



BHARAT HEAVY ELECTRICALS LIMITED
HEEP HARIDWAR INDIA-PIN 249403
FAX NO: 0091 1334 226462
PHONE NO: 0091 1334 281561

Enq. No. : T/T212/2017/1381/M

M/s.....

Sub: BHEL-HEEP/OPEN-TENDER (Turbine Component) / 2017

Dear Sir,

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. NO.	MATERIAL CODE	DESCRIPTION	DRAWING NO.	QTY(No)	DELIVERY SCHEDULE
1	W90311652018	F/M OIL GUARD RING	01165256000, Rev-01	5	2-28.02.2018 1-30.04.2018 2-30.05.2018
2	W90311721010	F/M OIL GUARD RING	01172156000, Rev-01	5	2-28.02.2018 1-30.04.2018 2-30.05.2018
3	W90311724019	F/M OIL GUARD RING	01172456000, Rev-01	5	2-28.02.2018 1-30.04.2018 2-30.05.2018
4	W90311820018	F/M OIL GUARD RING	01182056000, Rev-01	5	2-28.02.2018 1-30.04.2018 2-30.05.2018
5	W90311821022	F/M OIL GUARD RING	01182139000, Rev-00	10	4-28.02.2018 2-30.04.2018 4-30.05.2018
6	W90311826024	F/M OIL GUARD RING	01182658000, Rev-00	10	4-28.02.2018 2-30.04.2018 4-30.05.2018
7	W90311827020	F/M OIL GUARD RING	01182739000, Rev-00	5	2-28.02.2018 1-30.04.2018 2-30.05.2018
8	W91311654011	CASTING FOR SPHERICAL SOCKET	21165456901, Rev-00	5	2-28.02.2018 1-30.04.2018 2-30.05.2018
9	W91311723013	CASTING FOR SPHERICAL SOCKET	21172356901, Rev-00	5	2-28.02.2018 1-30.04.2018 2-30.05.2018
10	W9131183101	CASTING FOR SPHERICAL SOCKET	21183156901, Rev-00	10	4-28.02.2018 2-30.04.2018 4-30.05.2018
11	W91311832017	CASTING FOR CYLINDRICAL SHELL	21183258901, Rev-00	5	2-28.02.2018 1-30.04.2018 2-30.05.2018

SPECIAL INSTRUCTIONS:

1. Inspection by BHEL nominated agency 'TUV' as per QP no. "QA/CF/QP/311, Rev 02" for items W91311654011, W91311723013, W91311831010 & W91311832017 and as per QP no. "QA/CF/QP/312, rev 02" for items W90311652018, W90311721010, W90311724019, W90311820018, W90311821022, W90311826024 & W90311827020.
2. VENDOR TO OFFER AS PER DRAWINGS AND SPECIFICATION (Annexure-3) HERE ENECLSOD.
3. BHEL STANDARD PAYMENT TERM i.e "PAYMENT AFTER RECEIPT AND ACCEPTANCE OF MATERIAL/ITEM AT HEEP, BHEL-STORE" AS **PER GENERAL INSTRUCTION AND STANDARD TERMS & CONDITION (GISTC),VERSION JUNE 2017, Rev:01** SHALL BE APPLICABLE.
4. THE QUOTATION SHALL BE VALID FOR A **MINIMUM PERIOD OF 120 DAYS**, EFFECTIVE FROM THE DATE OF TENDER OPENING.
5. VENDOR TO CONFIRM THAT THEIR QUOTED RATES ARE NOT MORE THAN THOSE QUOTED FOR ANY OTHER CUSTOMER INCLUDING OTHER BHEL UNITS.
6. BHEL reserves the right to split the finally decided quantity tentatively in the ratio 3:2 {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}.
7. Date of BL/GR will be treated as date of delivery for all purposes including penalty for Late Delivery. In case, vendor quotes date of final inspection as date of delivery then date of BL/GR should be between 15 days of date of final inspection otherwise penalty for late delivery would be applicable.
8. All bidders to quote best possible deliveries. The offer of vendors not meeting our delivery requirement, as indicated in enquiry, on the date of opening of techno-commercial offers will be loaded @ 0.25% per week or part thereof subject to a maximum limit of 05% for the period by which their delivery exceeds BHEL's requirement. This loading will be for price comparison purpose only.
9. Late delivery penalty will be applicable @ 0.5% per week or part thereof subject to maximum of 10% of unexecuted portion of the order lot wise 1 no. of W90311652018, W90311721010, W90311724019, W90311820018, W90311827020, W91311654011, W91311723013 & W91311832017 and 2 no. of W90311821022, W90311826024, & W91311831010. The remaining terms shall be as per **GENERAL INSTRUCTION AND STANDARD TERMS & CONDITION (GISTC),VERSION JUNE 2017, Rev:01**
10. EARLY DELIVERY IS ALSO ACCEPTABLE. VENDOR TO OFFER BEST DELIVERY SCHEDULE.`
11. THE TOTAL QUANTITY MAY UNDERGO CHANGE AT THE TIME OF ORDERING.

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 submit **Tender Fee of Rs. 2,000/- (Rupees two thousand only)** in the form of Pay Order / Demand Draft (drawn in favour of 'BHEL HARIDWAR') only. It may be noted that if hard copy of any tender document is required, then the same may be collected against copy of Pay Order / Demand Draft of requisite tender fee (while original to be submitted with Part-I). **However, if no hard copy of any tender document is required from BHEL, no tender fee is required to be submitted.**

Vendors must also remit the requisite **EMD (Earnest Money Deposit) of Rs. 1, 50,000/- (Rupees one lakhs fifty thousand only)** in the form of Pay Order / Demand draft (drawn in favor of 'BHEL HARIDWAR'). In case of foreign bidders e-payment may also be accepted as EMD. **If EMD is not submitted along with the offer (Part-I) then the offer shall be out rightly rejected.**

HEEP BHEL Hardwar PMD: ST040 approved vendors 22745,06024,41137,28127 & 17004 for material codes W90311652018, W90311721010, W90311724019, W90311820018, W90311821022, W90311826024 & W90311827020 and approved vendors 06024,17004,28127,41137,23121,04152,22744, 22745& 04175 for material codes W91311654011,W91311723013, W91311831010 & W91311832017 are exempted for submission of requisite EMD against this tender enquiry.

Please submit separate drafts for EMD and tender fee in an envelope super-scribed with bold letters "EMD & Tender Fee" to be submitted with Part-I.

Micro & Small Enterprises (MSEs) are exempted from submission of EMD and/or Tender fees. Documents as detailed in **GENERAL INSTRUCTIONS AND STANDARD TERMS & CONDITIONS (GISTC), Version June-2017, Rev: 01** hoisted on our website www.bhelhwr.co.in are to be submitted for availing exemption from submission of Tender Fees & EMDs.

BHEL will forfeit the EMD if, the successful bidder / vendor refuses to honor the order after award of the same on him and / or withdraws his bid and / or unilaterally changes the offer and / or any of its terms & conditions within the validity period.

Tenders will be received in Tender Box kept in Tender Room and should be addressed to:

**THE HEAD OF MATERIAL MANAGEMENT,
Heavy Electrical Equipment Plant,
Bharat Heavy Electricals Limited,
HARIDWAR-249403 (Uttarakhand), INDIA.**

The date for opening of tender shall be 07.02.2018. Tenders will be received up to 1.45 P.M. on **07.02.2018** and opened on the same day at 2.00 P.M. in the Tender Room. **Please note that tender received after due date & time (1.45PM on 07.02.2018) will not be REPEAT will not be opened.** BHEL will not be responsible for any type of postal / courier delay.

Bids shall be opened at 2 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.

Amendments/Corrigendum, if any, will be hosted only on the websites mentioned above. Other terms and conditions will be as per tender documents.

Foreign and Indigenous bidders against open tender will necessarily have to obtain class – III DSCs. Procedure for application is available on www.bhel.com.

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 outrightly rejected.

Please submit your offer only for the above requirement subject to our **GENERAL INSTRUCTIONS AND STANDARD TERMS & CONDITIONS (GISTC), Version June 2017, Rev: 01**. Please visit our site www.bhelhwr.co.in for **General Instructions and Standard Terms & Conditions (GISTC), Version June 2017, Rev: 01** for Tender Enquiries. All the bidders/vendors must ensure compliance of these GISTC.

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) & EMD
- Documents as detailed in GISTC by MSE Supplier for availing benefits intended for MSE suppliers.
- Duly filled Non Disclosure Agreement (Annexure 4)
- Point wise reply/confirmation to **Pre-qualifying requirement (PQR)** as per Annexure-2 along with all necessary supporting documents in one go. **Noncompliance of this may lead to rejection offer.**

- **Part II –**

- Techno- Commercial Bid - it should be replica of price bid (copy of price bid without price part) in line with technical requirement as per drawings. (Annexure-3)

- **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

* Please submit your offer according to **General Instructions and Standard Terms & Conditions (GISTC), Version: June 2017 Rev: 01** for Tender Enquiries. Please visit our site **www.bhelhwr.co.in** for **GISTC**. All the bidders/vendors must ensure compliance of these **GISTC (VERSION: June-17, REV. 01)**. **GISTC (VERSION: June- 17, REV. 01)** can also be referred by login to B2B Portal for Vendors.

REFERENCES:

Annexure-1 (Format for CA Certificate - Applicable for MSE vendors)

Annexure-2 (Pre-Qualification Requirement)

Annexure-3 (Applicable Drawings and Specification)

Annexure-4 (NDA)

Certificate by Chartered Accountant on letter head

This is to Certify that M/S
(hereinafter referred to as 'company') having its registered office at
..... is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-II) dtd:.....,
Category: (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as on
date..... as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost
excluding land and building and the items specified by the Ministry of Small Scale Industries vide its
notification No.S.O.1722(E) dated October 5, 2006 :
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and
furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED
Act, 2006:
Rs.....Lacs

The above investment of Rs.....Lacs is within permissible limit of
Rs.....Lacs forMicro / Small (Strike off which is not applicable)
Category under MSMED Act 2006.

Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant



Pre-Qualification requirements for Spherical Socket and Cylindrical Shell**Indent No. 20171381 (Item Sl. No. 8 to 11)**

Clauses 1-4 are mandatory requirements. Offers of vendors not meeting these requirements will not be considered.

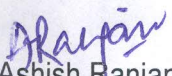
1. Vendor should have experience of supplying castings in **nodular cast Iron** material grade. In support of this, vendor shall furnish following details of the supplies in last 3 years-

a. Experience list, as per the following format:

Sl. No.	Weight (kg)	Material Grade	Qty.	PO No.	Name & Address of customer	Date of supply

- b. Vendor must furnish copy of PO and its corresponding test certificates (including Mechanical testing and Non Destructive test reports), of at least three casting from the above list. The test certificates must be certified by third party inspection agency or accepted by customer.
2. a. The vendor must confirm that they have suitable in-house manufacturing facilities for handling, melting and casting of enquired castings. Details to be provided.
- b. Also vendor to furnish details of facilities for rough machining and heat treatment available in-house. In case of out-sourcing, details of sub-contractor and its facilities to be provided. These facilities should be suitable for manufacture of spherical socket and cylindrical shell of enquired grade and weight.
3. a. Vendor to provide details of in-house facilities for performing destructive and non-destructive testing of these castings.
- b. In case of non-availability of facilities under point 3(a), outsourcing of these tests from NABL accredited labs is also acceptable.
4. Vendor must provide clause wise confirmation of specification HW19793 and drawing.

- Note: 1. Vendor shall also provide the photographs/drawings of the castings specified by them in the experience list at clause 1a.
2. All the documents shall be submitted in consolidated manner and should be in English language.


