



BHEL
Tenders

Government eProcurement System

Tender Details

Date : 08-Nov-2025 12:26 PM

Print

Basic Details

Organisation Chain	Bharat Heavy Electricals Limited HEP - Bhopal Transportation 354 - Material MGT-Tract. Machines		
Tender Reference Number	E5953048, RATE CONTRACT FOR TA9901AZ SLIP RING ASSY TO DRG NO 14302376001 V00 REV 11		
Tender ID	2025_BHEL_54576_1	Withdrawal Allowed	Yes
Tender Type	Open Tender	Form of contract	Supply
Tender Category	Goods	No. of Covers	2
General Technical Evaluation Allowed	No	ItemWise Technical Evaluation Allowed	No
Payment Mode	Not Applicable	Is Multi Currency Allowed For BOQ	No
Is Multi Currency Allowed For Fee	No	Allow Two Stage Bidding	No

Cover Details, No. Of Covers - 2

Cover No	Cover	Document Type	Description
1	Fee/PreQual/Technical	.pdf	SIGNED COPY OF NIT
		.pdf	DULY FILLED FORMAT FOR TECHNO COMMERCIAL ANNEXURE
		.pdf	SIGNED COPY OF REQUIRED DOCUMENTS AGAINST TECHNICAL PQR
		.pdf	SIGNED COPY OF BHEL GTC BP200102B AND PO TERMS
		.pdf	DULY FILLED AND SIGNED ANNEXURE-IX
		.pdf	DULY FILLED AND SIGNED ANNEXURE-A
		.pdf	UDYAM REGISTRATION CERTIFICATE FOR MSE BIDDER
		.pdf	SELF-CERTIFICATION REGARDING MINIMUM LOCAL CONTENT
2	Finance	.xls	PRICE BoQ

Tender Fee Details, [Total Fee in ₹ * - 0.00]

Tender Fee in ₹	0.00		
Fee Payable To	Nil	Fee Payable At	Nil
Tender Fee Exemption Allowed	No		

EMD Fee Details

EMD Amount in ₹	0.00	EMD Exemption Allowed	No
EMD Fee Type	fixed	EMD Percentage	NA
EMD Payable To	Nil	EMD Payable At	Nil

[Click to view modification history](#)

Work /Item(s)

Title	E5953048, RATE CONTRACT FOR TA9901AZ SLIP RING ASSY TO DRG NO 14302376001 V00 REV 11				
Work Description	RATE CONTRACT FOR TA9901AZ SLIP RING ASSY TO DRG NO 14302376001 V00 REV 11				
Pre Qualification Details	Please refer Tender documents.				
Independent External Monitor/Remarks	NA				
Show Tender Value in Public Domain	No				
Tender Value in ₹	40,00,000	Product Category	Electrical Work/ Equipment	Sub category	NA

Contract Type	Rate Contract	Bid Validity(Days)	90	Period Of Work(Days)	365
Location	BHEL BHOPAL	Pincode	462022	Pre Bid Meeting Place	NA
Pre Bid Meeting Address	NA	Pre Bid Meeting Date	NA	Bid Opening Place	BHEL BHOPAL
Should Allow NDA Tender	No	Allow Preferential Bidder	No		

Critical Dates

Publish Date	08-Nov-2025 01:00 PM	Bid Opening Date	18-Nov-2025 02:00 PM
Document Download / Sale Start Date	08-Nov-2025 01:00 PM	Document Download / Sale End Date	18-Nov-2025 02:00 PM
Clarification Start Date	NA	Clarification End Date	NA
Bid Submission Start Date	08-Nov-2025 01:00 PM	Bid Submission End Date	18-Nov-2025 02:00 PM

Tender Documents

NIT Document	S.No	Document Name	Description	Document Size (in KB)	
	1	Tendernotice_1.pdf	NIT	800.77	
Work Item Documents	S.No	Document Type	Document Name	Description	Document Size (in KB)
	1	Tender Documents	TenderDocuments.rar	COMPLETE TENDER DOCUMENT IN RAR FILE	15280.14
	2	BOQ	BOQ_58935.xls	Price BoQ	249.50

Bid Openers List

S.No	Bid Opener Login Id	Bid Opener Name	Certificate Name
1.	ratna1@bhel.in	RATNA RAKESH DAS	Ratna Mandal
2.	manendra1@bhel.in	Manendra Singh	Manendra Singh
3.	manojdubey@bhel.in	MANOJ KUMAR DUBEY	Manoj kumar Dubey
4.	ranjana1@bhel.in	RANJANA PARTE	Ranjana Parte

GeMARPTS Details

GeMARPTS ID	S1091LGERWHX
Description	TA9901 SLIP RING ASSY
Report Initiated On	04-Nov-2025
Valid Until	04-Dec-2025

Tender Properties

Auto Tendering Process allowed	No	Show Technical bid status	Yes
Show Finance bid status	Yes	Stage to disclose Bid Details in Public Domain	Technical Bid Opening
BoQ Comparative Chart model	Normal	BoQ Compartive chart decimal places	3
BoQ Comparative Chart Rank Type	L	Form Based BoQ	No

TIA Undertaking

S.No	Undertaking to Order	Tender complying with Order	Reason for non compliance of Order
1	PPP-MII Order 2017	Agree	
2	MSEs Order 2012	Agree	

Tender Inviting Authority

Name	MANENDRA SINGH
Address	MM TPTN BLK9

Tender Creator Details

Created By	Manendra Singh
Designation	Dy Mgr
Created Date	08-Nov-2025 12:18 PM

 BPC 0007	ENQUIRY TWO PART BID E-TENDER	भारत हेवी इलेक्ट्रिकल्स लिमिटेड, पिपलानी, भोपाल- ४६२०२२ (भारत) सामग्री प्रबंधन विभाग BHARAT HEAVY ELECTRICALS LIMITED, PIPLANI, BHOPAL-462022 (INDIA) MATERIALS MANAGEMENT DIVISION					ENQUIRY NO E5953048 ENQUIRY DATE 08/11/25 ENQUIRY DUE DATE 18/11/25				
		TIN NO- 23573000001	ECC NO- AAACB4146PXM009	MPCT NO- HEL/05/01/0001/S15/11/79							
		PHONE NO : 91-755-2500100		FAX : 91-755-2500023		www.bhel.com					

SUPP NAME AND ADDRESS	SUPP CODE	REV CD	REV NO	REV DATE	NO OF CATY2	NO OF CATY3	ENQ NO OF ITEMS	INDENT NO
	0	1	0	NA	1	2	1	121351133
	GUARANTEE CERTIFICATE		Y	SUPPLY CONDITION		SUPPLIER'S IDENTIFICATION MARK SHOULD BE		
	TEST CERTIFICATE		Y			ON EACH JOB.		
	INSTRUCTION BOOKLET		N	TECHNICAL CONDITION		AS PER DRG.		
	SAMPLE		N					
	GATE PASS		Y	INSPECTION CONDITION		BHEL AUTHORISED TPIA AT VENDOR WORKS.		

NOTE: QUOTE PRICE BOTH IN FIGURES & WORDS. IN CASE OF MISMATCH PRICE IN WORDS WILL BE VALID, QUOTATIONS NOT BEARING ENQUIRY NO AND DUE DATE LIABLE TO BE REJECTED.

SL NO	MATERIAL CODE	DESC	UNIT	ITEM QTY	QTY VR%	LOT NO	LOT QTY	DEST	DELIVERY DATE
1	BP9094676907	TA9901AZ SLIP RING ASSY TO DRG NO 14302376001 V00 REV 11. TO BE SUPPLIED IN PROPER PACKING. ONE NO IN EACH PACKING.	NO	40.000	30	1	20.000	213	04/01/26
						2	20.000	213	04/02/26

REMARK AS PER E TENDER ON NIC

DRAWING	Y	PURCH SPEC	Y	CATALOUGE	N	Quality Surveillance Plan	Y	TWO PART BID	Y
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NOTE: BHEL, BHOPAL'S Standard Terms & Conditions BP200102 (Latest Revision) form a part of this Enquiry. Bidders may obtain from us copies of these terms and conditions if not already available.

Note: During Bid Evaluation, No loading of price with regard to preferential payment of within 45 days will be made on vendore falling under MSMED ACT - OCT 06

Please submit your lowest quotation in sealed envelop essentially superscribed with ENQUIRY NO, DUE DATE AND PARTY'S NAME so as to reach at TENDER ROOM, GROUND FLOOR, ADM BUILDING, BHEL, PIPLANI BHOPAL-462022 by 11.00 am of due date.	SPECIAL REMARK: Bid to be submitted through e-procurement. Refer eproc link on BHEL Bhopal B2B site.
1.This is only a request for Quotation & not an order. 2.Small Scale industries should indicate SSI Regn. No. in Quotation/invoice. 3.In case you are not making an offer against this Enquiry, we request you to post a regret letter. 4.Indian vendors to please indicate GSTIN on their quotation.	Documents Enclosed 1.Drawing. 3.Purchase specification. 2.Catalogue. 4.Quality Surveillance Plan.
NAME : SHRI MANENDRA SINGH DESG : DY.MANAGER 0755-2505880 manendra1@bhel.in	
SIGN & SEAL	

ENQUIRY



MATERIAL MANAGEMENT - TRACTION MACHINES
HEAVY ELECTRICAL PLANT, BHOPAL
BHARAT HEAVY ELECTRICALS LIMITED

BHEL ENQUIRY NO. E5953048
DUE ON 18-11-2025

NIT TERMS & CONDITIONS:

SL. NO.	DESCRIPTION	DETAILS
1.	RATE CONTRACT TERMS	We intend to enter into a Rate Contract (RC) for ordering up to 12 months from RC freeze date, i.e. RC is to be kept valid for ordering up to 12 months from RC freeze date. Purchase Ordering shall be done as per BHEL requirement against the finalised rate contract & within its validity. Dispatches to be made against our purchase order (computerized) only, which will be issued against this Rate Contract. BHEL reserves the right to cancel/ short close the Rate Contract for unordered qty at any point of time even before the expiry of RC validity without assigning any reason whatsoever it may be.
2.	ITEM DESCRIPTION	TA9901AZ SLIP RING ASSY TO DRG NO 14302376001 V00 REV 11. TO BE SUPPLIED IN PROPER PACKING. ONE NO IN EACH PACKING.
3.	TECHNICAL CONDITION	As per attached list of attached Drgs, SPEC & PQR.
4.	QUANTITY	40 Nos
5.	QUANTITY VARIATION	± 30%
6.	SPLITTING OF ORDER	Not Applicable
7.	DELIVERY SCHEDULE REQUIREMENT	FOR THE FIRST LOT OF 20 NOS SCHEDULED DELIVERY DATE SHALL BE WITHIN 60 DAYS FROM THE PO DATE AND THEREAFTER FOR EACH SUBSEQUENT LOT OF 20 NOS. SCHEDULED DELIVERY DATE SHALL BE WITHIN 30 DAYS FROM THE SCHEDULED DELIVERY DATE OF THE PREVIOUS LOT. EARLY DELIVERY ACCEPTABLE.
8.	DELIVERY TERMS	FOR Destination (BHEL Bhopal)
9.	DELIVERY INSTRUCTION	Supplier identification (viz. Vendor code, PO number, sn etc) is compulsory on each job.
10.	QAP	Applicable as attached with the tender
11.	INSPECTION CONDITION	By BHEL authorised TPIA at vendors works.
12.	SAMPLE	As per attached Drg, Spec & QAP. (As applicable)
13.	TEST CERTIFICATE	All Material TC with TPIA inspection report to be supplied along with material as per drg, Spec & QAP. and TC should incorporate Spec.
14.	GUARANTEE / WARRANTY	As per BHEL GTC of ENQUIRY (BP200102B, Cl. No. 18)
15.	GUARANTEE/ WARRANTEE CERTIFICATE	GUARANTEE/ WARRANTEE Certificate to be supplied along with each lot of the material.



