INSPECTION.

ANNEXURE IV

Annexure-4

NON-DISCLOSURE AND PROPRIETARY INFORMATION AGREEMENT

BETWEEN

_____(Name of the Vendor),, having its registered offices in _____(Address of Vendor), registered under the no. _____ of the Companies' register of _____(Name of Place and Country), capital stock of _____(Value), with a place of business in _____(Name of Place and Country) (hereinafter referred to as "_____(Name of Vendor)");

AND

Bharat Heavy Electricals Ltd a company incorporated under the Indian Companies Act 1956 having its registered offices at BHEL House, Siri Fort, New Delhi -110 049 and having one of its works at Heavy Electrical Equipment Plant, Ranipur, Haridwar-249403 (Uttarakhand), India registered under the No. 4281 of 1964-65 of the companies register of Delhi, capital stock of Rs 4895.2 million with a place of registered office in New Delhi (hereinafter referred to as “BHEL”) hereinafter also referred to individually as “the Party” or collectively as “the Parties”.

BACKGROUND

This Agreement sets forth the rights and obligations of the Parties with respect to the use, handling, protection and safeguarding of Proprietary Information that is disclosed by and between the Parties.

WHEREAS

ANNEXURE IV

A) the Parties wish to pursue exploratory discussions concerning a possible collaboration between them in relation to the Program defined in Exhibit 1;

B) during the ensuing discussions and negotiations it may occur that either Party discloses to the other technical, financial or business information of a proprietary or confidential nature, which the Parties intend to protect against, making it available, by any means to any third person, and other unauthorized use and/or further disclosure by the recipient, in accordance with the terms and conditions set forth herein;

NOW, THEREFORE, the Parties have agreed as follows:

1. The term “Proprietary Information” shall mean any information or data of whatsoever kind of a confidential or proprietary nature, including but not limited to, commercial information, know how and technical information in the form of designs, drawings, concepts, requirements, specifications, software, interfaces, components, processes, or the like, that have been or will be disclosed by either Party to the other pursuant to this Agreement, either in writing, orally or other form, which is designated as “Proprietary” or “Confidential” by the disclosing Party by means of formal declaration or an appropriate stamp, legend or any other written or orally notice .
2. Proprietary Information may be conveyed, without limitation, through any written or printed documents, samples, models, electronic form on disk, tape, other storage media or any other means of disclosing such Proprietary Information that either Party may elect to use during the life of this Agreement, but if an originating Party originally discloses information orally or visually, the receiving Party will protect such information as Proprietary Information to the extent that the originating Party :
 - identifies the Information as Proprietary at the time of original disclosure,
 - summarizes the Proprietary Information in writing .

ANNEXURE IV

Information stored in electronic form on disk, tape, other storage media will be adequately marked if a proprietary legend displays when the information originally runs on a computer system and when the information is printed from its data file.

Proprietary Information also includes any information which can be obtained by examination, testing or analysis of any hardware or material substance or any component part of such hardware or material substance provided by the Disclosing Party even though the requirements in Clause 1 for marking and designation have not been fulfilled.

3. Each Party, to the extent of its rights to do so, shall disclose to the other only the Proprietary Information which the disclosing Party deems appropriate to fulfil the objectives of this Agreement. The Parties hereby represent that the disclosure of Proprietary Information by and between themselves shall be made in compliance with, and subject to the laws and regulations of the Disclosing Party's country.
4. The receiving Party hereby agrees and covenants that, from the effective date of this Agreement until the expiry date as per article 11 and the following period as per article 12, the Proprietary Information that either Party receives from the other shall:
 - a) be protected and kept in strict confidence by the receiving Party which must use the same degree of care it uses to protect its own confidential information and in no case less than a reasonable care;
 - b) be only disclosed to and used by those persons within the receiving Party's organization or that of its parent or controlled companies who have a need to know and solely for the purposes specified in this Agreement, and be treated by such persons or entities with the same degree of care and subject to the same restrictions;
 - c) to procure that each third party to whom Proprietary Information is disclosed under this Agreement is made aware of the provisions of this Agreement prior to such disclosure to it and that each such third party is

bound by obligations of confidentiality which are no less onerous than those contained in this Agreement;

- d) neither be disclosed nor caused to be disclosed or made available, either directly or indirectly, to any third Party or persons other than those mentioned in subparagraph b) above or other persons upon which both of the contractual Parties shall agree in an amendment to this Agreement;
- e) not to copy, reproduce or reduce to writing any part of such Proprietary Information except as may be reasonably necessary for the purpose referred to in the Recitals of this Agreement

PROVIDED THAT the Receiving Party shall be entitled to make any disclosure required by court order or government or regulatory requirement of the Disclosing Party's Proprietary Information subject to notifying the Disclosing Party as soon as possible of such requirement

- 5. Any Proprietary Information and copies thereof disclosed by either Party to the other shall remain the property of the disclosing Party and shall be immediately returned or destroyed by the receiving Party upon request.
- 6. The receiving Party shall have no obligations or restrictions with respect to any Proprietary Information for which the receiving Party can prove that:
 - a) is in or which comes into the public domain otherwise than as a result of a breach of this Agreement by any person to whom a disclosure of Proprietary Information is made as permitted under this Agreement or of any other duty of confidentiality relating to the Proprietary Information of which the Receiving Party has knowledge; or
 - b) it has been in its possession without restriction at the time of the disclosure, as evidenced by written documentation in its files; or
 - c) it has been lawfully received from a third Party without breach of this Agreement; or