Ashish Ranjan
Sr Mgr/MTE


Sujeet Kumar
Dy Mgr/MTE

 BHEL Bharat Heavy Electricals Limited Celebrating 50 Years of Engineering Excellence (1964-2014)	BHARAT HEAVY ELECTRICALS LIMITED, HEEP HARIDWAR	ITEM: Finish machined Oil Guard Ring DEPT: STE & MTE
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PRE –QUALIFICATION REQUIREMENT

Indent No 20171381(Item Sl. No. 1 to 7)

The following pre-qualification criteria for supplying Finish machined Oil Guard:

1. Manufacturing & Testing Facility Requirement:

- The vendor should have suitable in-house manufacturing facilities for handling, melting, casting and heat treatment to manufacture enquiry items. Details of above facilities are to be submitted with offer.
- Vendor to furnish in house testing facility to test the casting as per enquiry drawing and specification. Details of testing facility - Destructive and Non-Destructive is also to be submitted. In case of outsourcing details should also be provided.
Note: Testing lab should be NABL accredited.
- Also vendor to furnish details of facilities for machining available in-house. In case of outsourcing of machining operation, details of their sub-vendor with machining facilities to be provided. These facilities should be suitable to manufacture enquiry items.

2. Minimum Experience Requirement:

Vendor must have experience of manufacturing casting in material grade EN-GJS-400-15U (GGG-40). Vendor to submit details of their experience of past supply in above material grade casting in last three years as per Table 1.

Table 1

S.No	Item	Grade	Weight	Year of Supply	Customer
1.					
2.					
3.					

- Vendor to confirm that they will manufacture and supply enquiry items meeting all requirements specified in respective BHEL drawings / specification HW19793.
- Vendor must furnish copy of PO and its corresponding TC's of atleast 3 castings from List submitted at Table 1.
The TC's must be third party witnessed and approved by customer.

Note: Above details Sl. No. 1 to 4 to be submitted in consolidated manner and in one go.

QUALITY PLAN										PAGE 1 OF 2			
			QP NO.	QA/CF/QP/312	REV.	02	DESCRIPTION		LEGENDS				
BHEL			SPEC. NO.	AS PER P.O.	REV.	AS PER PO	FINISH MACHINED NODULAR CASTINGS		P- PERFORMED BY		1- BHEL REP		
			DRG. NO.	AS PER PO	REV.	W- WITNESSED BY			2- VENDOR				
											V- VERIFIED BY		3- SUBVENDOR
SL. NO.	COMPONENT OPERATION	CHARACTERISTICS	CLASSIFICATION	TYPE OF CHECK	QUANTITY	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY		REMARKS		
									P	W	V		

1.	MELTING	CHEMISTRY	MAJOR	CHEMICAL TEST	EACH HEAT	BHEL SPEC	BHEL SPEC	TC	2	1			
2.	FERRITIZING & ANNEALING	TEMP. & TIME	MAJOR	HT RECORD	EACH BATCH	MANUFACTURE PRACTICE		TIME TEMP RECORDS, GRAPH	2	1			
3.	MARKING	IDENTIFICATION OF CASTING & KEEL BLOCK	MAJOR	VISUAL	100%	BHEL SPEC	BHEL SPEC		2	1	*		PHOTO/ SKETCH OF TEST-coupon TO BE MADE PART OF TCs
4.	ROUGH MACHINING	DIMENSION	MAJOR	DIMENSIONAL	100%	DRAWING	DRAWING	DIMENSION RECORD	2	1			
5.	MECHANICAL TESTING	MECHANICAL PROPERTIES	MAJOR	TENSILE, IMPACT, MICRO STRUCTURE	AS PER SPEC	BHEL SPEC	BHEL SPEC	TC	2	1			
6.	FINAL NDT	NDT	MAJOR	HARDNESS	100%	SPEC & BHEL APPROVED NDE PLAN	BHEL SPEC	TC	2	1			
7.	LEAK TEST (IF CALLED FOR IN DRAWING)	LEAK PROOFNESS	MAJOR	UT & MPI	100%	DRAWING	DRAWING	TC	2	1			
8.	IDENTIFICATION, PACKING & FORWARDING TO M/C SHOP	CHECKING & RETRACE OF DOCUMENTS	CRITICAL	CHECKING	100%	PO, SPEC, DRG, & QP	PO, SPEC, DRG, & QP	SL NO 1 TO 7 CERTIFICATES	2				
9.	FINAL M/CING	DIMENSION	MAJOR	DIMENSIONAL	100%	DRAWING LOGSHEET	DRAWING LOGSHEET	DIMENSION RECORD + LOGSHEET	2	1			AT BHEL AG, REED APPROVED SUB VENDOR

* WITNESSING NOT REQUIRED IN CASE OF SEPERATELY POURED KEEL BLOCK (IF PERMITTED BY ORDERING SPECIFICATION)

QUALITY PLAN										PAGE 1 OF 1		
BHEL	QP NO.	QA/CF/QP/311		REV	02	DESCRIPTION		LEGENDS				
	SPEC. NO.	AS PER P.O.		REV.	AS PER PO	NODULAR CASTINGS		P- PERFORMED BY	1- BHEL REP			
	DRG. NO.	AS PER PO		REV.				W- WITNESSED BY	2- VENDOR			
								V- VERIFIED BY	3- SUBVENDOR			
SL. NO.	COMPONENT OPERATION	CHARACTERISTICS	CLASSIFICATION	TYPE OF CHECK	QUANTUM	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY	REMARKS		
									P	W	V	

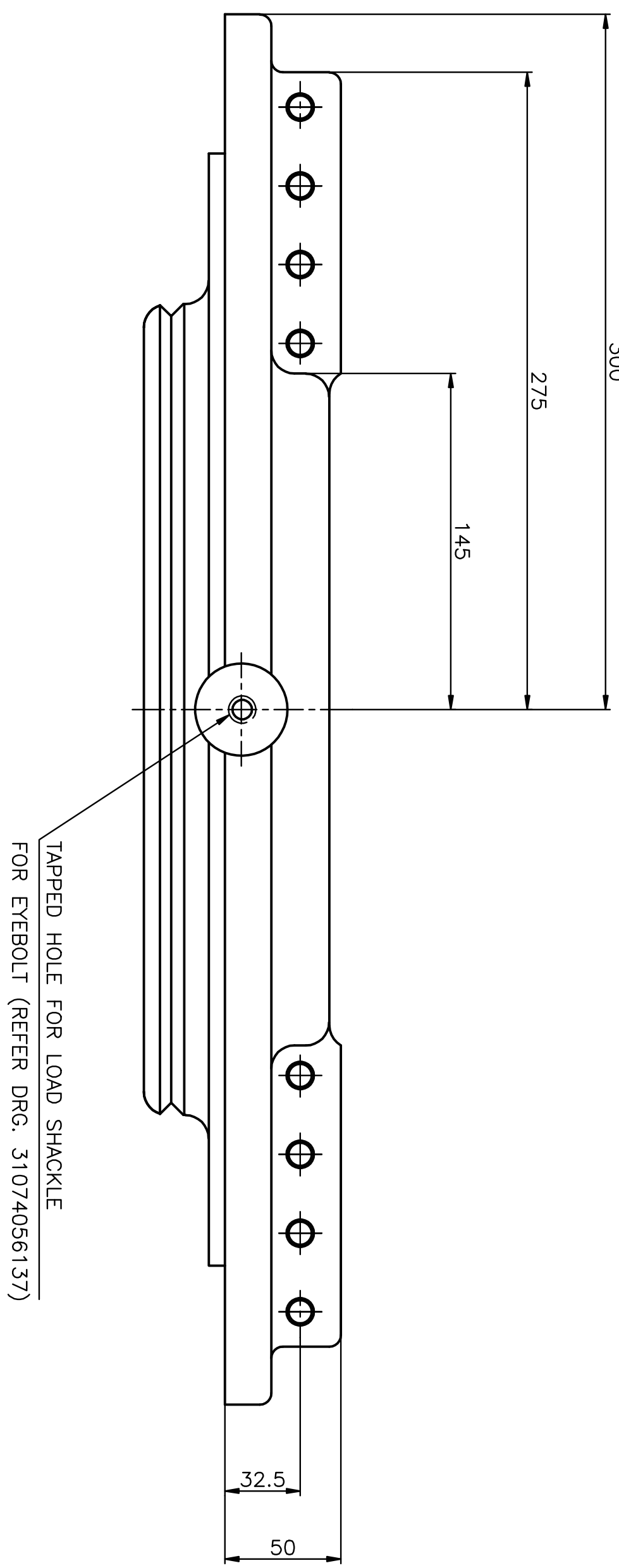
1.	MELTING	CHEMISTRY	MAJOR	CHEMICAL TEST	EACH HEAT	BHEL SPEC	BHEL SPEC	TC	2	1		
2.	FERRITIZING & ANNEALING	TEMP. & TIME	MAJOR	HT RECORD	EACH BATCH	MANUFACTURE PRACTICE		TIME TEMP RECORDS, GRAPH	2	1		
3.	MARKING	IDENTIFICATION OF CASTING & KEEL BLOCK	MAJOR	VISUAL	100%	BHEL SPEC	BHEL SPEC		2	1	*	PHOTO/ SKETCH OF TEST-coupon TO BE MADE PART OF TCs
4.	ROUGH MACHINING	DIMENSION	MAJOR	DIMENSIONAL	100%	DRAWING	DRAWING	DIMENSION RECORD	2	1		
5.	MECHANICAL TESTING	MECHANICAL PROPERTIES	MAJOR	TENSILE, IMPACT, MICRO STRUCTURE, HARDNESS	AS PER SPEC	BHEL SPEC	BHEL SPEC	TC	2	1		
6.	FINAL NDT	NDT	MAJOR	UT & MPI	100%	SPEC & BHEL APPROVED NDE PLAN	BHEL SPEC	TC	2	1		
7.	LEAK TEST (IF CALLED FOR IN DRAWING)	LEAK PROOFNESS	MAJOR	KEROSENE TEST	100%	DRAWING	DRAWING	TC	2	1		
8.	IDENTIFICATION, PACKING & FORWARDING TO M/C SHOP	CHECKING & RETRACE OF DOCUMENTS	CRITICAL	CHECKING	100%	PO, SPEC, DRG, & QP	PO, SPEC, DRG, & QP	SL NO 1 TO 7 CERTIFICATES	2			

* WITNESSING NOT REQUIRED IN CASE OF SEPERATELY POURED KEEL BLOCK (IF PERMITTED BY ORDERING SPECIFICATION)

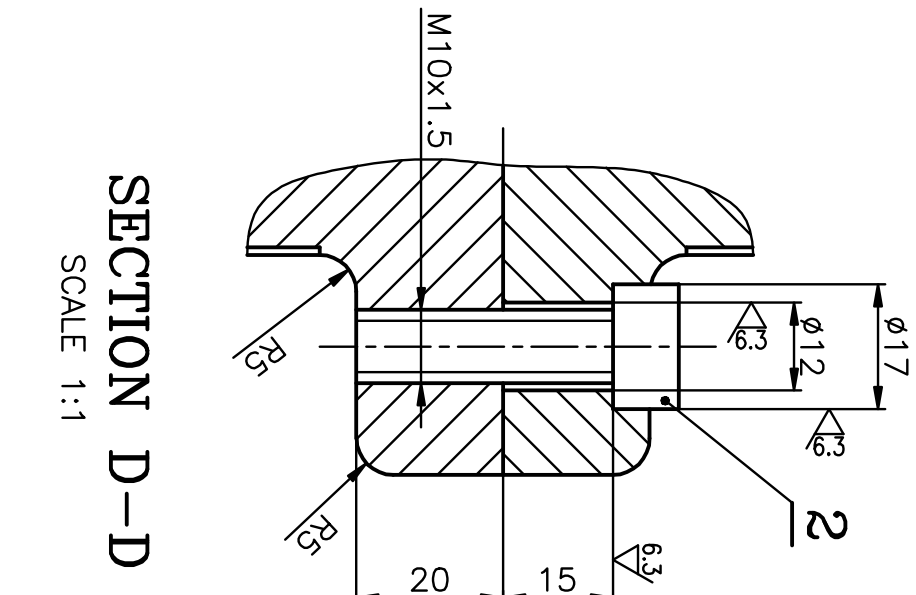
NOTES:

1. Weldings are only allowed after approval from BHEL in written form (refer clause for 'Rectification Welding' in specification) . .
2. Keel blocks will accompany castings during all HT processes.
3. Only qualified NDT operators will be employed

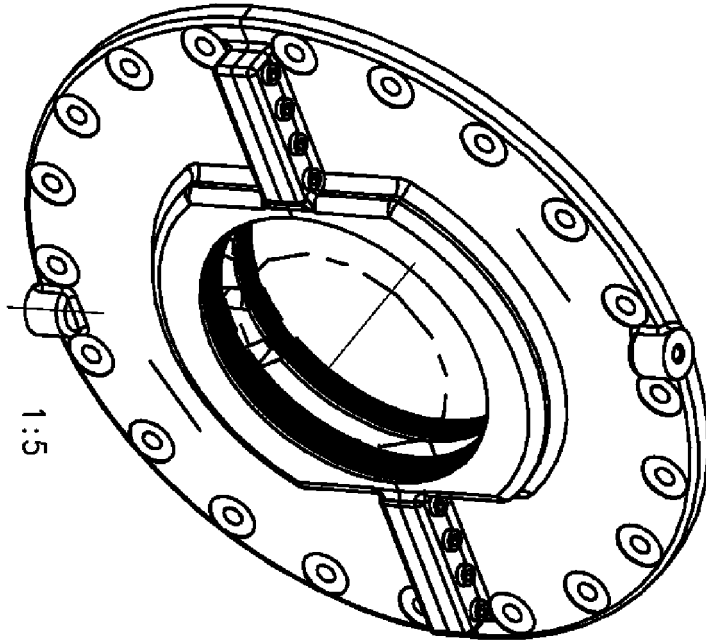
Sugandha Sharma
27/11/17
QA



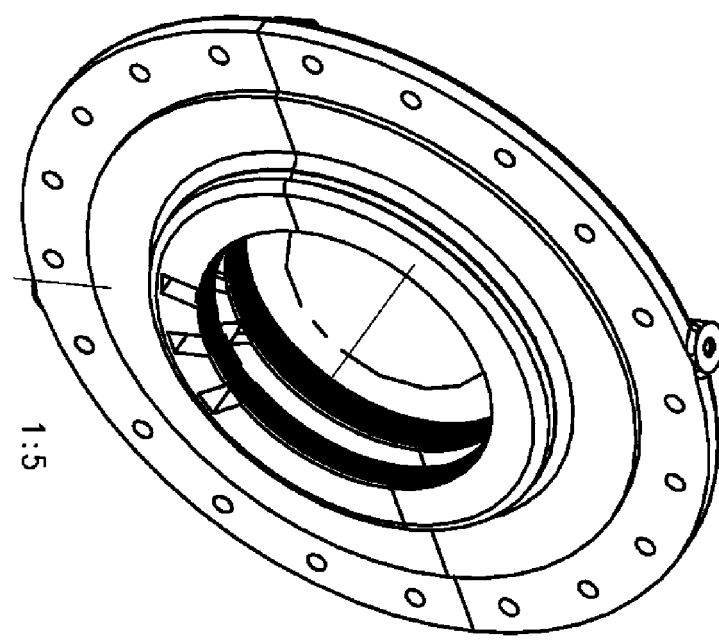
SECTION F-F
SCALE 1:1



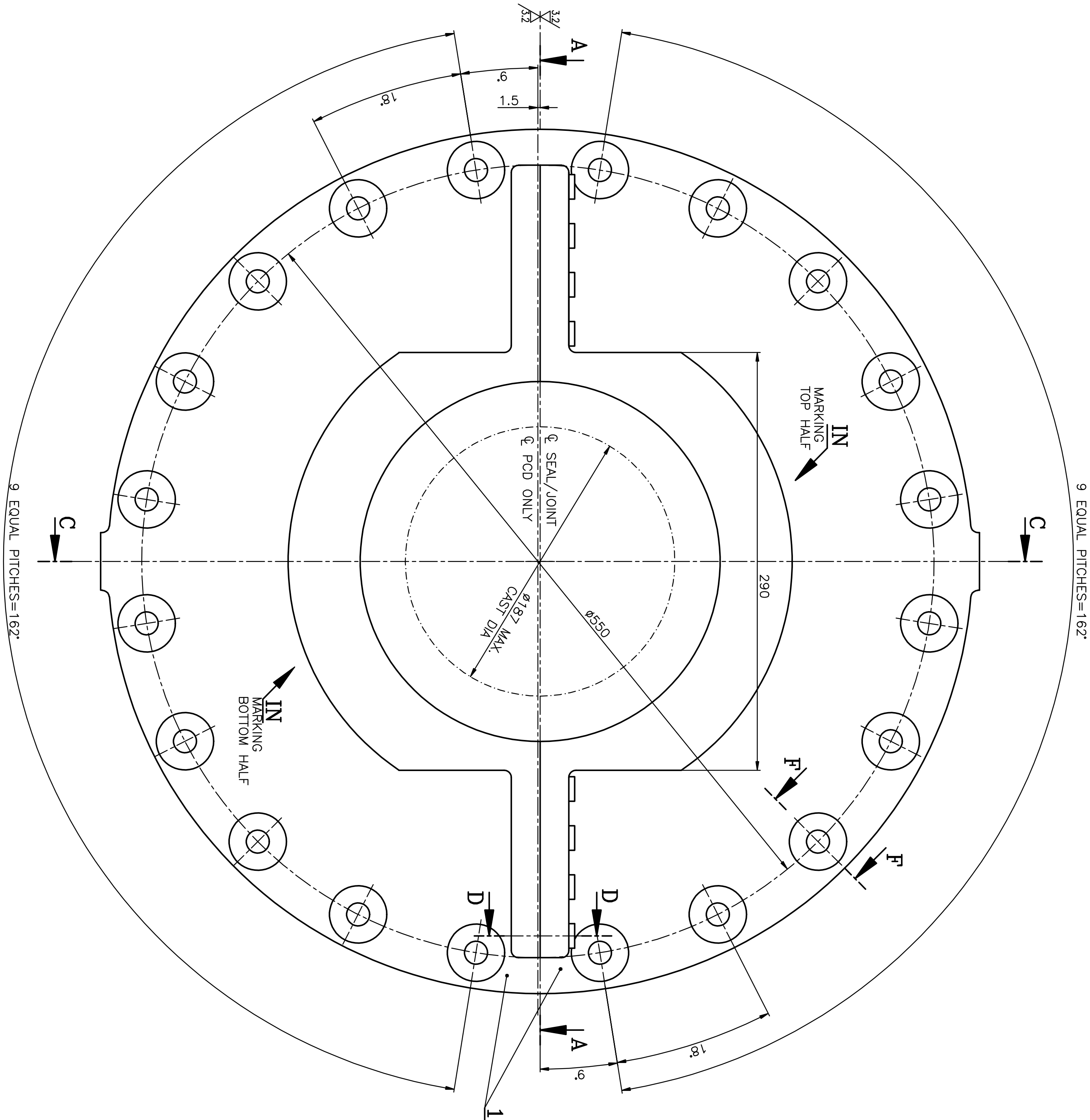
SECTION D-D
SCALE 1:1



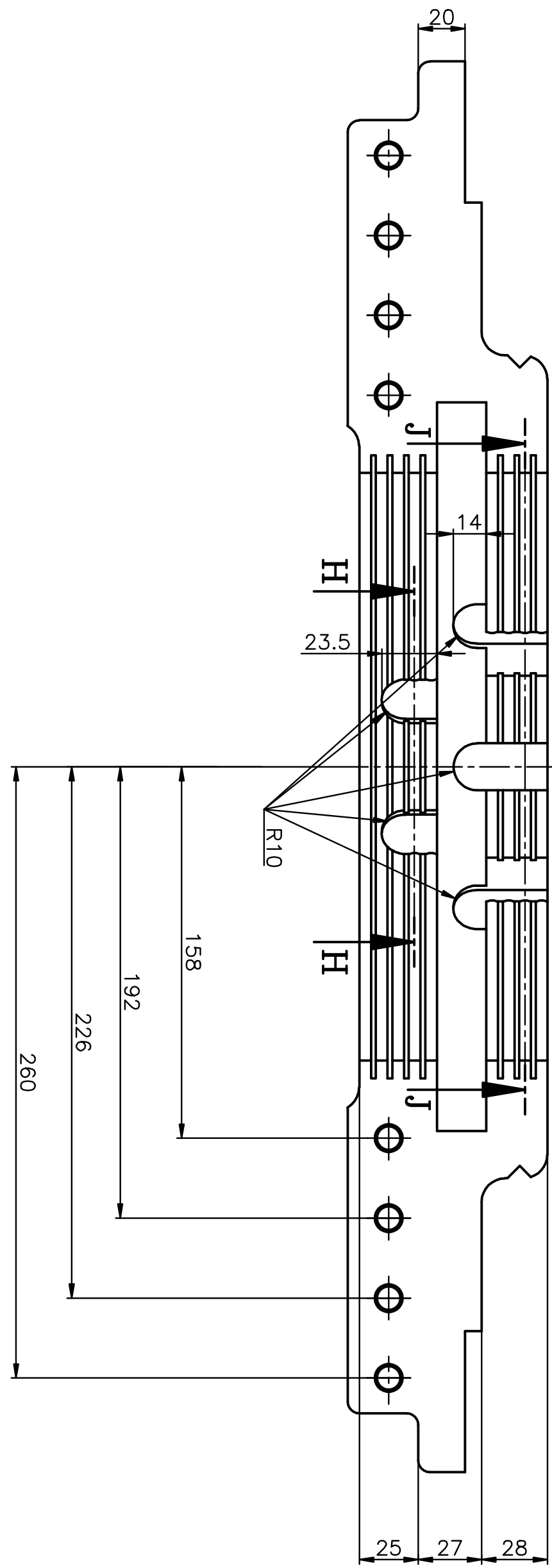
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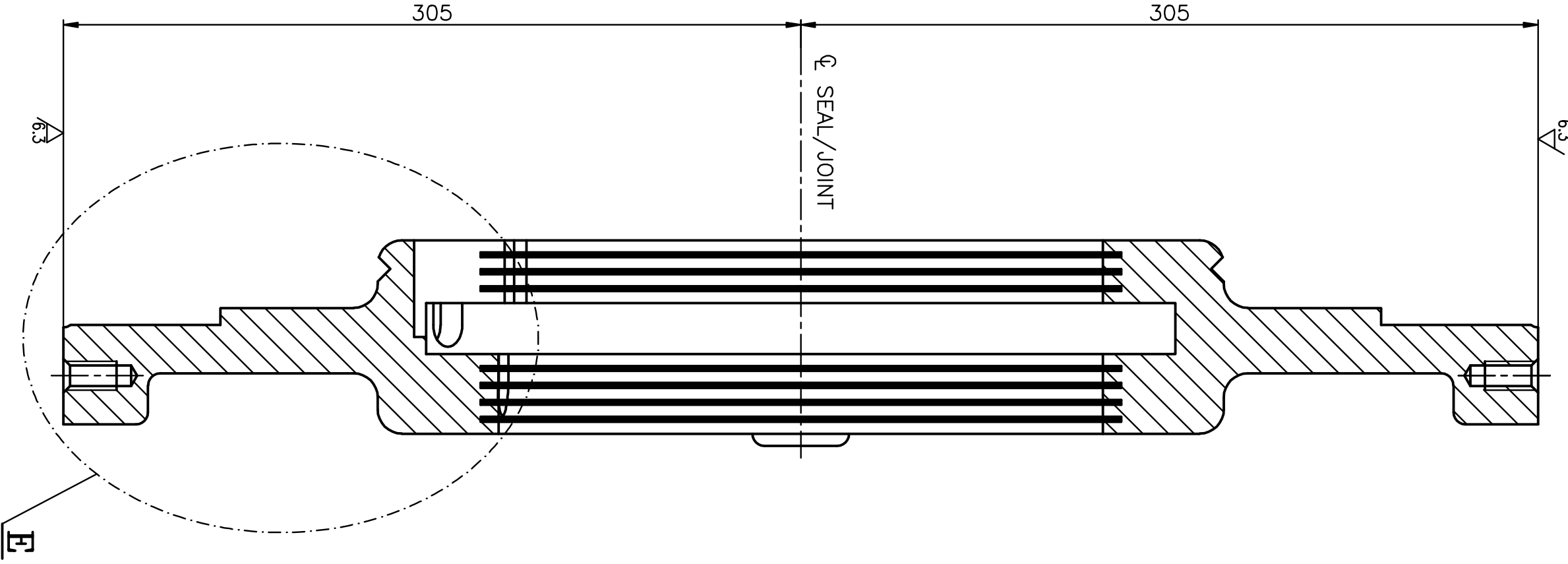
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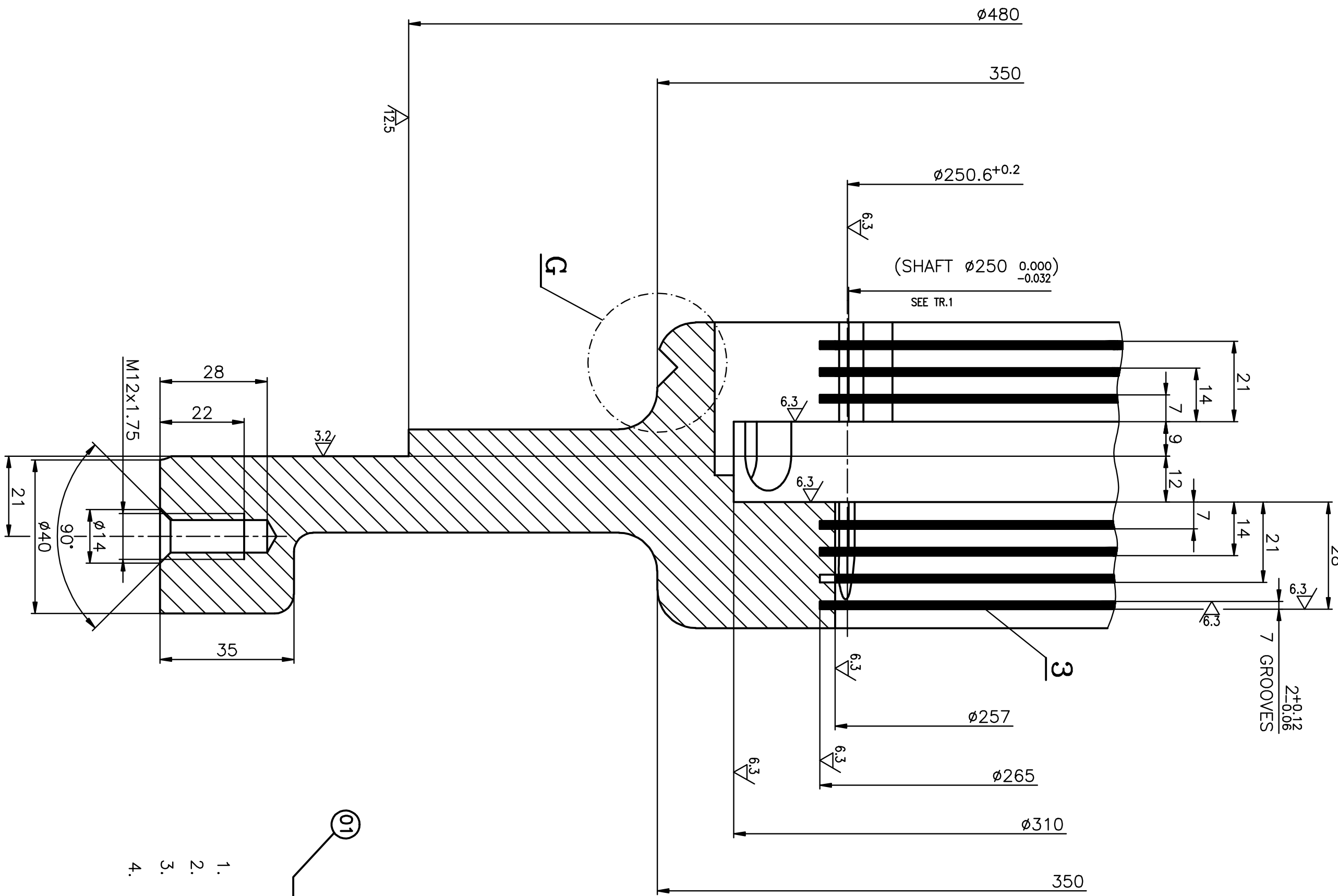
SEALING RING IN TWO PARTS



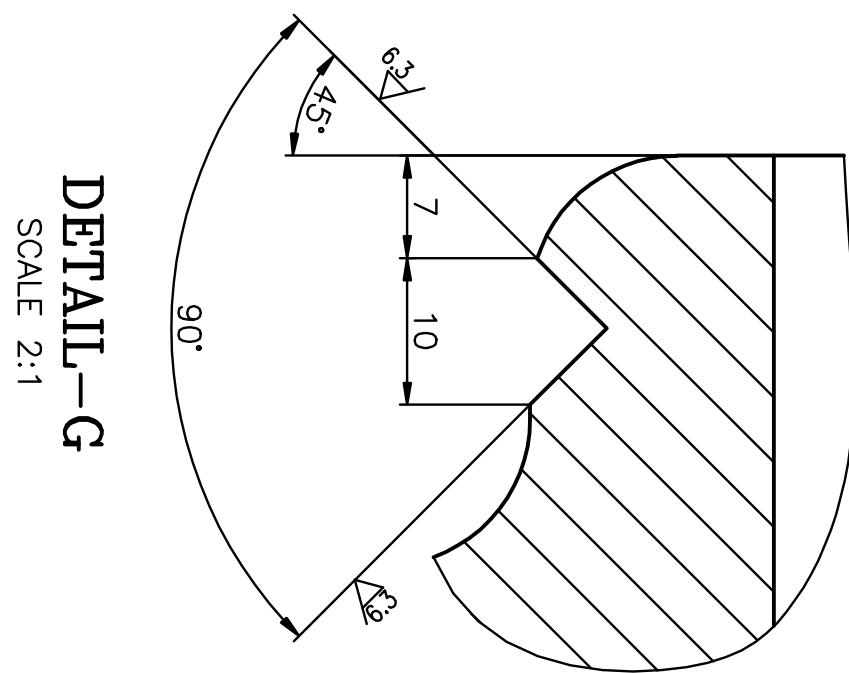
SECTION A-A



SECTION C-C



DETAIL-E
SCALE 1:1



DETAIL-G
SCALE 2:1

T.R. FOR PROCUREMENT OF OIL GUARD RING
IN FINISH MACHINE CONDITION:-

1. CASTING SHALL MEET ALL THE REQUIREMENTS OF SPECIFICATION HW19793.
2. ITEMS NO. 2 & 3 ARE IN BHEL'S SCOPE OF SUPPLY.
3. ALL FILLET RADII ARE R5 UNLESS OTHERWISE STATED.
4. DRG. NO. AND SUPPLIER'S EMBLEM SHALL BE MARKED ON THE SURFACE AT IN.

TECHNICAL REQUIREMENTS:-

1. THE SEAL RING MUST BE INSTALLED SO THAT IN THE STAND STILL CONDITION THE SEAL STRIP (ITEM NO. 03) HAVE A CLEARANCE OF 0.2^{±0.1} TO THE BOTTOM OF THE SHAFT.
2. CONSERVATION OF OIL GUARD RING (06R) TO BE CARRIED OUT AS PER S133004.
3. DIMENSIONS SHOWN ARE FINISH MACHINED SIZES.