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16.	INVOICE & DOCUMENTS SUBMISSION FOR PAYMENT.	For supply orders placed on Indian Suppliers: Irrespective of the value of the invoice amount, the bidder / vendor should necessarily upload the despatch & invoice details on BHEL SUVIDHA portal at https://suvidha.bhel.in/suvidha/, prior to despatch. All documents as per PO checklist, along with additional documents (if any), must be uploaded on the portal. It is mandatory that tax invoices with a net amount (including taxes) exceeding Rs five lakhs uploaded on the portal are digitally signed using a Class 3 Digital Signature Certificate (DSC) issued by a licensed Certifying Authority. Submission of invoice document in hard copy is allowed for invoices with a net amount (including taxes) equal to and upto Rs five lakhs, in case they were not digitally signed and uploaded on the portal. The material will not be accepted inside BHEL in absence of the above.
17.	PAYMENT TERMS	As per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 16) i.e. 100% payment in 90 days of receipt (45 days for Micro & Small and 60 days for Medium enterprises as registered in Udyam Certificate as per relevant MSME act in force) and subject to acceptance of material and relevant documents at BHEL. Any deviation from the above payment terms, if accepted (by BHEL), shall be loaded @ REPO rate + 4% for the purpose of bid evaluation.
18.	TECHNICAL PQR (T-PQR)	Technical Pre-Qualification Requirements (T-PQR) for procurement of the items is attached with the NIT. Compliance of all the points in T-PQR is mandatory. In absence of compliance of above and non-submission of documents required against the T-PQR, the Vendor's offer is liable to be rejected. Duly filled T-PQR with desired documents shall be submitted by the Vendor along with the offer. <i>Information/ compliance/ documents submitted by vendor shall be authentic in all aspects. In case any deviation/ false information/ forged documents are observed / revealed later on, BHEL is free to initiate appropriate punitive proceeding against the Vendor as per Prevalent Processes and Guidelines of Company.</i>
19.	FINANCIAL PQR (F-PQR)	Not Applicable
20.	BID PARTS	Offer shall be submitted by the bidders in Two Parts, i.e. Part-I Technical cum Commercial bid & Part-II Price bid.
21.	PENALTY / LD	As per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 9) i.e. 0.5% of the undelivered portion per week of delay or part thereof, subject to a maximum of 10% of the undelivered order value owing to delayed delivery. Any deviation from the above terms, if accepted (by BHEL), shall be loaded @ Repo rate + 4% (at offered value) to the extent to which it is not agreed to, by the bidder for the purpose of bid evaluation.
22.	PRICE BASIS	Firm Price basis
23.	PRICING TERMS	As per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 12)
24.	PRICE VALIDITY	As per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 13) i.e. Offer shall be valid for a period of 90 days from the date of Techno- commercial (Part-I) bid opening date.



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25.	TAXES & DUTIES	As per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 14)
26.	EVALUATION CRITERIA	Overall L1 basis
27.	EVALUATION IN CASE OF MORE THAN ONE L-1 BIDDER	In the course of evaluation, if more than one bidder happens to occupy L-1 status, effective L-1 will be decided by soliciting discounts from the respective L-1 bidders. In case more than one bidder happens to occupy the L-1 status even after soliciting discounts, the L-1 bidder shall be decided by a toss/draw of lots, in the presence of the respective L-1 bidder(s) or their representative(s). Ranking will be done accordingly. Decision of BHEL in such situations shall be final and binding.
28.	BID SECURITY/ Earnest Money Deposit (EMD)	Not Applicable
29.	PERFORMANCE SECURITY (PBG)	Not Applicable
30.	REVERSE AUCTION	Applicable It is declared upfront that this Enquiry shall be subjected to Reverse Auction (RA). Bidders may kindly note the Reverse Auction (RA) field as mentioned and asked for in enquiry template & ensure to proceed with choosing "YES" against same when asked during submission of their offer to give their acceptance for participation in RA. "BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com) for this tender. RA shall be conducted among the techno- commercially qualified bidders. Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered for RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking."
31.	MSE PREFERENCE	Applicable as per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 29)
32.	PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA)	Applicable as per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 33). For this procurement, the local content to categorize a supplier as a Class I local supplier/ Class II local Supplier/ Non-local supplier and purchase preference to Class I local supplier, is as defined in Public Procurement (Preference to Make in India), Order 2017 dated 19.07.2024 issued by DPIIT. In case of subsequent orders issued by the nodal ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of Part-II bids against this NIT The local content to categorize a supplier as a Class-I local supplier / Class-II local supplier / Non-Local supplier and purchase preference to Class-I local supplier, is as defined in above circular issued by DPIIT/ Nodal Ministry.



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		Bidders to also inform the Actual Percentage of the Local Content and the Complete Address of the Location of Local Value Addition as per the attached MII format, failing which no purchase preference shall be granted. In case the bid value is more than Rs. 10 Crore, the declaration relating to the Actual Percentage of the Local Content and the Complete Address of the Location of Local Value Addition shall be Certified by the Statutory Auditor or Cost Auditor, if the OEM is a Company and by a Practicing Cost Accountant or a Chartered Accountant for OEM other than Companies as per the above circular. For contracts valuing more than Rs 10 Crores, local content (in cases of self-certification submitted by bidders at the time of tendering) will be re-verified during execution of contract by Cost/ Chartered Accountant/ Statutory Auditor/Cost Auditor (as applicable) and in case of defaults, penalty upto 10% of the contract value shall be imposed. However, contract once awarded shall not be terminated on this account. <i>Bidders or successors can be debarred for false declarations for up to 2 years. Debarred suppliers not eligible for preference in any other procuring entity.</i>
33.	INTEGRITY PACT (IP)	Not Applicable
34.	RESTRICTION UNDER RULE 144 (xi) GFR	As per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 34)
35.	CONFLICT OF INTEREST AMONG BIDDERS/ AGENTS AND THEIR DECLARATION	A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. Bidders having a conflict of interest shall not be eligible to participate in the tender process. Treatment of cases regarding conflict of interest: - The bidder notes that a conflict of interest would said to have occurred in the tender process and execution of the resultant contract, in case of any of the following situations: - i) If its personnel have a close personal, financial, or business relationship with any personnel of BHEL who are directly or indirectly related to the procurement or execution process of the contract, which can affect the decision of BHEL directly or indirectly; ii) The bidder (or his allied firm) provided services for the need assessment/ procurement planning of the Tender process in which it is participating; iii) Procurement of goods directly from the manufacturers /suppliers shall be preferred. However, if the OEM/ Principal insists on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer/ supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer/ supplier or the manufacturer/ supplier could bid directly but not both. In case bids are received from both the manufacturer/ supplier and the agent, bid received from the agent shall be ignored. However, this shall not debar more than one Authorised distributor (with/ or without the OEM) from quoting



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		equipment manufactured by an Original Equipment Manufacturer (OEM) in procurements under a Proprietary Article Certificate. iv) A bidder participates in more than one bid in this tender process. Participation in any capacity by a Bidder (including the participation of a Bidder as a partner/ JV member or sub-contractor in another bid or vice-versa) in more than one bid shall result in the disqualification of all bids in which he is a party. However, this does not limit the participation of an entity as a sub-contractor in more than one bid if he is not bidding independently in his own name or as a member of a JV. The Bidder declares that they have read and understood the above aspects, and the bidder confirms that such conflict of interest does not exist and undertakes that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s), in this regard. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Bidder is found having indulged in above activities, the same will be considered as a violation of the tender conditions, and suitable action shall be taken by BHEL as per extant policies/ guidelines.
36.	ANNEXURE-IX	The Bidder/Supplier/Contractor will, when presenting his bid, declare whether other Family Firms or Sister Concern Affiliates/Subsidiary firms are participating in the same tender, so as to eliminate the possibility of cartel formation. Format for declaration is available in the NIT documents for this enquiry (Annexure-IX). Same is to be submitted with the offer.
37.	SPECIAL CONDITIONS	Bidders who fall under MSE (Micro & Small Enterprises only) and fail to upload 'UDYAM Registration Certificate (URC)' shall automatically be considered as Non-MSE supplier for this tender. Further, it is to be noted that MSE benefits are not being extended to Agent/ Dealer/ Trader/ Distributor (i.e. Other than manufacturer). Supplier has to also provide supporting document(s) such as Agreement Between OEM & Bidder(s) etc. Identification must. Soon after rejection of material, it is to be ensured by supplier that material should be taken back maximum within two weeks after communication for rectification/ replacement & supply back the rectified/ fresh material to BHEL Bhopal within 30 days from rejection. In the event of non-lifting of rejected material by supplier, BHEL will not be responsible for loss of such items to the supplier in any case. Offers of suppliers who are in 'HOLD/BANNED' status in BHEL Bhopal PMD shall not be considered. Unregistered vendors to submit documents required for registration to BHEL Portal Online (https://bhel.com/supplier-registration).
38.	OTHER TERMS & CONDITIONS	Other Terms & Conditions as per attached BHEL GTC of ENQUIRY (BP200102B). Any deviation of NIT, BHEL GTC of ENQUIRY (BP200102B) and BHEL PO Terms, where vendor response is not affirmative to be clearly indicated, else BHEL will consider that all above Terms & Conditions are acceptable to vendors.



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39.	GEM REGISTRATION	As you are kindly aware that Government e-Marketplace (GeM) is a one stop portal to facilitate Online Procurement of Goods & Services required by various Government Departments/ Organizations/ PSUs. BHEL being a PSU, would like that its suppliers/ contractors also have visibility on this portal so that GeM can be used for procurement by BHEL. Hence, you are requested to get yourselves registered on GeM.
40.	TENDER FEE	Not applicable
41.	BID SUBMISSION WITHIN DUE DATE & TIME	No request for extension of tender due date will be entertained at the time of tender opening and after due date under any circumstances. Hence, all bidders are requested to submit their bid well within due date and time only. <i>BHEL reserves the right for extension of tender based on the situation without assigning any reason whatsoever it may be.</i>
42.	DOCUMENTS TO BE FURNISHED ALONG WITH YOUR QUOTATION	Signed and Sealed copy of: - NIT - BHEL GTC of ENQUIRY (BP200102B) - BHEL PO Terms Duly Filled, Signed and Sealed copy of: - Techno-Commercial Annexure - T-PQR along with all supporting documents - Annexure-IX in Company Letterhead - Annexure-A - OEM & MSE Declaration - PPP-MII Certificate for local content Others: - UDYAM Registration Certificate (<i>as applicable for MSME bidders only</i>)
43.	INVOICING THROUGH SUVIDHA PORTAL	For supply orders placed on Indian Suppliers, irrespective of the value of the invoice amount, the bidder / vendor should necessarily upload the despatch & invoice details on BHEL SUVIDHA portal at https://suvidha.bhel.in/suvidha/, prior to despatch. All documents as per PO checklist, along with additional documents (if any), must be uploaded on the portal. It is mandatory that tax invoices with a net amount (including taxes) exceeding Rs five lakhs uploaded on the portal are digitally signed using a Class 3 Digital Signature Certificate (DSC) issued by a licensed Certifying Authority. Submission of invoice document in hard copy is allowed for invoices with a net amount (including taxes) equal to and upto Rs five lakhs, in case they were not digitally signed and uploaded on the portal. The material will not be accepted inside BHEL in absence of the above.

IT IS HEREBY MENTIONED THAT THIS IS E-TENDER SO OFFER SUBMITTED THROUGH E-PROCUREMENT PORTAL (www.eprocurebhel.co.in) SHALL ONLY BE CONSIDERED.

Techno-Commercial Annexure
(To be filled by supplier inline with NIT requirement and submit with offer)

Tender No.		E5953048 due on 18/11/2025		
Description :		Item01: TA9901AZ SLIP RING ASSY TO DRG NO 14302376001 V00 REV 11. TO BE SUPPLIED IN PROPER PACKING. ONE NO IN EACH PACKING. TENDER QTY.:- 40 Nos (+/-30%). Delivery required as per NIT.		
Sr. No.	ELEMENTS	Standards	To be offered/confirmed by supplier	Remarks, if any
1	Quotation reference no. & date	As per supplier		
2	HSN / SAC code	As per supplier		
3	Quotation currency	In INR		
4	Contact person	As per supplier		
5	Phone / Mobile	As per supplier		
6	E-Mail	As per supplier		
7	Order to be placed on (Also provide supplier code at BHEL Bhopal, if registered)	As per supplier		
8	Address	As per supplier		
9	Please specify delivery in weeks/ days (Specify item wise, lot wise as per RFQ)	As per NIT/ Accepted with deviation (If select Accepted with deviation, please mention the deviation)		
10	Rate quoted on "Firm" price basis	Yes		
11	Quoted for all the items and full quantity of tender enquiry	Yes / No. (If "No" please mention item number with Qty of regreted items)		
12	Technical specifications	Accepted as per NIT / Accepted with deviation (If select Accepted with deviation, please mention the deviation)		
13	Inspection	As per NIT/ Accepted with deviation (If select Accepted with deviation, please mention the deviation)		
14	Test certificate & Gurantee certificate as per NIT and specification will be submitted along with each consignment	Yes (In case of "No" your offer may be rejected).		
15	Brand name, if any.	As per supplier		
16	Supply from	As per supplier		
17	Terms of delivery ("FOR DESTINATION " means freight & insurance upto destination in supplier's scope (Destination: CRX Divn, BHEL Bhopal)	Accepted/ Accepted with deviation (If select Accepted with deviation, please mention the deviation)		
18	Transit insurance (In supplier's scope)	As per NIT/ Accepted with deviation (If select Accepted with deviation, please mention the deviation)		
19	CGST RATE (IN %)	As per supplier		
20	SGST RATE (IN %)	As per supplier		
21	IGST RATE (IN %)	As per supplier		
22	UGST RATE (IN %)	As per supplier		
23	Are you manufacturer of quoted item (s).	Yes / No		
24	Are you registered under MSMED ACT 2006 as small or micro. NOTE: - Firms registered under medium scale shall not be considered eligible for MSE benefits.	Yes / No (If select Yes, please enclosed valid UDYAM certificate)		

Techno-Commercial Annexure
(To be filled by supplier inline with NIT requirement and submit with offer)