- d) it has been or is published without violation of this Agreement; or
 - e) it has been independently developed in good faith by employees of the receiving Party who did not have access to the Proprietary Information; or
 - f) it has not been properly declared, designated or confirmed as Proprietary or Confidential; or
 - g) the protection period has expired according to articles 11 and 12 of this Agreement.
7. With respect to any exchange of Proprietary Information which may occur as a result of this Agreement, it is expressly understood and agreed that the persons listed in Exhibit 2 shall, on behalf of the respective Parties, be the exclusive individuals authorized to receive from and transmit to the other Party Proprietary Information under this Agreement. Each Party may replace at any time its respective authorized individuals identified in such Exhibit 2, within its own organization. Any such new designation by a Party shall be made by written notice to the other at the address indicated in such Exhibit 2.
8. Any Proprietary Information which is identified as “Classified Information”, or whose export is subject to an export license, shall be identified as such by the disclosing Party at the time of disclosure and the disclosure, protection, use and handling thereof, shall remain subject to the security procedures and restrictions imposed by the disclosing Party's Government.
9. The disclosure of Proprietary Information under this Agreement by either Party to the other shall not be construed as granting to the receiving Party any right, whether express or implied by licence or otherwise, on the matters, inventions or discoveries to which such information pertains, or as granting any trademark, patents, copyrights, trade secret right or other form of intellectual property right.

10. Nothing in this Agreement may be construed as an obligation of either Party to disclose any Proprietary Information to the other, or to enter into any subsequent contractual relationship with such other Party.
11. This Agreement covers the exchange of Proprietary Information which may be made by either Party to the other until ten years from signing of the agreement or any extension thereto which may be agreed upon by the Parties in writing. Proprietary information relevant to the Program detailed in Exhibit 1, already made available to the other contractual Party before the effective date, shall also be protected under this Agreement.

It is understood by the parties that, prior to disclosure, the Disclosing Party shall have obtained any government authorisation needed for the export of the Proprietary Information

12. The expiry of the period contemplated in Article 11 of this Agreement shall not relieve the receiving Party from complying with the obligations imposed by Article 4 here above with respect to the use and protection of the Proprietary Information, received prior the date of such expiry, for a period of ten (10) years after such expiry.
13. The Parties are independent contractors. Each will bear all costs and expenses in connection with this Agreement. This Agreement is intended to facilitate only the exchange of Proprietary Information and is not intended to be, and shall not be construed to create a teaming agreement, joint venture, association, partnership, or other business organisation or agency arrangement and no Party shall have the authority to bind the other without the other Party's separate prior written agreement .
14. This Agreement shall be governed by and shall be interpreted in accordance with the substantive Indian laws. Irrespective of the foregoing each Party shall remain

bound by the provisions of its own national laws and regulations with respect to the transfer or use of Classified Information or information whose export is subject to an export license.

15. All disputes among the Parties, in connection with or arising out of the existence, validity, construction, performance and termination of this Agreement (or any terms thereof), which the Parties are unable to resolve among themselves, shall be finally settled by an Arbitration. The Arbitration shall be held in Haridwar (India), in English language, in accordance with the rules laid down in the arbitration and reconciliation act of India.
16. The foregoing constitutes the entire Agreement among the Parties with respect to the subject matter hereof and supersedes and cancels all prior representations, negotiations, commitments, undertakings, communications, either oral or written, acceptances, understandings and agreements among the Parties with respect to or in connection with any of the matters to which such Agreement applies or refers.
17. Notices to _____(**Name of Vendor**) shall be made at the following address:

(Complete Address of Vendor)

Attention: Mr. _____(**Name of the Authorised Person of Vendor**)

Notices to BHEL shall be made at the following address:

BHARAT HEAVY ELECTRICALS LIMITED,
HEAVY ELECTRICAL EQUIPMENT PLANT,
Ranipur, Haridwar-249403 (Uttarakhand), India

Attention: _____(**Name of the PPX Incharge**)

18. The effective date of this Agreement shall be the date of the last signature appearing herein.

IN WITNESS WHEREOF, each of the Parties has caused this Agreement, to be executed by its duly authorized officer.

Date :

Signed for and on behalf of

Signed for and on behalf of

(Name of Vendor)

BHEL

By:

By:

Title:

Title:

Signature:

Signature:

EXHIBIT 1

to the

NON-DISCLOSURE AGREEMENT

between

_____(**Name of Vendor**)

and

BHARAT HEAVY ELECTRICALS LIMITED

dated:

The Non Disclosure Agreement covers the exchange of Proprietary Information which may occur during the discussions and negotiations in view of a possible cooperation between the Parties in the following programs:

-Description of Material or Services for which the order is placed

_____(**Name of Vendor**) list of products that require an exchange of Proprietary Information which may be occur during the discussions and negotiations in view of a possible cooperation for the above programs :

EXHIBIT 2

to the

NON-DISCLOSURE AGREEMENT

between

_____ **(Name of Vendor)**

and

Bharat Heavy Electricals Ltd.

dated:

Personnel of the Parties authorized to receive and/or transmit Proprietary Information
under this Agreement:

For **(Name of Vendor)**

(Name of Person)

Tel.

Fax

Address.

Tel.

Fax

Address.

For Bharat Heavy Electricals Ltd.

Mr.

Tel. 01334

Fax 01334

Address. Main Administration Building

BHEL, HEEP, Haridwar

India

Mr.

Tel. 01334

Fax 01334

Address. Main Administration Building

BHEL, HEEP, Haridwar

India