VAR NO.	REMARKS	ITEM NO.	DESCRIPTION	DATE	DRWING NO.	28	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
VAR 001	REMARKS	ITEM NO.	DESCRIPTION	DATE	DRWING NO.	28	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

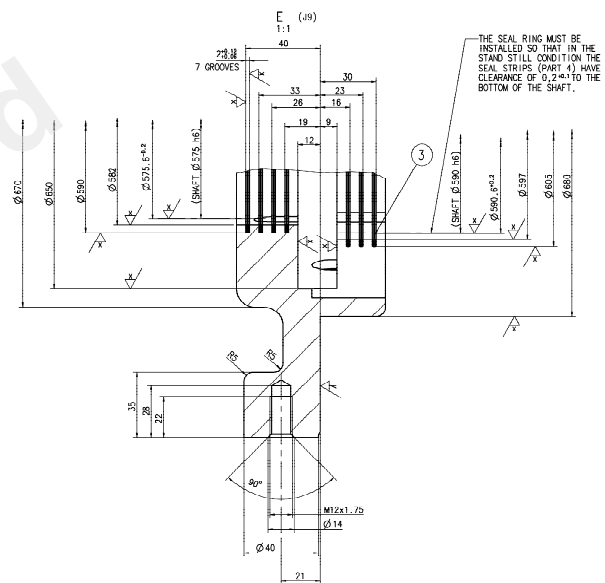
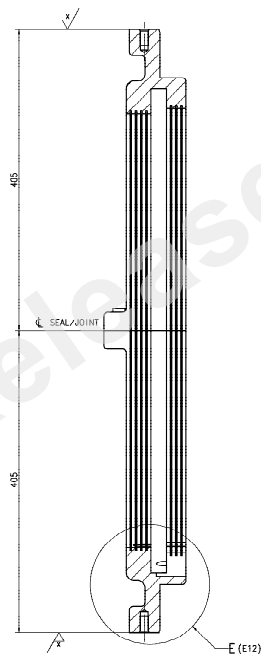
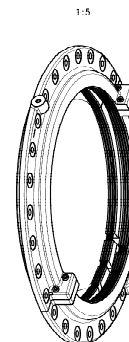
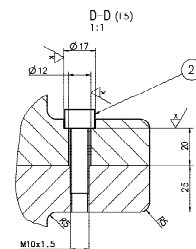
VAR NO.	REMARKS	ITEM NO.	DESCRIPTION	DATE	DRWING NO.	28	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
VAR 001	REMARKS	ITEM NO.	DESCRIPTION	DATE	DRWING NO.	28	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

INVENTORY No.	SIGN & DATE	AD176A22214 7603136 REV. DRAWING No.
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INVENTORY No.	SIGN & DATE	AD176A22214 7603136 REV. DRAWING No.
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INVENTORY No.	SIGN & DATE	AD176A22214 7603136 REV. DRAWING No.
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INVENTORY No.	SIGN & DATE	AD176A22214 7603136 REV. DRAWING No.
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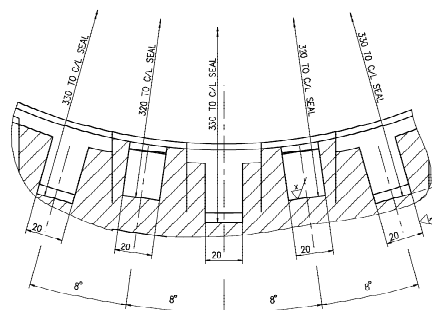


**T.R. FOR PROCUREMENT OF OIL GUARD RING
IN FINISH MACHINE CONDITION:-**

1. CASTING SHALL MEET ALL THE REQUIREMENTS OF SPECIFICATION HHW9793.
2. ITEMS NO. 2 & 3 ARE IN BIDDER'S SCOPE OF SUPPLY.
3. ALL FILLET RADII ARE R5 UNLESS OTHERWISE STATED.
4. DRG. NO. AND SUPPLIER'S EMBLEM SHALL BE MARKED ON THE SURFACE AT IN.