Tender No.		E5953048 due on 18/11/2025		
Description :		Item01: TA9901AZ SLIP RING ASSY TO DRG NO 14302376001 V00 REV 11. TO BE SUPPLIED IN PROPER PACKING. ONE NO IN EACH PACKING. TENDER QTY.:- 40 Nos (+/-30%). Delivery required as per NIT.		
Sr. No.	ELEMENTS	Standards	To be offered/confirmed by supplier	Remarks, if any
25	Terms of Payment (100% payment in 90 days of receipt (45 days for Micro & Small and 60 days for Medium enterprises as registered in Udyam certificate as per relevant MSME act in force) and subject to acceptance of material and relevant documents at BHEL. Pl refer GTC BP200102B)	As per NIT/ Accepted with deviation (If select Accepted with deviation, please mention the deviation)		
26	SELF CERTIFICATION OF MINIMUM LOCAL CONTENT, IF MORE THAN 50% VALUE ADDITION IS IN INDIA. (Note- In case of tenders worth more than Rs. 10 crores, Suppliers shall necessarily submit certificate from statutory auditor or cost auditor or cost accountant or CA) Please also specify the amount of local content in India. EXAMPLE :if 100% INDIGENOUS (MADE IN INDIA) MARK "Y"/100%	As per supplier		
27	Details of location of value addition / manufacturing	As per supplier		
28	Submission of MII_Certificate with duly sealed & signed (Under Public Procurement Policy)	Yes / No		
29	Other Charges (If any)	Applicable / Not Applicable. (If applicable please mention percentage (%) / Value (along with type of charges).		
30	Penalty for delayed performance as per BP200102B & NIT	Yes / No (In case of "No", your offer will be loaded suitably)		
31	Confirmation that documents pertaining to technical PQR has been submitted	Yes / No		
32	Acceptance to "REVERSE AUCTION" if conducted (As per BHEL's RA policy)	Yes / No		
33	Submission of Declaration format with duly sealed & signed (Annexure IX, refer attached) regarding whether other family firms or sister concern affiliates / subsidiary firms are participating in the same tender.	(Yes / No) If No please specify the reason.		
34	Submission of Declaration format with duly sealed & signed (Annexure-A - OEM & MSE Declaration)	Yes / No		
35	General terms and conditions of enquiry (Form No. BP-200102B) and BHEL PO Terms & Conditions is Acceptable.	Yes (In case of "No" your offer may be rejected).		
36	Quotation Validity will be 90 days from the date of techno-commercial bid opening.	Yes / No		
37	Acceptance to Performance Security	Yes / No	Not applicable	

2

SECTION-‘BB’

003, 008

PITCH 12.7
(2 GROOVES PER 25MM)

003, 008

003, 008

IDENTIFY TERMINAL STUDS AND RINGS WITH NUMERALS 1/4 HIGH AS SHOWN. MARK THE OUTBOARD FACE OF EACH RING AT STUD LOCATION DURING ASSEMBLY WITH THE SAME NUMERAL SHOWN ON FACE OF HOUSING.

↗	0.05 A	+0.787
		ø279.4 -0.000

1.6 MAX. 

TOOL LIST

003, 008

BORE Ø116.87 $\begin{matrix} +0.025 \\ -0.000 \end{matrix}$

001

008 011

005

010

THESE SURFACES SHOULD BE
SQUARE WITH BORE OF HOUSING
WITHIN 0.50 TOTAL INDICATOR READING
AFTER ASSEMBLY.

SECTION - 'AA'

Technical drawing of a mechanical part showing dimensions: $29^\circ \pm 1^\circ$, 1.57, 1.90 ± 0.00 , and $+0.25 - 0.00$.

SECTION-‘CC’

BREAK SHARP CORNERS
AFTER FINISH MACHINING.

+0.25	
1.90	
-0.00	
FULL DEPTH	
OBTAINED BY	
127MM RADIA	
TRAVEI	

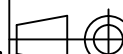
NOTES:—

1. AFTER COMPLETE ASSY. HV TEST ALL THE SLIP RINGS (4 NOS., IT.002) INDIVIDUALLY WITH RESPECT TO SLIP RING HUB (IT.001) AT 5 KV FOR 60 SEC. INSULATION RESISTANCE BEFORE AND AFTER THE HV TEST SHALL BE MORE THAN 1000 MΩ.
2. ITEM TO BE MANUFACTURED AS PER LATEST REVISION OF QA PLAN NO. QTM/QAP/075.
3. WEIGHT OF SLIP RING ASSY. SHOULD BE 33KG ±5%.

[illegible]

REV.	DATE	ALT:	SVB
11	05.09.16	CKD: PT	PT
		APP: VR	VR
ZONE	NOTE 3 ADDED.		
		ZONE	
		B/7	
		C/4	
		IN VIEW (B7 & D5) ITEM NO 006 & 007 INTERCHANGED	
REV.	DATE	ALTERED	CHECKED
03	5.12.13	CHECKED	✓
		APPROVED	✓
ZONE	CONCENTRICITY DIM. 0.05 WAS 0.002 (REF. A-9).		
REV.	DATE	ALTERED	CHECKED
02	04.7.13	CHECKED	✓
		APPROVED	✓
ZONE	NOTE-1 ADDED.		

ADDITIONAL INFORMATION			
SIM DRG NO. 8345866			
STATUS OF DRAWING			
DISTRIBUTION OF PRINTS			
TME -1		TNX -1	
TAM -3			
REV.	DATE	ALTERED	<i>gaut</i>
01	27.7.12	CHECKED	<i>gaut</i>
		APPROVED	<i>V</i>
ZONE	DRG. DIGITIZED & UPLOADED.		

उत्पाद का प्रकार या ग्राहक/परियोजना का नाम TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		TRACTION ALTERNATOR TA9901A2			
 भारत हे वी इलेक्ट्रिकल्स लिमिटेड भोपाल BHARAT HEAVY ELECTRICALS LTD. BHOPAL		ड्राइंग DRN. संख्या NO. (एड) अनुमति APPD.	नाम NAME हस्ता. SIGN S.G. D.K. M.B.	दिनांक/DATE 04.04.02 04.04.02 04.04.02	र.क्र. संख्या NO. OF WR. 01
विभाग DEPT. कोड CODE 405	ऊ.डि.ल. नाप की श्रेणी UNTOL. DIMS. GR.	 अनुपात SCALE NTS	भार WEIGHT (K.G.)	मुद्दे, ड्राइंग का संकेत REF. TO ASSY. DRG.	मद सं. ITEM NO. 01
शीट/का. TITLE		ड्राइंग नं. DRAWING NO.			कुल/REV.
SLIP RING ASSEMBLY		1 430 23 76 001			11
		मुल्य क. SHT. NO. 01			मुद्रांक की संख्या/NO. OF SHT. 01

REV.	DATE	ALTERED CHECKED	SDB PT	مستند مراجعة	REV.	DATE	ALTERED CHECKED	SDB PT	مستند مراجعة	REV.	DATE	ALTERED CHECKED	SDB AS	مستند مراجعة	REV.	DATE	ALTERED CHECKED	SDB AS	مستند مراجعة
09	19.03.18	APPROVED	PT		08	13.02.18	APPROVED	PT		07	15.1.16	APPROVED	AS		06	31.8.15	APPROVED	AS	
ZONE	VIEW UPDATED (REF. B.C.D/1,2,3).				ZONE	DIM. 30(MIN.) WAS NOT ON (C/1). IN BOM IT.011 DRG.NO. 44302376006 WAS NOT ON, IS:1364-PART 3 WAS ON NOTE -2 MODIFIED.				ZONE	TOOL LIST ADDED.				ZONE	DETAIL- 'C' & SECTION- 'DD' DELETED. SECTION- 'AA' UPDATED. SECTION- 'CC' ADDED.			
(TCM-347)																			

8

INVENTORY NO.

SECTION—'AA'

NOTE :-

1. MACHINING ALLOWANCE OF 3-4MM TO BE IN CASTING FOR ALL MACHINED DIMENSIONS.

11

File No. HEP-TPTNOMNX(59)/92/2025-HEP-TAM21300 (Computer No. 242974)
Generated from eOffice by Manoj Kumar Dubey, ENGINEER(MKD)-MNX35400-HEP, ENGINEER, HEP-HEAVY ELECTRICALS PLANT (HEP) on 08/11/2025 08:57 am

000 92 32 034 2 ON.DRG

2

3

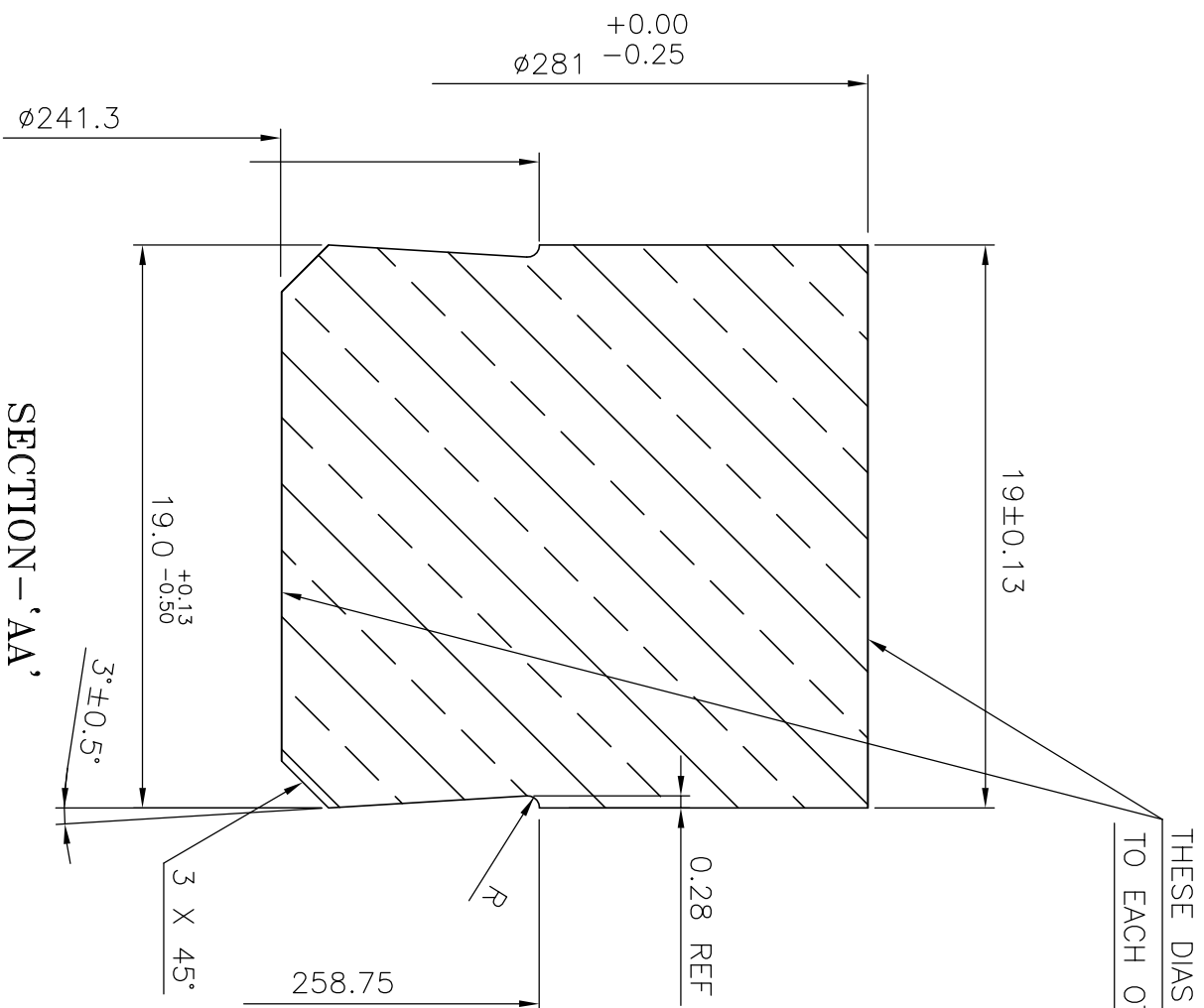
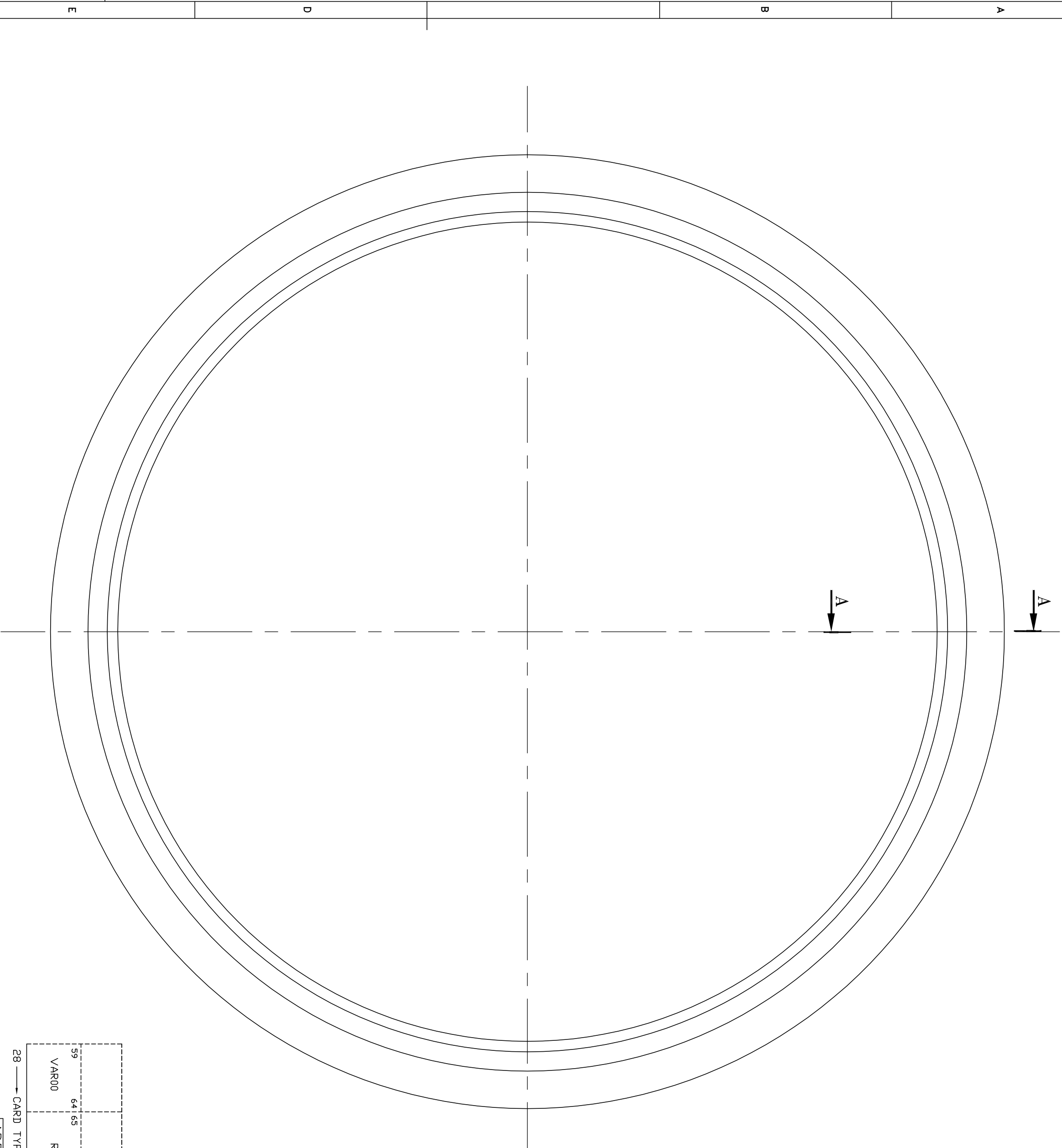
4