TECH. REQUIREMENTS :-

1. DIMENSIONS MENTIONED (---) ARE FOR REFERENCE ONLY.
2. CONSERVATION OF DGR TO BE CARRIED OUT AS PER ST33004 ALONG BEARING PEDESTAL.



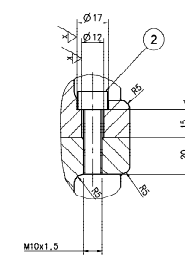
ASSEMBLY	
WEIGHT	C of G
125 Kg	X = 0 Y = 9 Z = 4

WEIGHT GIVEN IS ESTIMATED
IN THE CAST CONDITION

MLV	DATE
-----	------

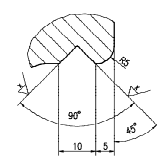
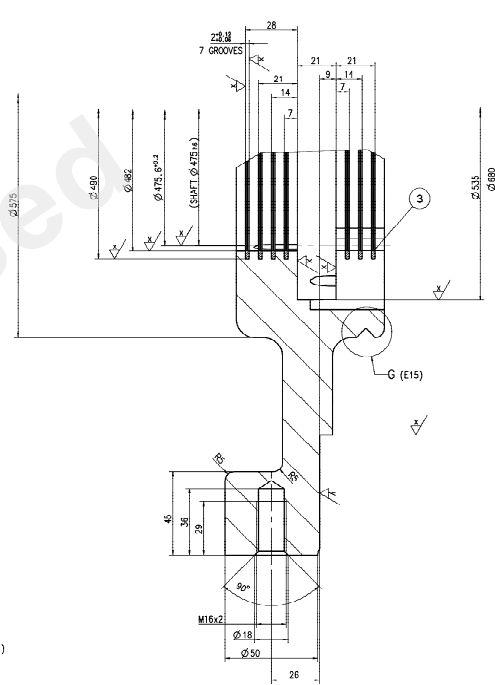
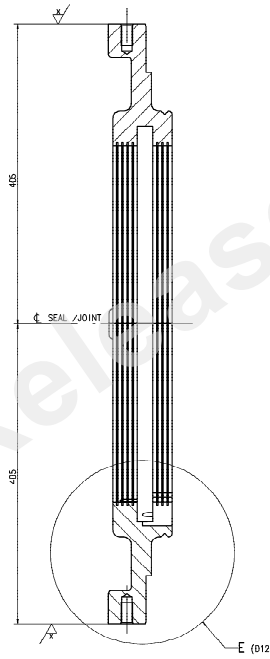
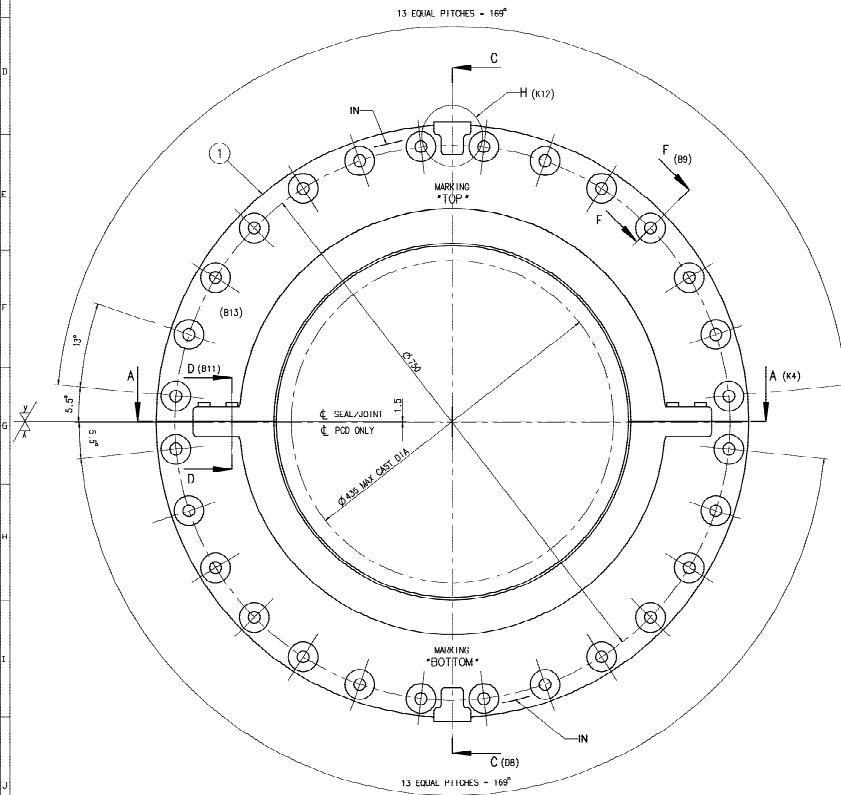
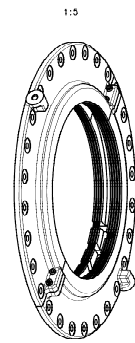
	GAS C	
	MLV	DAI

[illegible]

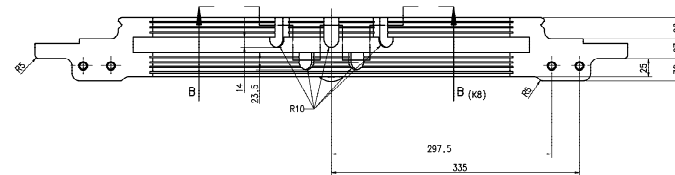


SECTION - F-F (06
1:1

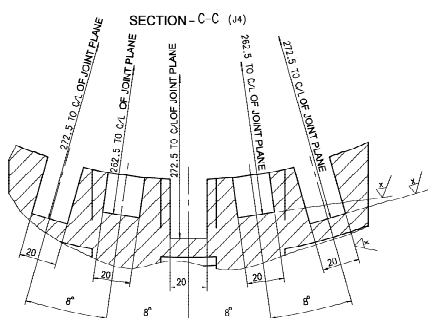
SECTION - D-D (F2)



DETAIL - G (G12)
2:1

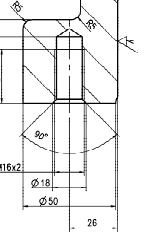


SECTION - A-A (F6)

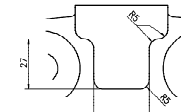


SECTION - C-C (J4)

SECTION-B-B (L5)
1:1



DETAIL - E (J9)
1:1



DETAIL- H (02)
1:1

T.R. FOR PROCUREMENT OF OIL GUARD RING
IN FINISH MACHINE CONDITION:-

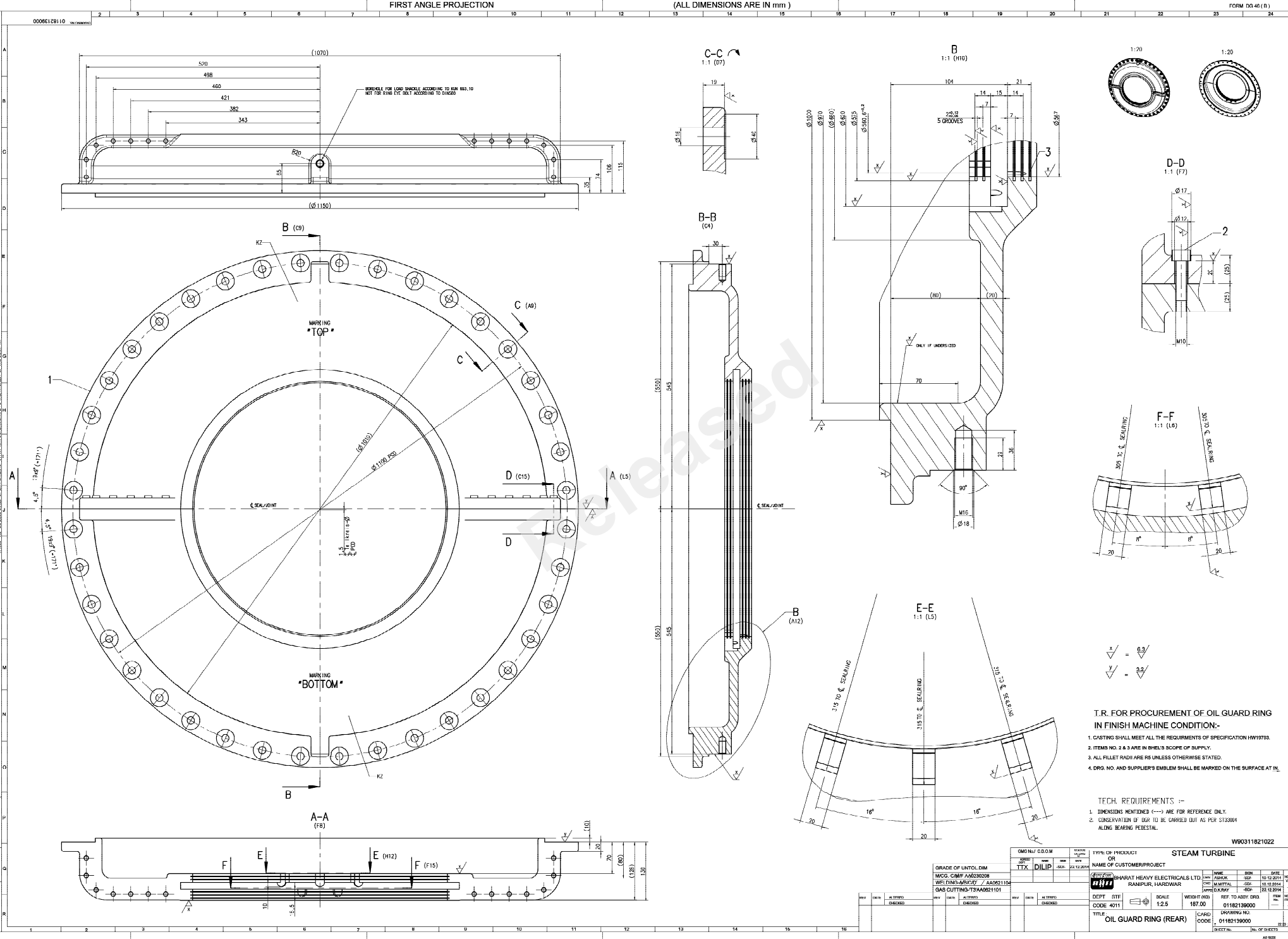
1. CASTING SHALL MEET ALL THE REQUIREMENTS OF SPECIFICATION HW19793.
2. ITEMS NO. 2 & 3 ARE IN BHEL'S SCOPE OF SUPPLY.
3. ALL FILLET RADII ARE R5 UNLESS OTHERWISE STATED.
4. DRG. NO. AND SUPPLIER'S EMBLEM SHALL BE MARKED ON THE SURFACE AT IN.

TECH. REQUIREMENTS :-

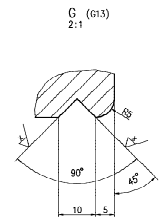
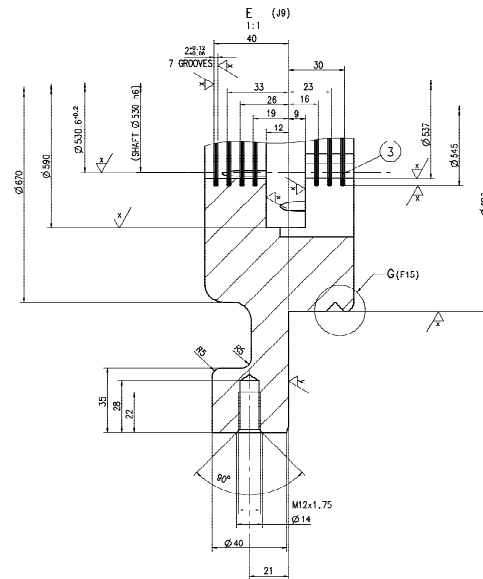
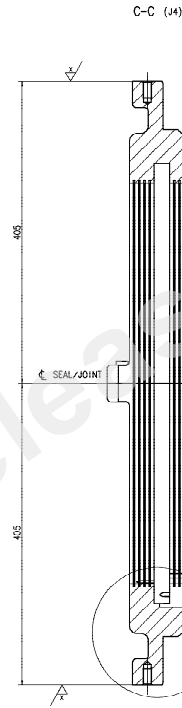
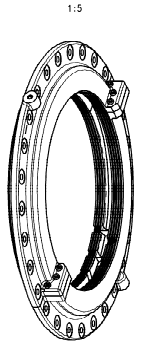
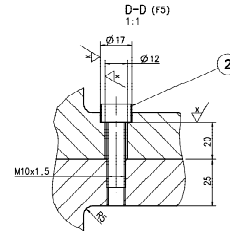
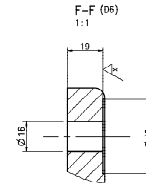
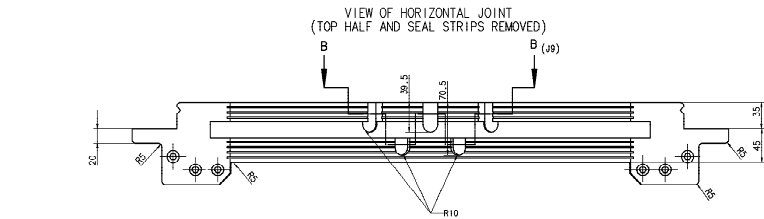
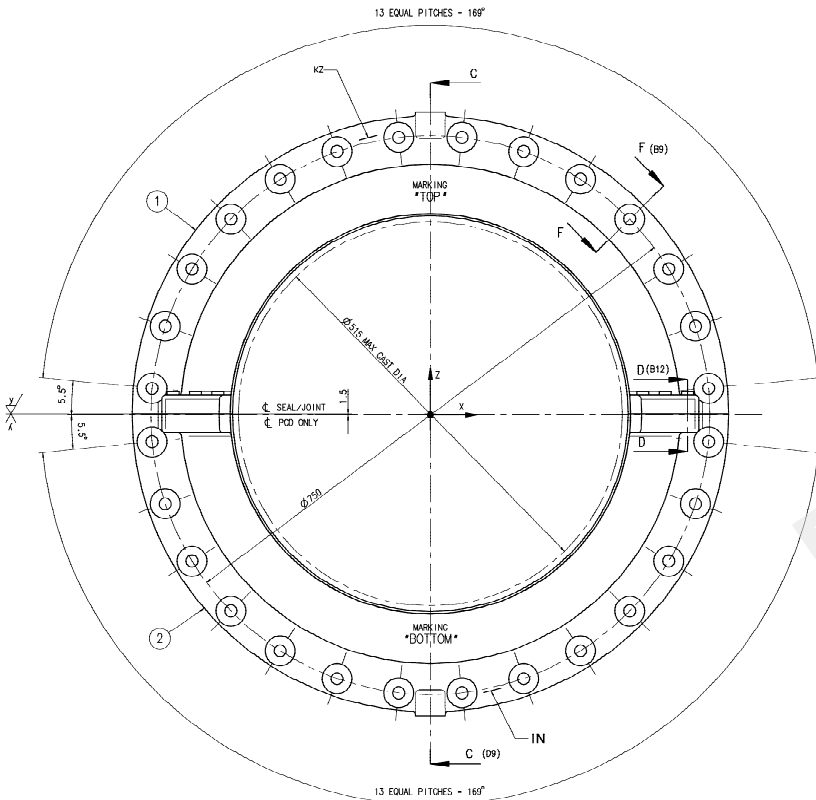
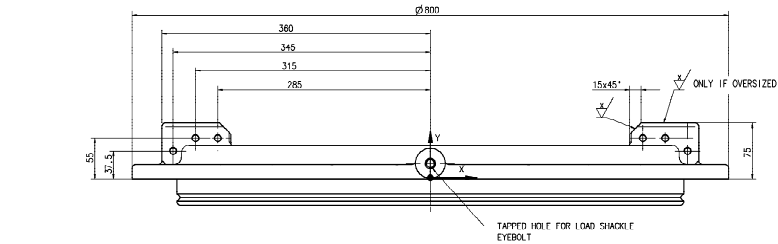
1. DIMENSIONS MENTIONED (---) ARE FOR REFERENCE ONLY.
2. CONSERVATION OF OGR TO BE CARRIED OUT AS PER ST33004 ALONG BEARING PEDESTAL.

W90311820018

[illegible]



00005-92811-0



$\frac{x}{y} = \frac{6.3}{3.2}$

$\frac{x}{y} = \frac{6.3}{3.2}$

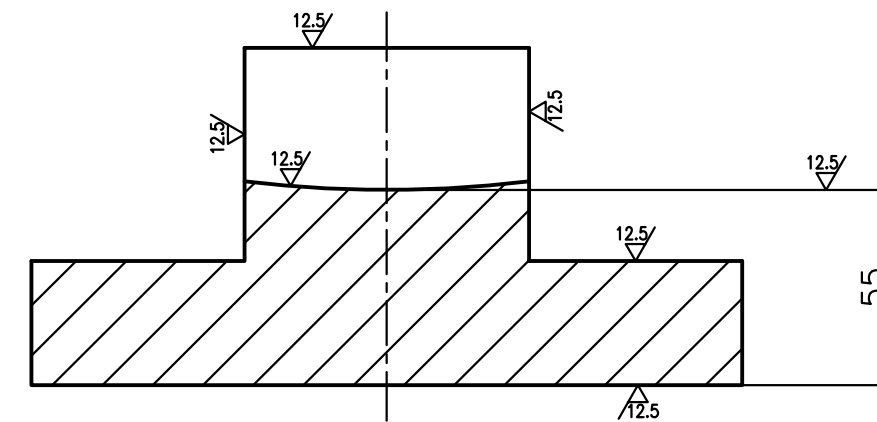
TECHNICAL REQUIREMENT FOR PROCUREMENT OF OIL GUARDRING IN FINISH MACHINED CONDITION:-
1-CASTING SHALL MEET ALL THE REQUIREMENTS OF SPECIFICATION HW10793.
2-ITEMS NO. 2&3 ARE IN BULK'S SCOPE OF SUPPLY.
3-ALL FILLET RADI ARE R6 UNLESS OTHERWISE STATED.
4-DRG. NO. AND SUPPLIER'S EMBLEM SHALL BE MARKED ON THE SURFACE AT IN

TECHNICAL REQUIREMENT
1-DIMENSION MENTIONED (---) ARE REFERENCE ONLY.
2-CONSERVATION OF OGR TO BE CARRIED OUT AS PER ST33004 ALONG BEARING PEDISTAL.
3-IDENTIFICATION ACCORDING TO HW6400397 AT THE PLACE MARKED WITH IS.

GRADE OF UNIT/DIM WELDING-JURCO / A10021104 GAS CUTTING-TSA0021101				NAME OF CUSTOMER/PROJECT BIHARAT HEAVY ELECTRICALS LTD RAIPUR, HARGHAR				DEPT. SITE CODE 4011				DRAWING NO. 0-11828-58000			
REV. DATE. ALTERED. CHECKED.				REV. DATE. ALTERED. CHECKED.				REV. DATE. ALTERED. CHECKED.				REV. DATE. ALTERED. CHECKED.			
NO. OF SHEETS				NO. OF SHEETS				NO. OF SHEETS				NO. OF SHEETS			

1

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1. THE CASTING SHALL BE MANUFACTURE AND DELIVERED IN ROUGH MACHINED CONDITION WITH 5 ± 1 mm. MACHINING ALLOWANCE ON SURFACES MARKED WITH MACHINING SYMBOL $\sqrt{12.5}$.
2. THE CASTING SHALL BE DELIVERED TO MEET THE REQUIREMENTS OF SPECIFICATION NO. HW19793.
3. QUALITY LEVEL ; S4,V4 (S3,V1) ACCORDING TO HW0980829, HW0980831.
4. □□HIGH CONDITION ZONE (S3,V1)
5. IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED WITH **IN**.

	CASTING FOR SPHERICAL SOCKET		2-11654-56901		W91311654011			37	00	
					HW19793					
ITEM NO.	DESCRIPTION	STD	DRAWING NO.		MATERIALCODE	A	UNIT	UNIT	WT.	SD
			VAR		MATERIALSPEC	C				

GRADE OF UNTOL.DIM
M/CG.- C /M/ F AA0230208
WELDING- A /B/ C / D AA0621104
GAS CUTTING-'T3'AA0621101

GMS No./ CBOM No. 01165456000			STATUS OF DRG
AGREED DEPT	NAME	SIGN	DATE
STE	ALOK SINGH	sd/-	18.06.1
TTX	RAVINDER	sd/-	29.08.1

	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT
--	---



BHARAT HEAVY ELECTRICALS LTD.
RANIPUR, HARDWAR

	NAME	SIGN	DATE	
DRN	RAJPAL	sd/-	16.06.11	NO. C
CHD	ASHISH	sd/-	16.06.11	VAR
APPD	T.G.S.	sd/-	29.08.11	73

DEPT	MTE
------	-----

SCALE 1:2	WEIGHT (KG) 37.00
--------------	----------------------

REF. TO ASSY. DRG.	
0-11654-56000	

ITEM No.	NO. OF ITEMS
-------------	-----------------

TITLE : **CASTING FOR
SPHERICAL SOCKET^(R/M)**

CARD
CODE

DRAWING NO.	75
2-11654-56901	

SHEET No.	No. OF SHEETS
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21165456017
A0176A2090
7651257^q
Ref.Drawing No>

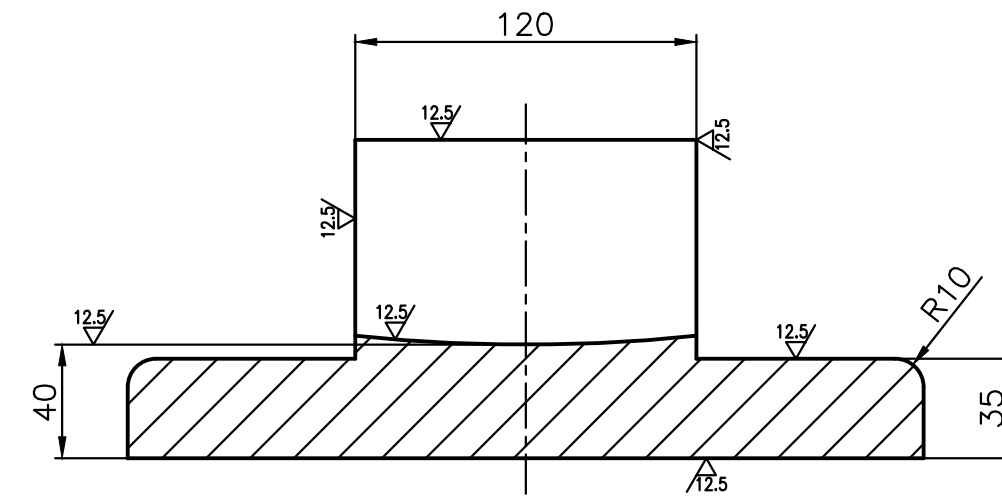
Sign & Date

Inventory No.		
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REV	DATE	ALTERED CHECKED	REV	DATE	ALTERED CHECKED	REV	DATE	ALTERED CHECKED	REV	DATE	ALTERED CHECKED	REV	DATE	ALTERED CHECKED	REV	DATE	ALTERED CHECKED
8			7			6			5			4			3		

1

3.2/
√ALL OVER



1. THE CASTING SHALL BE MANUFACTURE AND DELIVERED IN ROUGH MACHINED CONDITION WITH 5 ± 1 mm. MACHINING ALLOWANCE ON SURFACES MARKED WITH MACHINING SYMBOL $\nabla^{12.5}$.
2. THE CASTING SHALL BE DELIVERED TO MEET THE REQUIREMENTS OF SPECIFICATION NO. HW19793.
3. QUALITY LEVEL ; S4,V4 (S3,V1) ACCORDING TO HW0980829, HW0980831.
4. □ HIGH CONDITION ZONE (S3,V1)
5. IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED WITH **IN** .