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7

8

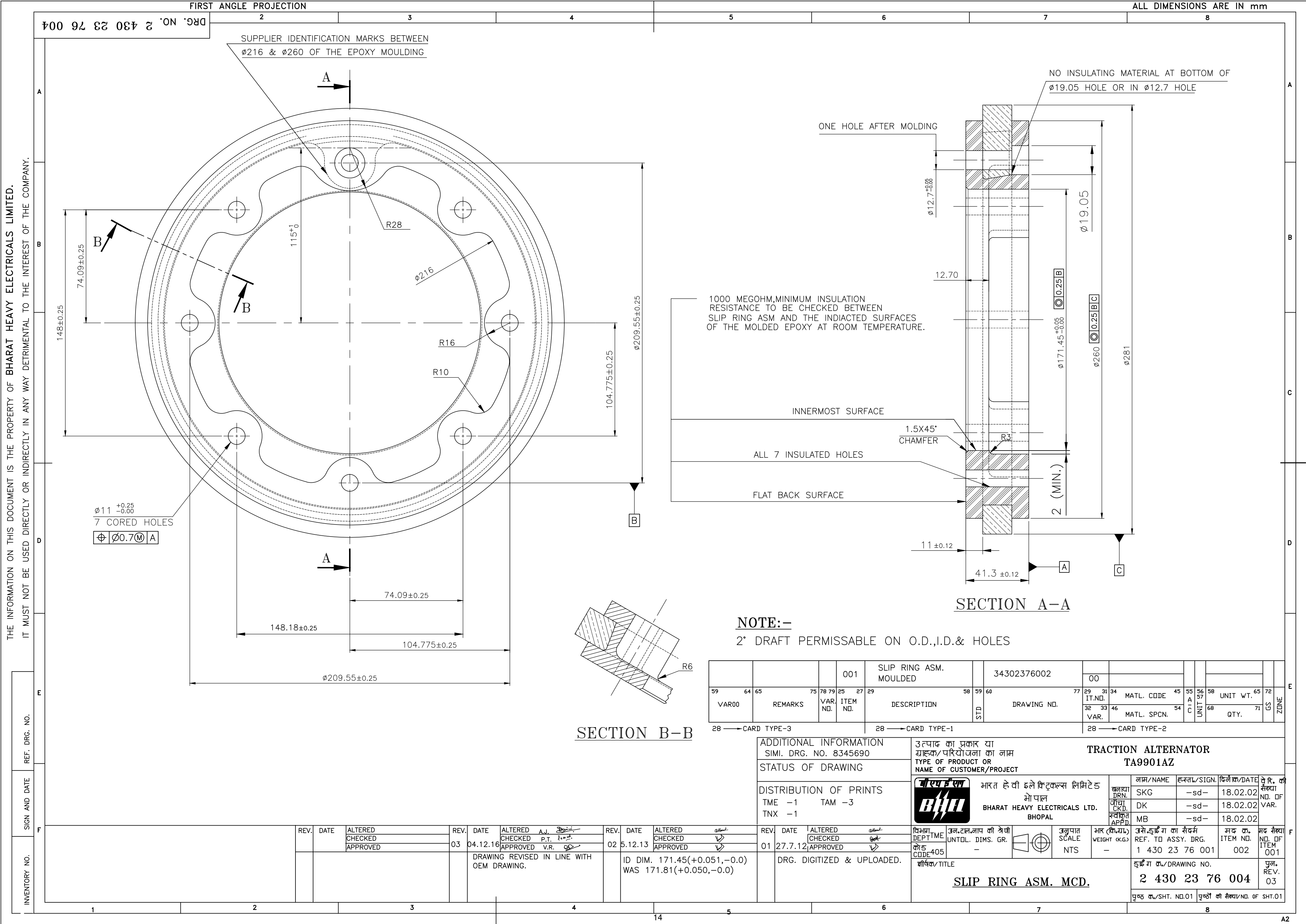


NOTE:-
1. RING TO BE CENTRIFUGALLY CAST.
FINISHED O.D. TO BE FREE OF VOIDS, POROSITY OR NON METALLIC INCLUSIONS.

28 → CARD TYPE-3		28 → CARD TYPE-1		28 → CARD TYPE-2	
59	64 65	75 76 79 85	27 29	001	RING BRONZE
VAR00	REMARKS	VAR. ITEM NO.	DESCRIPTION	SAE 65	
		58 59 60	DRAWING NO.	MATL. CODE	UNIT
		32 33 46	VAR.	MATL. SPCN.	QTY.

ADDITIONAL INFORMATION		3 रचना की प्रकार या		TRACTION ALTERNATOR	
SIM DRG. NO. 8408857		उद्देश्य/परिचयिता की नाम		TA9901AZ	
STATUS OF DRAWING		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT			
DISTRIBUTION OF PRINTS		भारत हेवी इलेक्ट्रिकल्स लिमिटेड			
TME -1		भोपाल			
TNX -1		BHARAT HEAVY ELECTRICALS LTD.			
		BHOPAL			
REV.	DATE	ALTERED	DEPT. TIME	उद्देश्य/परिचयिता की श्रेणी	उद्देश्य/परिचयिता की श्रेणी
01	27.7.12	APPROVED	TM20079	GR. W.	GR. W.
DRG. DIGITIZED & UPLOADED.		कोड/405		कोड/405	
		शीर्षक/TITLE		RING	

INVENTORY NO.		SIGN AND DATE		REF. DRG. NO.		THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.																							
F		E		D		B		A		1		2		3		4		5		6		7		8					
REV.		DATE		ALTERED		CHECKED		APPROVED		REV.		DATE		ALTERED		CHECKED		APPROVED		REV.		DATE		ALTERED		CHECKED		APPROVED	
1		2		3		4		5		6		7		8		9		10		11		12		13		14		15	

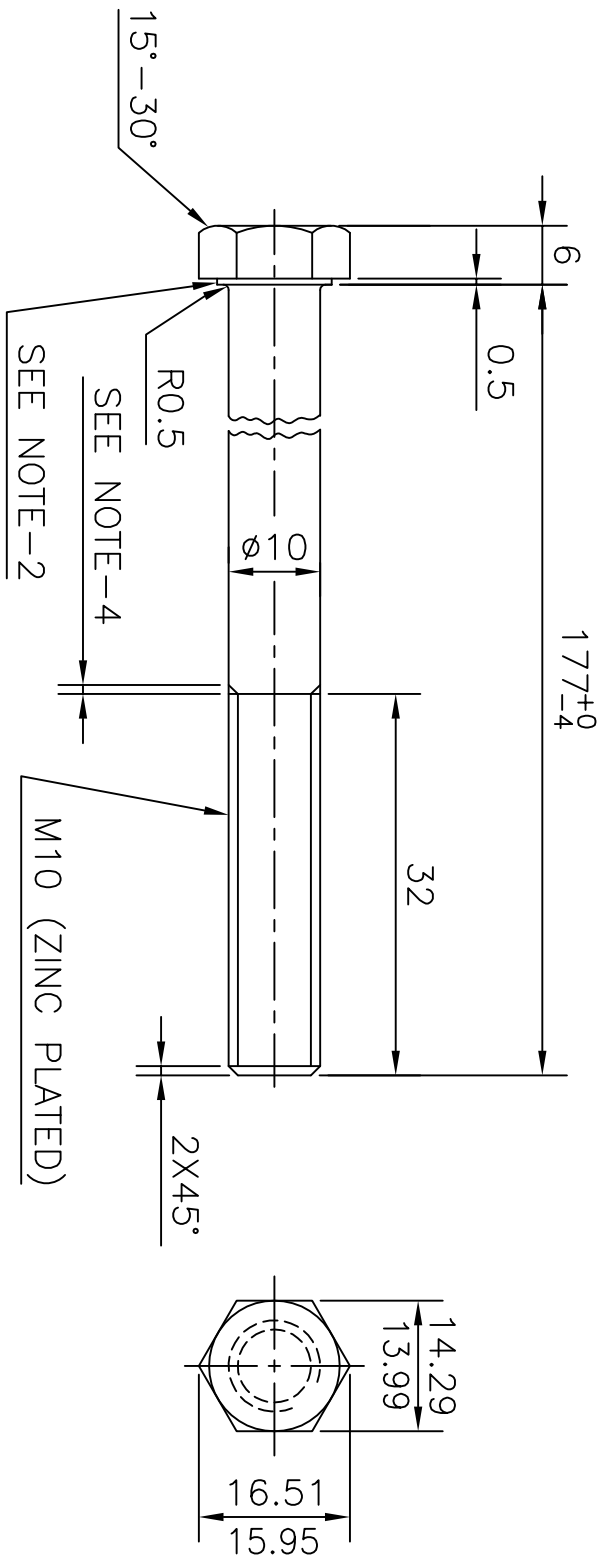


File No. HEP-TPTNOMNX(59)/92/2025-HEP-TAM21300 (Computer No. 242974)
Generated from eOffice by Manoj Kumar Dubey - ENGINEER(MKD)-MNX35400-HEP-ENGINEER-HEP-HEAVY ELECTRICALS PLANT (HEP) on 08/11/2025 08:57 am

DRG. NO. 3 430 23 76 001

NOTES :-

1. TORQUE REQUIREMENTS TIGHTENING TORQUE – 2-3 KG/M.
2. AXIS OF HEAD MUST BE CONCENTRIC WITH AXIS OF BOLT WITHIN 0.86 TIR. BEARING FACE SHALL BE FLAT WITH DIA. OF 12.85-14.27 AND SQUARE WITH BOLT AXIS WITHIN 2° (REF. – 0.457 MAX. TOTAL RUNOUT).
3. MATERIAL TO BE STEEL AS PER IS:1367 GR.8.8
4. FOR THREAD RUNOUT REFER AA0231850.