	CASTING FOR SPHERICAL SOCKET		2-11723-56901		W92311723013			70	00	
					HW19793					
ITEM NO.	DESCRIPTION	STD	DRAWING NO.		MATERIALCODE	A	UNIT	UNIT	WT.	SD
				VAR	MATERIALSPEC	C				

GRADE OF UNTOL.DIM
M/CG.- C /M/ F AA0230208
WELDING- A /B/ C / D AA0621104
GAS CUTTING-T3'AA0621101

GMS No./ CBOM No. 01172356000			STATUS OF DRG U
	AGREED DEPT	NAME	SIGN
	DATE		
STE	AKASH	sd/-	15.07.1
TTX	S.SARKAR	sd/-	10.09.1
4			

	TYPE OF PRODUCT
	OR
1	NAME OF CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.
RANIPUR, HARDWAR

	NAME	SIGN	DATE	
DRN	RAJPAL	sd/-	15.07.11	NO. C
CHD	ASHISH	sd/-	15.07.11	VAR
APPD	T.S.G.	-	10.09.11	73

DEPT	MTF
------	-----

SCALE 1:2.5	WEIGHT (KG) 70.00
----------------	----------------------

REF. TO ASSY. DRG.	
0-11723-56000	

ITEM No.	NO. OF ITEMS
—	—

TITLE :	CASTING FOR SPHERICAL SOCKET ^(R/M)
---------	--

CARD CODE	DRAWING NO. 2-11723-56901	7	22	23	2
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SHEET No. 01	No. OF SHEETS 01
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3-11723-56015
A0171A1846
7651051
Ref. Drawing No>

Sign & Date

Inventory No	
--------------	--

DRAWING No.

1

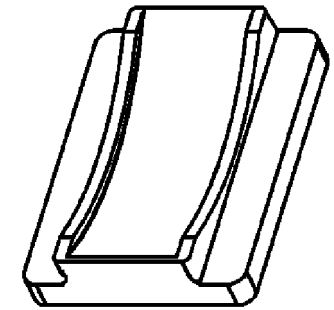
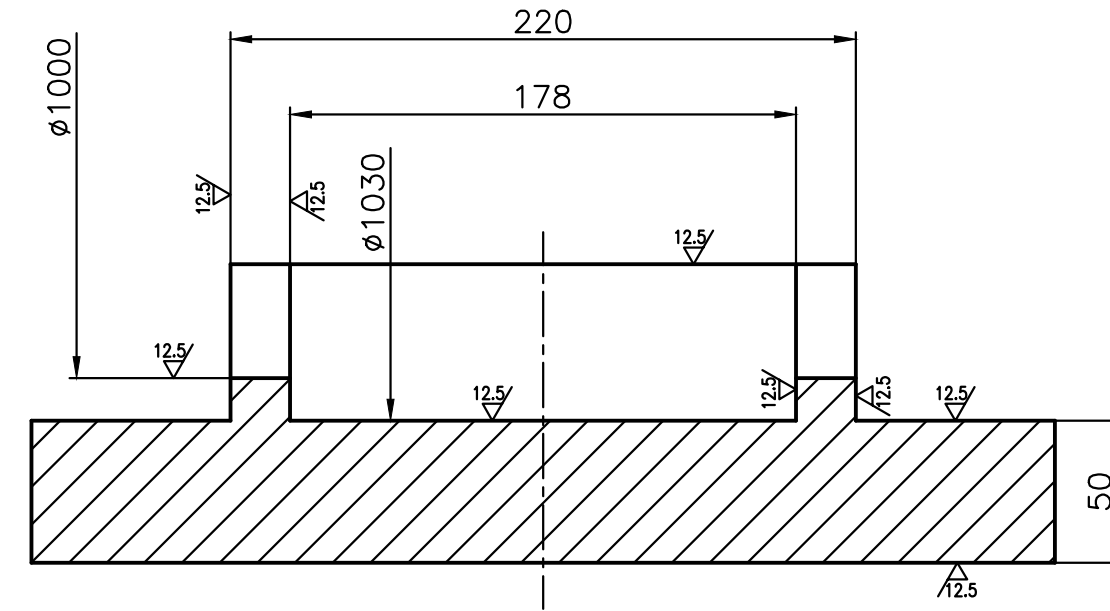
Sign & Date

2-11831-56009
A0171A1847 a
7651028
Ref: Drawing N

Inventory No	

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SECTION A-A

TECHNICAL REQUIREMENTS:-

1. THE CASTING SHALL BE MANUFACTURE AND DELIVERED IN ROUGH MACHINED CONDITION WITH 5 ± 1 mm. MACHINING ALLOWANCE ON SURFACES MARKED WITH MACHINING SYMBOL $\sqrt{R}^{12.5}$.
2. THE CASTING SHALL BE DELIVERED TO MEET THE REQUIREMENTS OF SPECIFICATION NO. HW19793.
3. QUALITY LEVEL ; S4,V4 (S3,V1) ACCORDING TO HW0980829, HW0980831.
4. □□□HIGH CONDITION ZONE (S3,V1)
5. IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED WITH **IN**.

	CASTING FOR SPHERICAL SOCKET		2-11831-56901		W91311831010			84	00	
					HW19793					
ITEM NO.	DESCRIPTION	STD	DRAWING NO.		MATERIALCODE	A	UNIT	UNIT	WT.	SD
				VAR	MATERIALSPEC	C				

GRADE OF UNTOL.DIM
M/CG.- C /M/ F AA0230208
WELDING- K /B/ C / D AA0621104
GAS CUTTING-'T3'AA0621101

GMS No./ CBOM No. 01183156000			STATUS OF DRG U
AGREED DEPT	NAME	SIGN	DATE
STE	RITESH	Sd-	18.08.1
TTX	RAVINDER	Sd-	18.08.1

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT	STEAM TURBINE
---	---------------

 BHARAT HEAVY ELECTRICALS LTD. RANIPUR, HARDWAR		NAME	SIGN	DATE	NO. OF VAR — 73 74
	DRN	RAJPAL	sd/-	25.07.11	
	CHD	ASHISH	sd/-	25.07.11	
	APPD	T.S.G.	sd/-	18.08.11	

DEPT	MTE		SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM No.	NO. OF ITEMS
CODE	4300		1:2.5	84.00	—	—	75 77

TITLE : CASTING FOR		CARD CODE	DRAWING NO.		75	77
CYLINDRICAL SHEEL^(R/M)			2-11831-56901		7	22 23 24
			SHEET No.		No. OF SHEETS	

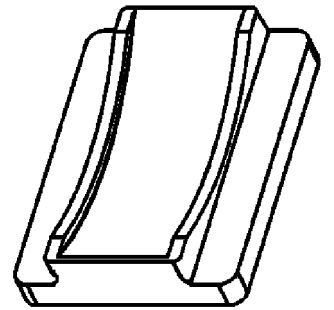
[illegible]

DRAWING No.

1

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✓ ALL OVER EXCEPTED
OTHERWISE STATED



TECHNICAL REQUIREMENTS:-

1. THE CASTING SHALL BE MANUFACTURE AND DELIVERED IN ROUGH MACHINED CONDITION WITH 5 ± 1 mm. MACHINING ALLOWANCE ON SURFACES MARKED WITH MACHINING SYMBOL $\sqrt[125]{}$.
2. THE CASTING SHALL BE DELIVERED TO MEET THE REQUIREMENTS OF SPECIFICATION NO. HW19793.
3. QUALITY LEVEL ; S4,V4 (S3,V1) ACCORDING TO HW0980829, HW0980831.
4. □□HIGH CONDITION ZONE (S3,V1)
5. IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED WITH **IN** .

	CASTING FOR CYLINDRICAL SHELL (ROUGH MACHINED)		2-11832-58901		W91311832017			122	00	
					HW19793					
ITEM NO.	DESCRIPTION	STD	DRAWING NO.		MATERIALCODE	A	UNIT	UNIT	WT.	
				VAR	MATERIALSPEC	C				

GRADE OF UNTOL.DIM
M/CG.- C /M/ F AA0230208
WELDING- A /B/ C / D AA0621104
GAS CUTTING-T3'AA0621101

GMS No./ CBOM No. 01183258000			STATUS OF PRG U
AGREED DEPT	NAME	SIGN	DATE
STE	M.KUMAR	sd/-	23.05.12
TTX	S.KUMAR	sd/-	04.06.12

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT	
---	--

STEAM TURBINE

	BHARAT HEAVY ELECTRICALS LTD. RANIPUR, HARDWAR		NAME	SIGN	DATE	NO. OF VAR —
		DRN	ASHOK	sd/-	16.05.12	
		CHD	SUJEET	sd/-	17.05.12	
		APPD	T.S.G.	sd/-	04.06.12	
						73 74

DEPT	MTE		SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM No.	NO. OF ITEMS
CODE	4300		1:2.5	122.00	—	—	75 77

TITLE : CASTING FOR
CYLINDRICAL SHEEL^(R/M)

CARD CODE	DRAWING NO. 2-11832-58901		
	7	22	23 24
	SHEET No.	No. OF SHEETS	

SIZE A2

2-11832-58021
Ref.Drawing No>

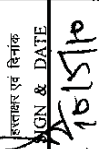
Sign & Date

	Inventory No
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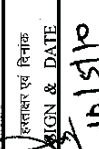
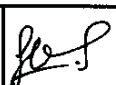
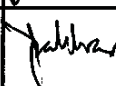
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8			7			6			5			4			3		

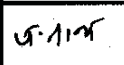
दिनांक एवं हस्ताक्षर DATE & SIGNATURE		संस्थान क्रय विनिर्देश (हीप - हार्डवयर) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)	HW 19793										
			पृष्ठ का Page 1 of 6										
सामग्री सूची संख्या का INVENTORY NO.	NODULAR GRAPHITE IRON CASTING EN-GJS-400-15U (GGG-40) WITH IDENTIFICATION NUMBER												
COPYRIGHT AND CONFIDENTIAL The information on this document 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. GENERAL This specification governs the quality of nodular cast iron of grade EN-GJS-400-15U according to EN 1563 (Material no: EN-151072).												
	2. APPLICATION This material specification is valid for low stressed turbine components such as turbine casing, steam exhaust section, casing covers, bearing casings, bearing covers etc.												
	3. CONDITION OF DELIVERY The casting shall be delivered to the condition as stated in ordering drawing.												
	4. REFERENCED DOCUMENTS EN 1563, DIN 1685-1, EN 1370, BNIF 359-01, MSS-SP-55, EN 10204, HW0980829 (PS 1.0021), HW0980831 (PS 1.0022) Equivalent standard can also be used after approval from BHEL												
स्वत्ताधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।	5. DIMENSION & TOLERANCE 5.1 Casting shall be supplied to the dimension shown on the drawing accompanying the order. 5.2 Tolerance: General tolerances as per DIN1685 part-1, accuracy degree GTB18 are applicable.												
	6. MANUFACTURE 6.1 The method of manufacture is left to the discretion of the supplier unless otherwise mutually agreed. The supplier shall examine the suitability of casting with respect to ordering drawing. In case of any change required or for testing any modification required, the supplier shall discuss with the BHEL for approval. If additional material thickness for dross remains in delivery conditions, this shall be agreed with the purchaser. Therefore, in case of a prototype manufacturing, i. e. a casting which the supplier supplies to the purchaser for the first time, the supplier shall initiate a quality meeting with the purchaser.												
	6.2 The manufacturer shall forward manufacturing plan and Non destructive Test plan, for approval, to BHEL before the commencement of production. BHEL reserves the right to												
	<table border="1"> <tr> <td>नाम NAME</td> <td>दिनांक एवं हस्ताक्षर SIGNATURE & DATE</td> </tr> <tr> <td>अनुवादक TRANSLATED BY</td> <td></td> </tr> <tr> <td>निर्माणकर्ता WORKED BY</td> <td>SSG</td> </tr> <tr> <td>जांचकर्ता CHECKED BY</td> <td>P.NATH</td> </tr> <tr> <td>पर्यवेक्षणकर्ता SUPERVISED BY</td> <td>VB ARORA</td> </tr> </table>				नाम NAME	दिनांक एवं हस्ताक्षर SIGNATURE & DATE	अनुवादक TRANSLATED BY		निर्माणकर्ता WORKED BY	SSG	जांचकर्ता CHECKED BY	P.NATH	पर्यवेक्षणकर्ता SUPERVISED BY
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सामग्री सूची संख्या INVENTORY NO.	TSX KISHAN LAL N. R. De QAX N. K. MANWANI	25.7.05 18/9/05 25.7.05	APPROVED : संस्थान मानक समिति APPROVED : PLANT STANDARDS COMMITTEE	REV 02 23.4.10									
सामग्री सूची संख्या INVENTORY NO.	सहमत विभाग AGREED DEPTT	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	निर्माण : PREPARED : MTE									
सामग्री सूची संख्या INVENTORY NO.	जारी : मानक विभाग ISSUED : STANDARDS DIVISION	दिनांक : DATE : 18-3-00											

निमंक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (डीप - हार्डवार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)	HW 19793	
			पृष्ठ का Page 2 of 6	
समग्री सूची संख्या INVENTORY NO. P-3162	REV 02	निर्माणकर्ता WORKED BY जांचकर्ता CHECKED BY	SSG P.NATH	17/01/05 17/01/05
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				
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।				
6.3 Chaplet and inner iron chills are only allowed to be used after approval by the purchaser in a written form.				
7. HEAT-TREATMENT If the casting requires, according to the experience of the manufacturer, a ferritising heat-treatment for achieving the properties required in clause 10, or when the required properties are not achieved without heat treatment, and the necessity of ferritising heat treatment is felt, manufacturer shall inform the detailed process to BHEL.				
8. CHEMICAL COMPOSITION The chemical composition is to be selected by manufacturer to satisfy the required properties.				
9. SELECTION OF TEST SAMPLES 9.1 The mechanical properties as given in clause 10.1 are to be determined for each casting . 9.2 For the main casing wall the mechanical properties shall be determined on test coupons according to EN 1563, table 6, geometry I or II, depending on the wall thickness where the test coupons are attached. For cross sections > 200 mm, e.g. the joint flange area, the mechanical properties shall be determined on test coupons which shall have the area 100 x 250 mm. The test coupons shall be attached to the casting according to casting specific criteria. Their position shall be documented by sketches or photos. 9.3 Before cutting off the test coupons shall be identified by the authorised inspector with the ID-No. and an appropriate issue showing the position on the casting. The test coupons must be heat treated together with the casting at every heat treatment. 9.4 The specimens for the determination of the mechanical properties shall be taken from the test coupon as near as possible to the cutting face. Two test coupons (one from the main wall and one from the joint flange area) shall be sent to the purchaser for his material receipt inspection. For castings having a weight <= 10,000 kg one test coupon is adequate.				
10. MECHANICAL PROPERTIES In the delivery conditions the casting shall have the following properties on integrally cast keel block at room temperature:				

दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (डीप - हार्डवार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)		HW 19793	
				पृष्ठ का Page 3 of 6	
सामग्री सूची संख्या INVENTORY NO.	10.1	For wall thickness			
सामग्री सूची संख्या को अधिकृतित करता है	> 60mm	> 60 to 200mm	> 200mm (joint flange area)		
	0.2% Proof Stress* : $\geq 250 \text{ N/mm}^2$	$\geq 240 \text{ N/mm}^2$	$\geq 220 \text{ N/mm}^2$		
	Tensile strength : $\geq 390 \text{ N/mm}^2$	$\geq 370 \text{ N/mm}^2$	$\geq 350 \text{ N/mm}^2$		
	Elongation ($l_0=5d_0$) : $\geq 14\%$	$\geq 11\%$	$\geq 10\%$		
	Redn. In area : for information	for information	for information		
* Determination of yield limit instead of 0.2% ps is permitted.					
11 RECTIFICATION WELDING					
<u>Weldings are only allowed after approval by the purchaser in a written form.</u>					
Before starting any welding the supplier shall submit following Information to the purchaser:					
- A welding procedure approval report (WPAR) on an appropriate welding - A real list of welders qualified for such welding operations - A welding procedure specification (WPS)					
Excavations ready for welding shall be documented by a sketch or a photo noting the appropriate positions and dimensions					
Areas to be welded shall be ground down to the flawless base metal. This shall be verified by a surface crack inspection, where severity level 1 according to HW0980829 shall be achieved.					
Welded areas shall be NDE inspected. The inspection method shall be agreed upon with the purchaser.					
The hardness of the weld material, the heat affected zone and the base material shall be measured and documented accordingly					
11.2 Testing of weld spots					
All the rectification welding are subjected to magnetic particle or dye penetration test for determination of surface crack after grinding (and if agreed upon, after heat treatment).					
A volume test shall be conducted for weld portion with a depth of greater than 50% of wall thickness. The cracks in the rectified areas as well as surrounding area are not permissible. Quality level of repaired zone shall be same as the quality level of casting in that zone.					
स्वत्वधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में संचालित हो न किया जाए।	दिनांक एवं हस्ताक्षर SIGN & DATE 	सामग्री सूची संख्या INVENTORY NO. P-3162	REV 02	निर्माणकर्ता WORKED BY SKUMAR	10.5.2010
				जांचकर्ता CHECKED BY TSG	10.5.10

दिनांक एवं हस्ताक्षर SIGN & DATE	संस्थान क्रय विनिर्देश (डीप - हार्डवार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)	HW 19793	
		पृष्ठ का Page 4 of 6	
सामग्री सूची संख्या INVENTORY NO. P-3162	12 NDT AT SUPPLIER'S WORKS 12.1 General Due to lack of standards for NDT of nodular iron casting, the basis for NDT is the plant standard HW0980829 and HW0980831 independent of standard specified in ordering drawing. As far as there are no stronger requirements on the quality levels in the additional ordering data, e.g. drawings, the general quality level for casting is quality level 4, i.e. S4 and V4. The surfaces of the castings shall be clean and allow for visual inspection as per MSS SP-55. If NDE is performed, the surfaces shall be fit for testing, e.g. ground.	SUPERSEDES INVENTORY NO.	सामग्री सूची संख्या को अधिकृत करता है
COPYRIGHT AND CONFIDENTIAL The information on this document 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.			
स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।	12.2 Scope of Inspection Following NDT shall be performed in delivery condition : a) Visual inspection of all outer and inner surfaces. b) MPI according to HW0980829 on following areas: 1) Areas with quality level S3 or better (see order drawing), according to HW0980829 e.g. lifting elements like lifting lugs, etc., especially the transition to the body of casting. In case of excess material in the testing areas which will be machined off in the final shape, MPI can be omitted. 2) Lifting elements like lifting lugs etc., especially the transition to the body of the casting. 3) Welded areas, if any. On faces being inaccessible for a proper MPI, DPT may be performed instead. c) Volume examination by Ultrasonic testing as per HW0980831 on following areas : • Supports, guiding areas. • Lifting elements like lifting lugs etc. • Positions with grouted bolts. • Convex sealing areas • Areas with special requirements marked in the drawing or in a sketch. • Welded areas, if any.		
दिनांक एवं हस्ताक्षर SIGN & DATE 10/5/10	12.3 Criteria for Registration and Decision : a) Visual Inspection Criteria of standard MSS SP-55, Type I, III to VII, IX, X, XII shall be applied. Surface according to sketches a) and b) are acceptable.		
सामग्री सूची संख्या INVENTORY NO. P-3162	REV 02	निर्माणकर्ता WORKED BY SKUMAR	जांचकर्ता CHECKED BY TSG
		10/5/10	10/5/10

निमांक एवं डिजाइन SIGN & DATE		संस्थान क्रय विनिर्देश (डीप - हार्डवार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)	HW 19793	
			पृष्ठ का Page 5 of 6	
सुपरसेडि INVENTORY NO. सामग्री सूची संख्या को अधिकृत करता है	b) Surface crack inspection Severity level S4 according to HW0980829 is valid if there are no special requirements mentioned in the drawing. Remarks: In case of excess material on sealing areas or flange faces which will be machined off, the quality classes V1 to V4 approved by UT instead of the quality class S1 to S4 shall be applied accordingly c) Volume examination Criteria of standard HW0980831 shall be applied for recording. As far as there are no higher requirements mentioned in the drawing - generally criteria of standard HW0980831, quality class V4 shall be applied for decision. Recordable indications, located in machining areas, can be judged individually by BHEL. 13. TEST CERTIFICATE The supplier shall furnish 4 copies of test certificate B according to DIN 50049 to BHEL unless otherwise specified on the order. The test certificate shall contain the following, which must reach BHEL before or along with the casting. a. BHEL Reference: - Material specification. - Order number. - Name and drawing number of the casting. - Identification No. b. Supplier's Reference: - Name or emblem. - Melt number and grade EN-GJS-400-15U. - Method of melting. - Photograph of sketch of the location of the keel block. - Heat treatment details including actual temperature, holding times and cooling rates should be presented in the form of a sketch, if carried out. - Photograph of sketches with complete view showing the weld repair on the entire casting. - Reference to the list of qualified welders and to the approved welding procedure. c. Test results: - Melt analysis. - Mechanical test and its individual value including hardness test - Test report on magnetic particle inspection/dye penetration examination/ultrasonic.			
संस्थापक एवं गोपनीय इस प्रलेख में दी गई सूचना भारत देशी इलेक्ट्रिकल्स की संपत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए ।				
निमांक एवं डिजाइन SIGN & DATE 	10/5/10			
सामग्री सूची संख्या INVENTORY NO. P-3162	REV 02	निर्माणकर्ता WORKED BY SKUMAR		10.5.2010
		जांचकर्ता CHECKED BY TSG		10.5.10

दिनांक एवं हस्ताक्षर SIGN & DATE 		संस्थान क्रय विनिर्देश (हीप - हार्डवेयर) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)		HW 19793 पृष्ठ का Page 6 of 6	
सामग्री सूची संख्या को SUPERSEDES INVENTORY NO.		d. Certification that the casting conform to the specified quantity level. e. Dimensional Report.			
सामग्री सूची संख्या को अधिकृत करता है		14. CLEARANCE FOR DELIVERY 14.1 BHEL evaluates the total results with regard th the intended operational requirements of the casting and judges according to admissibility of deviations, if any, form the properties required in this specification. 14.2 The clearance does not release the supplier from the responsibility for hidden defects which are detected at later stage of manufacturing.			
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		15. IDENTIFICATION MARKING The identification numbers shown in the order and the standardised material designation EN-GJS-400-15U are to be cast on the location shown in the ordering drawing. Other identification mark such as the seal of the customer, the inspector of the supplier of third party agency or works internal details are to be put directly near the identification no. All the keel blocks shall be clearly indentified with the identification number.			
स्वाधिकार एवं गोपनीय इस प्रलेख में की गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इसका प्रलेख एवं अप्रलेख रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए ।		16. PACKING Each casting shall be suitably protected from corrosion and damage during transit by anticorrosive paint HE 1707 (Produced by Central Insulation Technology BHEL Bhopal) or Petrolatom (product of Bharat Petroleum). The overseas suppliers may use Tectyle 506 (produced by M/s Vololine, Germany).			
दिनांक SIGN & DATE 					
सामग्री सूची संख्या INVENTORY NO. P-3162		REV 02		निर्माणकर्ता WORKED BY SSG  1073	
				जांचकर्ता CHECKED BY P.NATH 	

Annexure-3

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

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.

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

(14)

- 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.

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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:



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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 :

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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