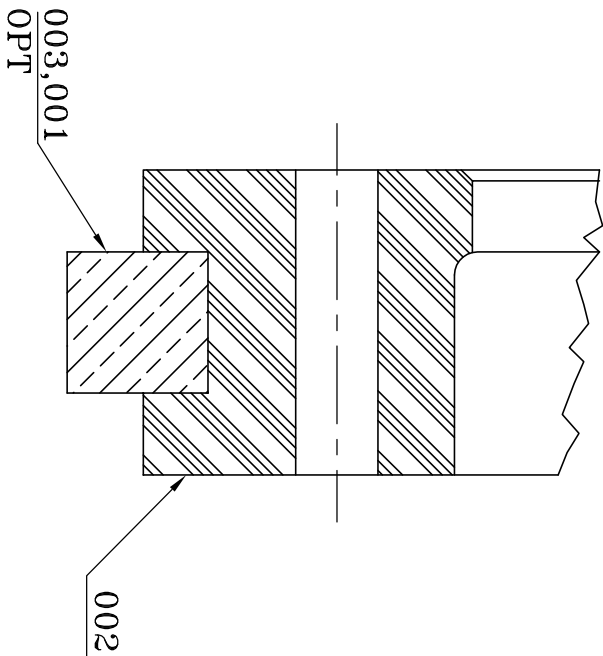


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16

[illegible]

DRG. NO. 3 430 23 76 002



NOTES:—

1. THIS PART NUMBER DEFINES THE MOLDED ASSEMBLY AS IT IS RECEIVED AT EMD. FOR SPECIFICATIONS AND DIMENSIONS,SEE DRAWING NO. 2 430 23 76 004.
2. ALTERNATIVELY IT.003 CAN BE USED IN PLACE OF IT.001

17

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[illegible]

NG ASM		2 430 23 76 005											
D EPOXY								TM02363					
TOR		2 430 23 76 002											
NG													
DESCRIPTION		58 59 60		DRAWING NO.		77 79 31 34		IT.ND.		45 55 56 57 58		UNIT WT. 65 72	
ARD TYPE-1		LS				VAR.		32 33 46		MATL. SPCN.		54 55 56 57 58 68 71	
												ZONE	
उत्पाद का प्रकार या ग्रहण/परियोजना का नाम TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		भारत हेवी इलेक्ट्रिकल्स लिमिटेड भोपाल BHARAT HEAVY ELECTRICALS LTD. BHOPAL		खारा DRN		नाम/NAME		हस्ता/ SIGN		दिनांक/ DATE		वे.रि. की संख्या NO. OF VAR	
विभाग DEPT		उत्प. दर्ज. नाम की श्रेणी UNTD.DIMS. GR.		उत्पाद SCALE		भारत भारती APPD		उत्पाद SCALE		भारत भारती APPD		उत्पाद SCALE	
कोड 405		NTS		NTS		—		—		—		—	
शीर्षक/ TITLE		SLIP RING ASM MOULDED		उत्पाद REF. TO ASSY. DRG.		उत्पाद REF. TO ASSY. DRG.		उत्पाद REF. TO ASSY. DRG.		उत्पाद REF. TO ASSY. DRG.		उत्पाद REF. TO ASSY. DRG.	
		3 430 23 76 002		3 430 23 76 004		3 430 23 76 004		3 430 23 76 004		3 430 23 76 004		3 430 23 76 004	
		पृष्ठ क्र./SHT. No. 01		पृष्ठों की संख्या/ NO. OF SHT. 01		पृष्ठों की संख्या/ NO. OF SHT. 01		पृष्ठों की संख्या/ NO. OF SHT. 01		पृष्ठों की संख्या/ NO. OF SHT. 01		पृष्ठों की संख्या/ NO. OF SHT. 01	

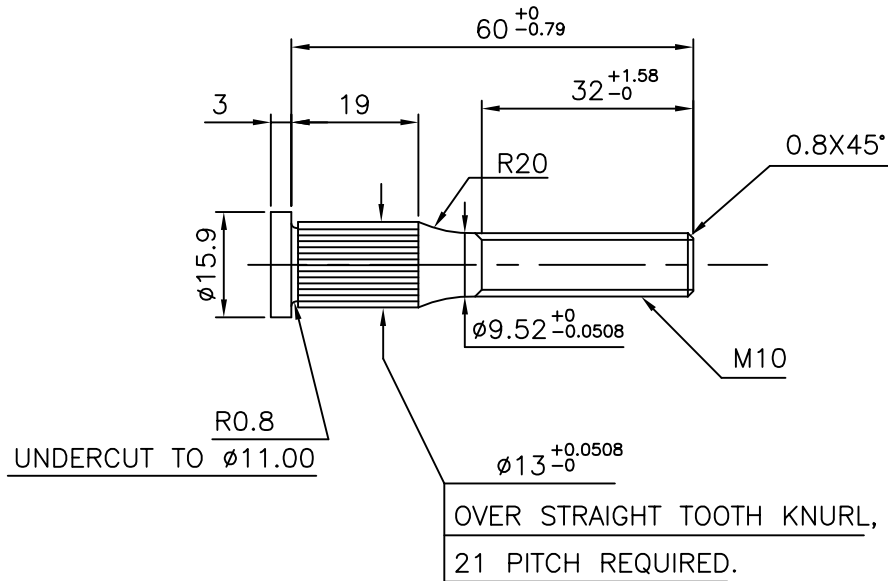
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

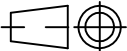
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REV.	DATE	ALTERED	REV.	DATE	ALTERED	ADDITIONAL SIMI. DRG. NO. 8310267
03	27.07.12	CHECKED	02	22.04.03	CHECKED	INFORMATION
		APPROVED			APPROVED	
DRG. DIGITIZED & UPLOADED.			Ø15.9 WAS NOT ON.			STATUS OF DRAWING
						DISTRIBUTION TAM-3 TME-1 OF PRINTS TNX-1

REV.	DATE	ALTERED
04	18.04.15	CHECKED
		APPROVED
MATERIAL SPEC. AA12116 WAS AA12114. THREAD DIMENSION M10 WAS M10-16 UNC-2A THD.		

**NOTE:-**

1. MACHINE ALL OVER.

SIGN. & DATE	REF. DRG. NO.	NOTE:— 1. MACHINE ALL OVER.																										
INVENTORY NO.	VAR. NO.		REMARKS		VAR. NO.		ITEM NO.		DESCRIPTION		STD.		DRAWING NO.		IT. NO.		MATL. CODE		A		UNIT		UNIT WT.		G.S.		ZONE	
बीएचईएल  भारत हेवी इलेक्ट्रिकल्स लिमिटेड भोपाल BHARAT HEAVY ELECTRICALS LTD. BHOPAL														नाम NAME		हस्ता. SIGN		दिनांक DATE		वे. र. की संख्या NO. OF VAR.								
खनपा DRN		SKG		—sd—		18.02.02																						
जीका CKD		DK		—sd—		18.02.02																						
अनुमोदित APPD		M.BHAKTA		—sd—		18.02.02																						
विभाग DEPT		TME		अन. टल. नाप की श्रेणी UNTOL.DIMS. GR.				अनुपात SCALE		भार. कि.ग्रा. WEIGHT (K.G.)		असे.ड्राइंग का संदर्भ REF. TO ASSY. DRG.		मद. क्र. ITEM NO.		मद. संख्या NO. OF ITEM												
कोड CODE		405		—				NTS				14302376001		004		001												
शीर्षक/ TITLE														आरेख क्र./DRAWING NO.				पुन./REV.										
STUD—SLIP RING														4 430 23 76 001				04										
TRACTION ALTERNATOR—TA9901AZ														पृष्ठ क्र./SHT. No. 01				पृष्ठों की संख्या/NO. OF SHT. 01										

(ALL DIMENSIONS ARE IN mm)

[illegible]

1. MACHINE ALL OVER.



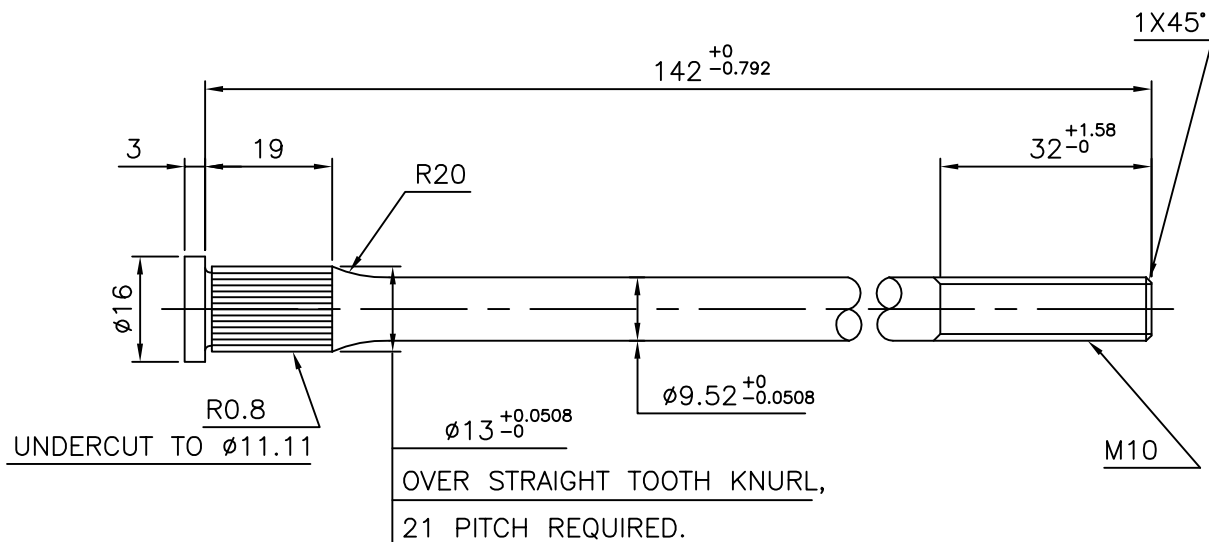
बी एच ई एल
BHEL

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

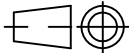
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REV.	DATE	ALTERED	REV.	DATE	ALTERED	ADDITIONAL INFORMATION
02	27.07.12	CHECKED APPROVED	01	26.03.03	CHECKED APPROVED	SIMI. DRG. NO. 8345700
DRG. DIGITIZED & UPLOADED.			MATL SPECN. AA12114 WAS NOT ON. NOTE-1 WAS NOT ON.			STATUS OF DRAWING
						DISTRIBUTION OF PRINTS
						TAM-3 TME-1 TNX-1
REV.	DATE	ALTERED	REV.	DATE	ALTERED	
03	18.04.15	CHECKED APPROVED				
MATERIAL SPEC. AA12116 WAS AA12114. THREAD DIMENSION M10 WAS M10-16 UNC-2A THD.						



NOTE:-

1. MACHINE ALL OVER.

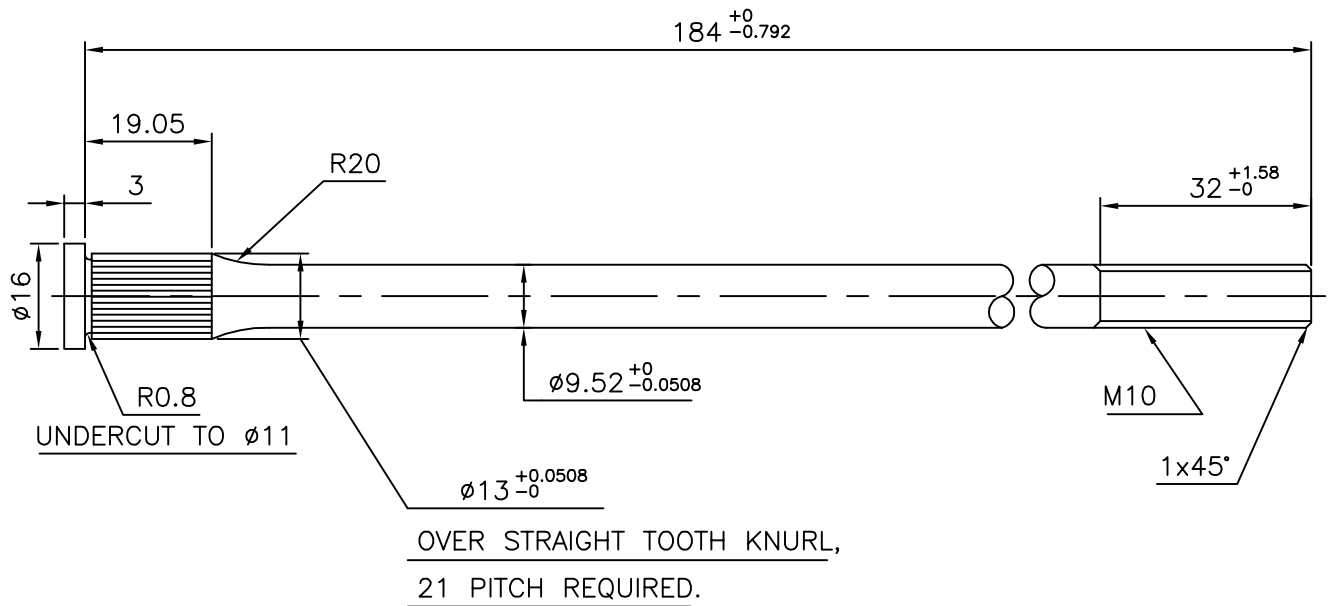
SIGN. & DATE	REF. DRG. NO.																								
	1. MACHINE ALL OVER.																								
INVENTORY NO.	VAR 00		REMARKS		VAR. NO.	ITEM NO	DESCRIPTION		STD.	DRAWING NO.		IT.NO	MATL. CODE		A	UNIT	UNIT WT.		G	ZONE					
												VAR	MATL. SPECN.				QTY.								
	 भारत हेवी इलेक्ट्रिकल्स लिमिटेड भोपाल BHARAT HEAVY ELECTRICALS LTD. BHOPAL												नाम NAME		हस्ता SIGN		दिनांक DATE		वे.रि. की संख्या NO. OF VAR.						
													खनाया DRN		SKG		-sd-				18.02.02				
													जोड़ा CKD		DK		-sd-				18.02.02				
अनुमोदित APPD		M.BHAKTA		-sd-		18.02.02																			
विभाग DEPT TME		अन. टल. नाप की श्रेणी UNTOL.DIMS. GR.				अनुपात SCALE NTS		भार कि.ग्रा. WEIGHT (K.G.)		उपस.ड्राईंग का संदर्भ REF. TO ASSY. DRG. 14302376001				मद क. ITEM NO. 006		मद संख्या NO. OF ITEM 001									
कोड CODE 405		-																							
शीर्षक/ TITLE										STUD-SLIP RING										उपस.क./DRAWING NO.				पुन/REV.	
										TRACTION ALTERNATOR-TA9901AZ										4 430 23 76 003				03	
																				पृष्ठ क्र./SHT. No. 01		पृष्ठों की संख्या/NO. OF SHT. 01			

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

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REV.	DATE	ALTERED	REV.	DATE	ALTERED	ADDITIONAL INFORMATION
02	27.07.12	CHECKED APPROVED	01	26.03.03	CHECKED APPROVED	SIMI. DRG. NO. 8345701
DRG. DIGITIZED & UPLOADED.			MATL SPECN. AA12114 WAS NOT ON. NOTE-1 WAS NOT ON.			STATUS OF DRAWING
						DISTRIBUTION OF PRINTS
						TAM-3 TME-1 TNX-1
REV.	DATE	ALTERED	REV.	DATE	ALTERED	
03	18.04.15	CHECKED APPROVED				
MATERIAL SPEC. AA12116 WAS AA12114. THREAD DIMENSION M10 WAS M10-16 UNC-2A THD.						

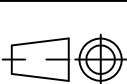
**NOTE:-**

1. MACHINE ALL OVER.

REF. DRG. NO.

SIGN. & DATE

INVENTORY NO.

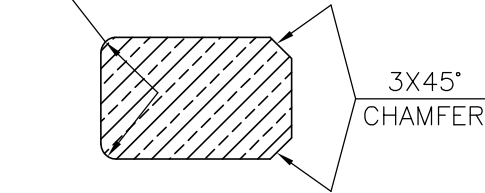
			001	STUD-BRASS				AA12116						
VAR 00	REMARKS	VAR. NO.	ITEM NO	DESCRIPTION	STD.	DRAWING NO.	IT.NO	MATL. CODE	A/C	UNIT	UNIT WT.	G.S.	ZONE	
							VAR	MATL. SPECN.			QTY.			
 भारत हेवी इलेक्ट्रीकल्स लिमिटेड भोपाल BHARAT HEAVY ELECTRICALS LTD. BHOPAL							नाम NAME	हस्ता. SIGN	दिनांक DATE	वे. र. की संख्या NO. OF VAR.				
							खाना DRN	SKG	-sd-	18.02.02				
							जाँचा CKD	DK	-sd-	18.02.02				
							अनुमोदित APPD	M.BHAKTA	-sd-	18.02.02				
विभाग DEPT	TME	अन. टोल. माप की त्रुटि UNTOI.DIMS. GR.			अनुपात SCALE NTS	भार कि.ग्रा. WEIGHT (K.G.)	असे.ड्राईंग का संदर्भ REF. TO ASSY. DRG. 14302376001		मद क. ITEM NO.	मद संख्या NO. OF ITEM				
कोड CODE	405	-							007	001				
शीर्षक/ TITLE STUD-SLIP RING TRACTION ALTERNATOR-TA9901AZ							असे.ड्राईंग का संदर्भ REF. TO ASSY. DRG.				पुन./REV.			
							4 430 23 76 004				03			
							पृष्ठ क./SHT. No. 01				पृष्ठों की संख्या/NO. OF SHT. 01			

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

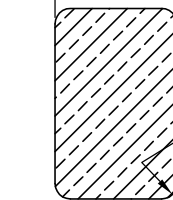
REV.	DATE	ALTERED	REV.	DATE	ALTERED	ADDITIONAL INFORMATION
02	27.07.12	CHECKED APPROVED	01	26.03.03	CHECKED APPROVED	8408858
DRG. DIGITIZED & UPLOADED.			IN BOM MATL SPEC. AA12141 WAS NOT ON. DRG. UPDATED.			STATUS OF DRAWING
						DISTRIBUTION OF PRINTS
						TAM-3 TME-1 TNX-1

2.3±0.8 BLEND R.
(2.5x45° OPTIONAL)



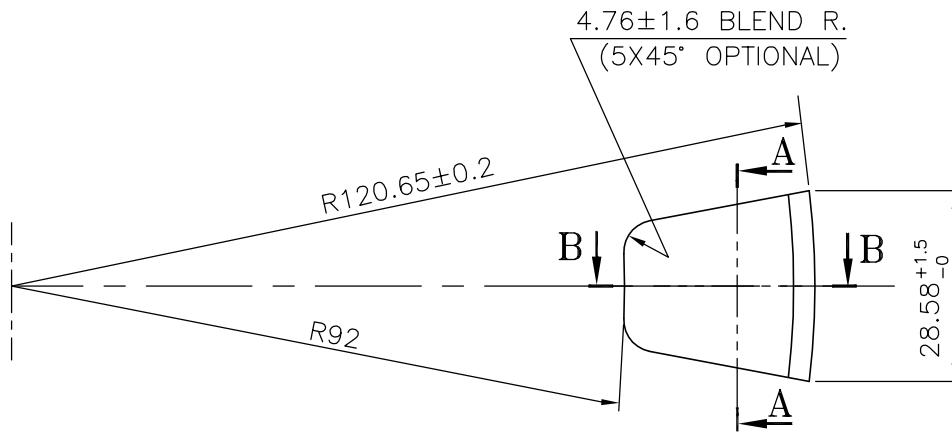
SECTION-BB

18.30±0.13



2.3±0.8 BLEND R.
(2.5x45° OPTIONAL)

SECTION-AA



MAKE FROM CENTRIFUGALLY CAST RING.

VAR 00	REMARKS	VAR. NO.	ITEM NO.	DESCRIPTION	STD.	DRAWING NO.	IT. NO.	MATL. CODE	A/C	UNIT	UNIT WT.	G.S.	ZONE
			001	LUG (BRONZE)				AA12141					
							VAR	MATL. SPECN.			QTY.		



भारत हेवी इलेक्ट्रिकल्स लिमिटेड
भोपाल
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL

नाम NAME	हस्ता. SIGN	दिनांक DATE	वे. र. की संख्या NO. OF VAR.
ड्राफ्ट DRN SKG	-sd-	18.02.02	
जांचा CKD DK	-sd-	18.02.02	
अनुमोदित APPD M.BHAKTA	-sd-	18.02.02	

विभाग DEPT TME	अन. टल. नाप की त्रुटि UNTL.DIMS. GR.	उत्पात SCALE NTS	भार कि.ग्रा. WEIGHT (K.G.)	असे. ड्राईंग का संदर्भ REF. TO ASSY. DRG. 24302376005	मद क. ITEM NO. 002	मद संख्या NO. OF ITEM 001
कोड CODE 405	-					
शीर्षक/ TITLE LUG TRACTION ALTERNATOR-TA9901AZ				आरेख क्र./DRAWING NO. 4 430 23 76 005		पुन./REV. 02
				पृष्ठ क्र./SHT. No. 01	पृष्ठों की संख्या/NO. OF SHT. 01	

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IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

REF. DRG. NO.

SIGN. & DATE

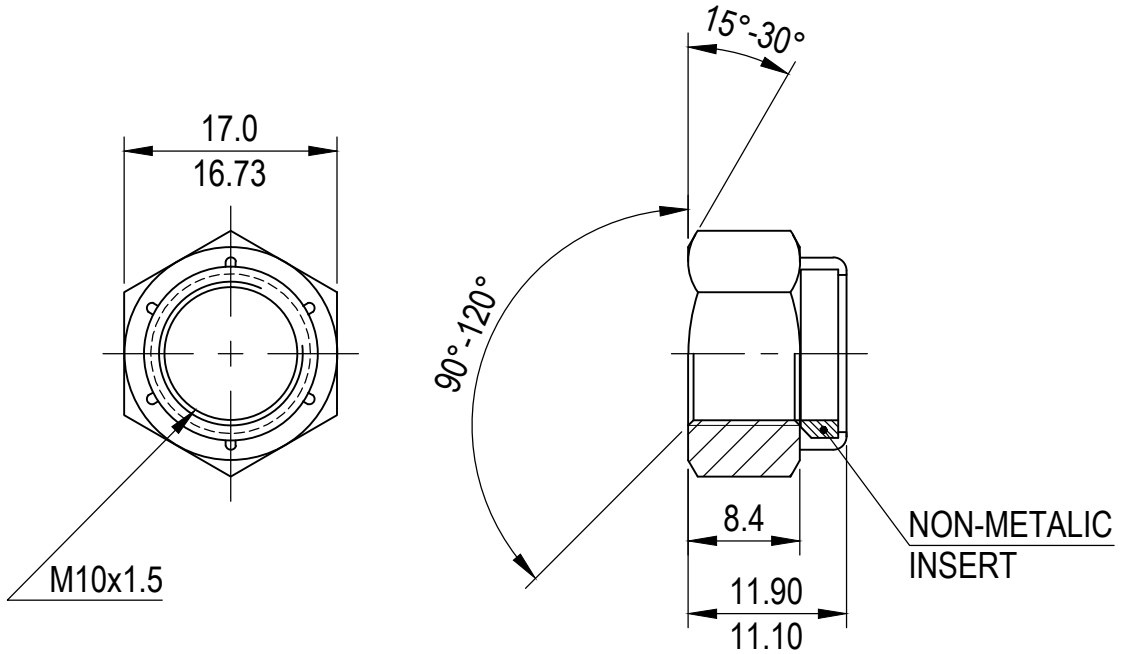
INVENTORY NO.

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WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN mm.

REV.	DATE	ALTERED	REV.	DATE	ALTERED	ADDITIONAL INFORMATION :
		CHECKED			CHECKED	REF.DRG.NO. : -
		APPROVED			APPROVED	
ZONE			ZONE			STATUS OF DRAWING :
						DISTRIBUTION TME-1, TAM-3, OF PRINTS : TNX-1



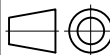
NOTE :-

1. BRASS NUT WITH NON-METALIC INSERT.

REF. DRG. NO.

SIGN. & DATE

INVENTORY NO.

	SEE NOTE-1	001	BRASS NUT SELF LOCK						KG	-																						
						AA12116				-																						
59 64 65	75	25 27	29	58	59	29 31 IT.NO.	34	MATL. CODE	45	55	56 57	58	UNIT WT.	65																		
VAR 00	REMARKS	ITEM NO.	DESCRIPTION		STD	32 33 VAR.	46	MATL. SPCN.	54	A C	UNIT	68	QTY.	71																		
 BHARAT HEAVY ELECTRICALS LTD. BHOPAL <table><tr><td></td><td>NAME</td><td>SIGN</td><td>DATE</td><td rowspan="3">NO. OF VAR.</td></tr><tr><td>DRN.</td><td>S.D.B.</td><td></td><td>15.02.16</td></tr><tr><td>CHD.</td><td>J.K.</td><td></td><td>15.02.16</td></tr><tr><td>APPD.</td><td>J.K.</td><td></td><td>15.02.16</td><td>-</td></tr></table>																NAME	SIGN	DATE	NO. OF VAR.	DRN.	S.D.B.		15.02.16	CHD.	J.K.		15.02.16	APPD.	J.K.		15.02.16	-
	NAME	SIGN	DATE	NO. OF VAR.																												
DRN.	S.D.B.		15.02.16																													
CHD.	J.K.		15.02.16																													
APPD.	J.K.		15.02.16	-																												
DEPT. TME	UNTOL. DIMS. GR.		SCALE	WEIGHT (K.G.)	REF. TO ASSY. DRG.	ITEM NO.	NO. OF ITEM																									
CODE 405	-		NTS	-	1 430 23 76 001	011	001																									
TITLE					DRAWING NO.			REV.																								
BRASS NUT - M10 (SELF LOCKING) TA9901AZ					4 430 23 76 006			00																								
					SHEET NO. 01		NO. OF SHEET 01																									

SIZE A4



CORPORATE STANDARD

AA7151145

Rev. No.07

PAGE 1 of 3

THIN NUTS, HEXAGON, PRODUCT Gr: A COARSE PITCH, BRASS (M1.6 - M16)

1 DESIGNATION

A product Gr. A hexagon, brass thin nut, nominal diameter 4mm, coarse pitch shall be designated as

1.1 On drawings

- i) Material specification column : AA7151145
- ii) Description column : THIN NUT HEX A M4 - BR

1.2 On indents

Thin Nut Hex A M4 - Brass; AA7151145

1.3 For issuing enquiries and on purchase orders

While issuing enquiries and purchase orders, enclose a copy of this BHEL standard.

2 COMPLIANCE WITH STANDARDS

2.1 Dimensions, Tolerances & General Requirements

As per BHEL standard AA7151145

2.2 Material

Brass with minimum tensile strength 395 N/mm² (395 MPa) as specified in IS 319, Gr.1 or Gr.2, Half hard (HB)

2.2.1 These items are to be manufactured from extruded / drawn sections only.

2.3 Threads

- Pitch - coarse to IS 4218, Part 2
- Tolerance quality - Medium
- Tolerance class - 6H

2.4 Identification Marking

As stated in clause 10 of IS 1367 : Part 6

2.5 Surface Discontinuity

As per IS 1367, Part 9 /Sec 1, for General Application.

IS 1367, Part 9 /Sec 2, for Special Application.

2.6 Finish

As specified in BHEL order.

Revisions:

APPROVED:

INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC(F)

Rev. No.07

Amd. No.

Reaffirmed

Prepared

Issued

Dt. of 1st Issue

Dt:22-03-2021

Dt:

Year: 24

HEEP, Haridwar

Corp. R&D

01-01-1977

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AA7151145

Rev. No.07

PAGE 2 of 3

CORPORATE STANDARD**3 NOTE**

- 3.1** For screw threads, general (Metric) refer to BHEL standard AA0231800.
- 3.2** For tolerance grade, position and class refer to BHEL standard AA0230201.
- 3.3** Thin nuts to this standard would be un-plated, divisions wishing to have plated nuts would have to get them plated.
- 3.4** Weights given in this standard are for general reference only and are not meant for commercial transactions.
- 3.5** When fasteners are to be tested with in BHEL, the following sampling plan shall be followed as detailed below, for physical properties

Lot Size	Sample size	Acceptance No.
Upto 1000	5	0
1001 – 3000	8	0
3001 – 10000	13	0
10001 – 35000	20	0
Over - 35000	32	1

4 REFERRED STANDARDS (Latest publications including amendments)

- 1) AA0230201
- 2) IS 4218 Part 2
- 3) AA0231800
- 4) IS 319

EXPLANATORY NOTE

This revision issued with the following changes:

- In Clause 2.4, clause 10 in place of clause 9.

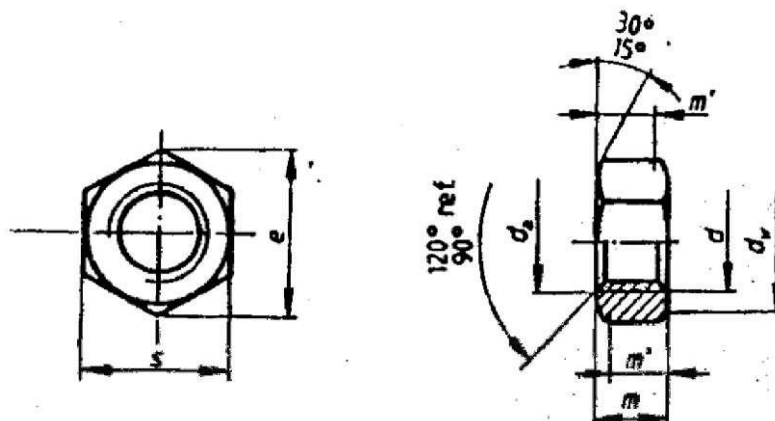


CORPORATE STANDARD

AA7151145

Rev. No.07

PAGE 3 of 3



Note:

- 1) Corporate sub-code Numbers are given in the Table-1
- 2) Weights have been shown in kg per 1000 Nos.

Table 1

All dimensions are in mm

Thread d	Flats s		Corner e Min.	Thickness m		Wrench Height m' Min.	Dia. dw Min.	Dia. da		Sub-code weight
	Max.	Min.		Max.	Min.			Max.	Min.	
M 1.6	3.2	3.02	3.41	1	0.75	0.6	2.1	1.84	1.6	080
M 2	4	3.82	4.32	1.2	0.95	0.8	3.1	2.3	2	098
M 2.5	5	4.82	5.45	1.6	1.35	1.1	4.1	2.9	2.5	101
M 3	5.5	5.32	6.01	1.8	1.55	1.2	4.6	3.45	3	110
M 4	7	6.78	7.66	2.2	1.95	1.6	5.9	4.6	4	012 0.55
M 5	8	7.78	8.79	2.7	2.45	2	6.9	5.75	5	020 0.83
M 6	10	9.78	11.05	3.2	2.9	2.3	8.9	6.75	6	039 1.46
M 8	13	12.73	14.38	4	3.7	3	11.6	8.75	8	047 3.55
M 10	16	15.73	17.77	5	4.7	3.8	14.6	10.8	10	055 7.82
M 12	18	17.73	20.33	6	5.7	4.6	16.6	13	12	063 12.93
M 16	24	23.67	26.75	8	7.42	5.9	22.5	17.3	16	071 22.10

	CORPORATE STANDARD	AA7161002 Rev. No. 04 PAGE 1 of 3			
WASHERS, MACHINED, BRASS					
1 DESIGNATION A machined washer of size 4.3 mm made of brass shall be designated as: 1.1 On drawings i) Material specification column: AA7161002 ii) Description column: WASHER MCD 4.3 - BR 1.2 On indents Washer Machined 4.3 - Brass: AA7161002 1.3 For issuing enquiries and on purchase orders While issuing enquiries and purchase orders, delete BHEL standard number from the above description and add the information given under clause 2. 2 COMPLIANCE WITH STANDARDS 2.1 Dimensions, Tolerances and General requirements As per IS 2016-1967, Table-1, Reaffirmed 2011 2.2 Material Brass as stated in IS 2016 2.3 These items are to be manufactured from extruded/drawn sections only. 2.4 Finish As specified in BHEL order. 3 NOTE 3.1 For machined washers of steel, refer to BHEL standard AA7161001. 3.2 For machined washers of copper, refer to BHEL standard AA7161004. 3.3 Washers to this standard would be un-plated, divisions wishing to have plated washers would have to get them plated. 3.4 For general requirements of washers, refer BHEL standard AA0230408. 3.5 Weights given in this standard are for general reference only and are not meant for commercial transactions.					
Revisions: As per clause 33.5.a) of MOM of MRC-Tools		APPROVED: INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC (F)			
Rev. No. 04	Amd. No.	Reaffirmed	Prepared	Issued	Dt. of 1 st Issue
Dt: 14-03-2016	Dt:	Year: 27	HPEP, Hyderabad	Corp. R&D	01-01-1977

AA7161002

Rev. No. 04

PAGE 2 of 3

CORPORATE STANDARD

3.6 When fasteners are to be tested with in BHEL, the following sampling plan based on IS: 6821 (Table-1), shall be followed for physical properties.

LOT SIZE	SAMPLE SIZE	ACCEPTANCE NO
Up to 1000	5	0
1001 - 3000	8	0
3001 - 10000	13	0
10001 - 35000	20	0
Over 35000	32	1

4 REFERRED STANDARDS (Latest publications including amendment)

- 1) IS 6821
- 2) AA0230408
- 3) AA7161001
- 4) AA7161004

EXPLANATORY NOTE

The following changes have been made in this revision:

- Clause 2.1, year of reaffirmation is added as IS: 2016-1967, Table-1, Reaffirmed 2011.
- Page-3: Table-1; Sub-code against nominal size 2.7 mm is added.

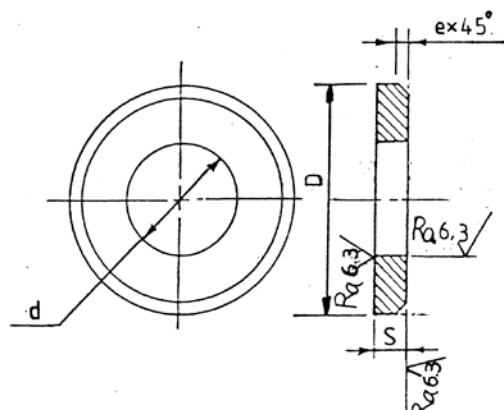


CORPORATE STANDARD

AA7161002

Rev. No. 04

PAGE 3 of 3



NOTE:

- 1) Corporate sub-code numbers are shown below.
- 2) Weights have been shown in kg. / 1000 No.

Table 1

All dimensions are in mm

SIZE NOM. d H12	OUTSIDE DIAMETER (D)		THICKNESS (s)		e Nom.	FOR BOLT OR SCREWS SIZE	Sub – Code Weight
	BASIC	TOL	BASIC	TOL			
1.7	4	+0 -0.3	0.3	± 0.1	0.1	M1.6	
2.2	5	+0 -0.3	0.3	± 0.1	0.1	M2	
2.7	6.5	+0 -0.3	0.5	± 0.1	0.2	M2.5	125
3.2	7	+0 -0.3	0.5	± 0.1	0.2	M3	010 0.12
4.3	9	+0 -0.3	0.8	± 0.1	0.3	M4	028 0.31
5.3	10	+0 -0.3	1.0	± 0.1	0.4	M5	036 0.45
6.4	12.5	+0 -0.4	1.6	± 0.2	0.6	M6	044 1.15
8.4	17	+0 -0.4	1.6	± 0.2	0.6	M8	052 2.22
10.5	21	+0 -0.5	2	± 0.2	0.6	M10	060 4.26
13	24	+0 -0.5	2.5	±0.3	0.6	M12	079 6.69
17	30	+0 -0.5	3	± 0.3	0.6	M16	087 11.90
21	37	+0 -0.8	3	± 0.3	1.0	M20	095
25	44	+0 -0.8	4	± 0.3	1.0	M24	109
31	56	+0 -1.0	4	± 0.3	1.0	M30	
37	66	+0 -1.0	5	± 0.6	1.6	M36	117
43	78	+0 -1.0	7	± 1.0	1.6	M42	
50	92	+0 -1.5	8	± 1.0	1.6	M48	
58	105	+0 -1.5	9	± 1.0	1.6	M56	
66	115	+0 -1.5	9	± 1.0	2.0	M64	
74	125	+0 -1.8	10.0	± 1.0	2.0	M72	
82	140	+0 -1.8	12.0	±1.2	2.5	M80	
93	160	+0 -1.8	12.0	±1.2	3.0	M90	
104	175	+0 -1.8	14.0	±1.2	3.0	M100	
114	185	+0 -2	14	±1.2	3.0	M110	
129	220	+0 -2	16	±1.2	3.0	M125	
144	240	+0 -2	18	±1.2	4.0	M140	

	CORPORATE STANDARD	AA7164001 Rev. No. 05 PAGE 1 of 3
WASHERS, SPRING LOCK, SINGLE COIL, RECTANGULAR SECTION, TYPE - A (WITH BENT ENDS) STEEL		
1 DESIGNATION A single coil, rectangular section, spring lock washer, Type-A (with bent ends) for right hand threads, of nominal size 5 mm, and made of steel shall be designated as: 1.1 On Drawings i) Material specification column: AA7164001 ii) Description column: WASHER SPRING LOCK SC A 5-ST 1.2 On Indents Washer Spring Lock A 5- AA7164001 1.3 For issuing enquiries and on purchase orders While issuing enquiries and purchase orders, delete the corporate standard No, from the above description and add the information given under clause 2. 2 COMPLIANCE WITH STANDARDS 2.1 Dimensions, Tolerances & General Requirements To IS 3063-1994, Type A (Table-1A) Reaffirmed 2010 2.2 Material Spring steel Gr. 3 to Gr.6 as specified in IS 4072 2.3 Heat Treatment and Hardness Spring Lock washer after coiling shall be suitably heat treated, so as to result in the finished washer having a hardness in the range of 430 - 530 HV 2.4 Finish As specified in BHEL order.		
Revisions: As per clause 33.5.a) of MOM of MRC-Fasteners		APPROVED: INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC (F)
Rev. No. 05	Amd. No.	Reaffirmed
Dt: 14-03-2016	Dt:	Year: 30
Prepared HPEP, Hyderabad		Issued Corp. R&D
		Dt. of 1 st Issue 01-04-1993

AA7164001

Rev. No. 05

PAGE 2 of 3

CORPORATE STANDARD**3 NOTE**

- 3.1** For washers spring lock (Type-B) refer corporate standard AA7164002.
- 3.2** Lock washers to this standard would be un-plated, divisions wishing to have plated washers would have to get them plated.
- 3.3** Weights given in this standard are for general reference only and are not meant for commercial transactions.
- 3.4** When the fasteners are to be tested within BHEL, the following sampling plan shall be followed for physical properties.

LOT SIZE	SAMPLE SIZE	ACCEPTANCE No.
Up to 1000	5	0
1001 – 3000	8	0
3001 - 10000	13	0
10000 – 35000	20	0
Over 35000	32	1

4 Referred Standards (Latest Publications including amendments)

- 1) AA7164002
- 2) IS 4072

EXPLANATORY NOTE

The following changes have been made in this revision:

- Clause 2.1, year of Reaffirmation of **IS** changed as IS 3063-1994, Reaffirmed 2010

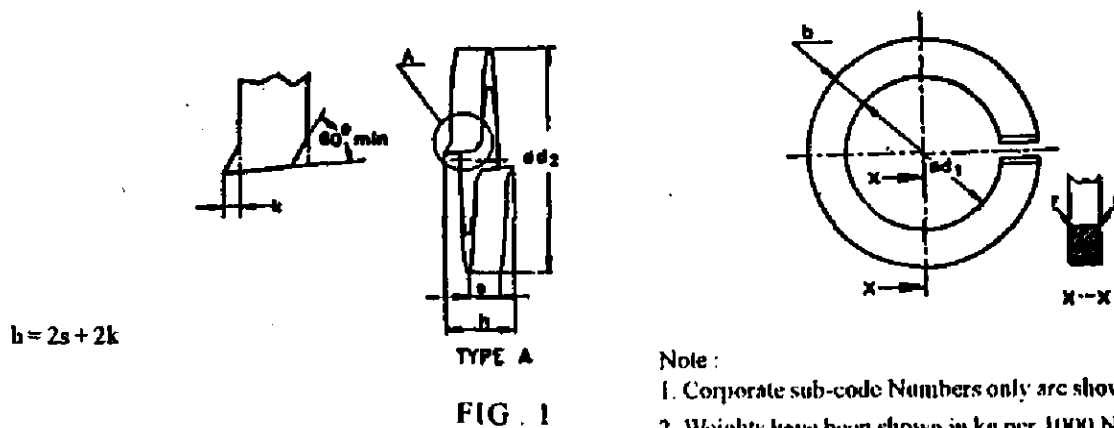


CORPORATE STANDARD

AA7164001

Rev. No. 05

PAGE 3 of 3


Table 1

All dimensions are in 'mm'

Nom. size	Internal Diameter d_1		Outside Dia d_2 Max.	Width b		Thickness s		Radius r Nom.	Bent End k^*	For Bolt Nut or Screw Size	Sub code	Weight
	Basic	Tol. +		Basic	Tol. ±	Basic	Tol. ±					
2	2.1	0.3	4.4	0.9	0.1	0.5	0.1	0.1	-	M2		0.033
2.2	2.3	0.3	4.8	1.0	0.1	0.6	0.1	0.1	-	M2.2		0.050
2.5	2.6	0.3	5.1	1.0	0.1	0.6	0.1	0.1	-	M2.5		0.052
3.0	3.1	0.3	6.2	1.3	0.1	0.8	0.1	0.2	0.15	M3	014	0.11
4.0	4.1	0.3	7.6	1.5	0.1	0.9	0.1	0.2	0.15	M4	022	0.18
5.0	5.1	0.3	9.2	1.8	0.1	1.2	0.1	0.2	0.15	M5	030	0.36
6.0	6.1	0.4	11.8	2.5	0.15	1.6	0.1	0.3	0.2	M6	049	0.83
8.0	8.1	0.4	14.8	3.0	0.15	2.0	0.1	0.5	0.3	M8	057	1.60
10.0	10.2	0.5	18.1	3.5	0.2	2.2	0.15	0.5	0.3	M10	065	2.53
12.0	12.2	0.5	21.1	4.0	0.2	2.5	0.15	1.0	0.4	M12	073	3.82
16.0	16.2	0.8	27.4	5.0	0.2	3.5	0.2	1.0	0.4	M16	081	8.91
20.0	20.2	1.0	33.6	6.0	0.2	4.0	0.2	1.0	0.4	M20	090	15.2
24.0	24.5	1.0	40.0	7.0	0.25	5.0	0.2	1.6	0.5	M24	103	26.2
30.0	30.5	1.2	48.2	8.0	0.25	6.0	0.2	1.6	0.8	M30	111	44.3
36.0	36.5	1.2	58.2	10.0	0.25	6.0	0.2	1.6	0.8	M36		67.3
42.0	42.5	1.2	68.2	12.0	0.25	7.0	0.25	2.0	0.8	M42		111
48.0	49.0	1.5	75.0	12.0	0.25	7.0	0.25	2.0	0.8	M48		123
52.0	53.0	1.5	83.0	14.0	0.25	8.0	0.25	2.0	1	M52		182
56.0	57.0	1.5	87.0	14.0	0.25	8.0	0.25	2.0	1	M56		193
60.0	61.0	1.5	91.0	14.0	0.25	8.0	0.25	2.0	1	M60		203
64.0	65.0	1.5	95.0	14.0	0.25	8.0	0.25	2.0	1	M64	120	218

The bend "k" shall be made on the last length of the washer circumference without any sharp angle.

	CORPORATE PURCHASING SPECIFICATION	AA12141 Rev No. 04 PAGE 1 of 3																					
PHOSPHOR BRONZE RODS AND BARS FOR ELECTRICAL MACHINES																							
1 GENERAL This specification governs the quality requirements of Phosphor bronze rods and bars greater than 6mm.																							
2 APPLICATION Electrical machines.																							
3 CONDITION FO DELIVERY As manufactured. The material shall be suitably stress relieved, if required.																							
4 COMPLIANCE WITH NATIONAL STANDARDS The material shall comply with the requirements of the following national standard and also meet the requirements of this specification. IS : 7811 – 2019 : Phosphor Bronze Rods and Bars. Gr. CuSn5																							
5 DIMENSIONS AND TOLERANCES The dimensions shall be as specified in the order. The tolerances shall be as given in IS:2826 - Dimensions and tolerances for copper & copper alloy rods, bars for general engineering purposes.																							
6 FREEDOM FROM DEFECTS The material shall be free from porosity and other defects of a nature that may interfere with normal commercial operation.																							
7 CHEMICAL COMPOSITION The analysis of copper when analysed in accordance with IS:4027 (Method for chemical analysis of bronzes) or any other conventional/Instrumental methods shall be as follows:																							
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="text-align: left;">Element</th> <th>Percent, min.</th> <th>Percent, max.</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">Tin</td> <td>4.2</td> <td>5.5</td> </tr> <tr> <td style="text-align: left;">Phosphorus</td> <td>0.02</td> <td>0.40</td> </tr> <tr> <td style="text-align: left;">* Lead</td> <td>--</td> <td>0.05</td> </tr> <tr> <td style="text-align: left;">* Zinc</td> <td>--</td> <td>0.30</td> </tr> <tr> <td style="text-align: left;">*Total Impurities</td> <td>--</td> <td>0.5</td> </tr> <tr> <td style="text-align: left;">Copper</td> <td colspan="2">Remainder</td> </tr> </tbody> </table>			Element	Percent, min.	Percent, max.	Tin	4.2	5.5	Phosphorus	0.02	0.40	* Lead	--	0.05	* Zinc	--	0.30	*Total Impurities	--	0.5	Copper	Remainder	
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* Lead	--	0.05																					
* Zinc	--	0.30																					
*Total Impurities	--	0.5																					
Copper	Remainder																						
8 TEST SAMPLES For conducting tests all rods/bars of same dimensions and manufactured under similar conditions of production shall be grouped in batches as follows;																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="3" style="padding: 5px;">Revisions:</td> <td colspan="3" style="text-align: center; padding: 5px;">APPROVED: INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC(NFM+HE)</td> </tr> <tr> <td style="width: 16.6%; padding: 5px;">Rev No.04</td> <td style="width: 16.6%; padding: 5px;">Amd No.</td> <td style="width: 16.6%; padding: 5px;">Reaffirmed</td> <td style="width: 16.6%; padding: 5px;">Prepared HEP, Bhopal</td> <td style="width: 16.6%; padding: 5px;">Issued Corp.R&D</td> <td style="width: 16.6%; padding: 5px;">Dt. of 1st Issue March 1978</td> </tr> <tr> <td style="padding: 5px;">Dt:02-09-2022</td> <td style="padding: 5px;">Dt:</td> <td style="padding: 5px;">Year:</td> <td style="text-align: center; padding: 5px;">33</td> <td></td> <td></td> </tr> </table>			Revisions:			APPROVED: INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC(NFM+HE)			Rev No.04	Amd No.	Reaffirmed	Prepared HEP, Bhopal	Issued Corp.R&D	Dt. of 1 st Issue March 1978	Dt:02-09-2022	Dt:	Year:	33					
Revisions:			APPROVED: INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC(NFM+HE)																				
Rev No.04	Amd No.	Reaffirmed	Prepared HEP, Bhopal	Issued Corp.R&D	Dt. of 1 st Issue March 1978																		
Dt:02-09-2022	Dt:	Year:	33																				

AA12141

Rev No. 04

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CORPORATE PURCHASING SPECIFICATION

Specified size (diameter or width across flats) in mm	Mass of batch in kg
Upto and including 12	250
Over 12 & upto and including 40	500
Over 40 & upto and including 80	1000
Over 80	2000

One sample shall be selected from each batch or part thereof to provide necessary test pieces for chemical, Mechanical, Electrical resistivity.

9 MECHANICAL PROPERTIES

When tested in accordance with IS 1608 (Part-1), (Mechanical testing of metals-Tensile testing), the material shall show the following properties in as received condition:

Cross sectional thickness, mm		0.2% proof stress, min., in N/mm ²	Tensile strength min., N/mm ²	Elongation on G.L. of 5.65 $\sqrt{S_0}$, min., percent
Over	upto & incld.			
6	18	410	500	12
18	40	380	460	12
40	70	315	380	16
70	100	235	315	20
100	120	118	275	22
120	--	80	255	25

10 ELECTRICAL RESISTIVITY

The electrical resistivity at 20°C of a rod of 1 meter in length and uniform cross sectional area of 1 mm² shall be 0.108 ohm $\pm$ 10%.

11 RETEST

Should any of the test pieces first selected, fail to pass the prescribed tests mentioned under various clauses in this specification, two further samples from the same batch shall be selected for testing one of which shall be from the same component from which the original test sample was taken, unless that component has been withdrawn by the supplier.

Should the test pieces from both these additional samples pass, the batch represented by the test sample shall be accepted. Should the test pieces from either of these additional samples fail, the batch represented by the test samples shall be rejected.

12 INSPECTION AT SUPPLIER' WORKS

Whenever specified, tests and inspection are to be conducted in the presence of BHEL's representative.

The supplier shall offer BHEL's representative all reasonable facilities, without charge to satisfy the latter that the material is being furnished in accordance with this specification.

The supplier shall prepare and provide necessary test specimens for testing to be carried out at his premises. If facilities are not available at his works, the supplier shall make necessary arrangements for carrying out the prescribed test elsewhere. The supplier shall notify BHEL in advance about the readiness of the material for inspection and testing.

BHEL reserves the right to test the material at BHEL's works and the final acceptance of the material shall be based on these test results.

13 TEST CERTIFICATES:

Unless otherwise stated, three copies of certificates shall be supplied along with each consignment.

	CORPORATE PURCHASING SPECIFICATION	AA12141
		Rev No. 04
		PAGE 3 of 3

In addition, the supplier shall ensure to send one copy of test certificates along with the dispatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information:

- AA12141, Rev.04: PHOSPHOR BRONZE RODS AND BARS FOR ELECTRICAL MACHINES
- BHEL Order No.
- Manufacturer 's/Supplier's Name:
- Consignment/Identification No.
- Sizes and Quantity Supplied
- Results of dimensional inspection, chemical analysis, mechanical, electrical and all other tests as called for.

14 PACKING AND MARKING

The material shall be supplied in bundles weighing about 50 kg and strapped with loops and suitably packed in wooden crates to prevent corrosion and damage during transit.

Each package or crate shall be legibly marked with the following information:

- AA12141 : PHOSPHOR BRONZE RODS AND BARS FOR ELECTRICAL MACHINES
- BHEL Order No.
- Identification No.
- Weight
- Supplier's Reference and Name

15 REFERRED STADARDS (Latest publications including amendments)

1) IS: 1608 2) IS 2826 3) IS: 4027 4) IS: 7811

	CORPORATE PURCHASING SPECIFICATION		AA77015
			Rev No.03
			PREFACE SHEET

COPPER - PHOSPHORUS BRAZING ALLOY (BA Cu P5)

FOR INTERNAL USE ONLY
REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS

Equivalent/Comparable Standards:

- | | | |
|----|-----------|-----------------------------------|
| 1. | INDIAN | IS 2927-1975
Gr: BA Cu P5 |
| 2. | EURO NORM | DIN EN 1044-1999*
Grade CP102* |

* Nearest Equivalent

User Plants and Replaced Plant Specifications/References:

BHOPAL	P.S.77004-A
HYDERABAD	
HARIDWAR	

Revisions: Brought upto date			APPROVED: INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC(W)		
Rev No.03	Amd No.	Reaffirmed	Prepared	Issued	Dt. of 1 st Issue
Dt:31-05-2017	Dt:	Year:	HEP, Bhopal	Corp.R&D	01-01-1988

DRC-RS113

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CORPORATE PURCHASING SPECIFICATION

AA77015

Rev No.03

PAGE 1 of 2

COPPER - PHOSPHORUS BRAZING ALLOY (BA Cu P5)

1 GENERAL

This specification governs the quality of Copper Phosphorus, Brazing Alloy for general purposes.

2 APPLICATION

Used for joining Copper and Copper alloys. These alloys are not recommended for ferrous and nickel bearing metals. Copper can be brazed without the use of the flux. However, for brazing copper alloys flux may be necessary.

3 CONDITION OF DELIVERY

Forms and sizes shall be as per Purchase Order requirement.

4 COMPLIANCE WITH STANDARDS

This specification is based on

IS 2927 – 1975 : “Specification for Brazing Alloys”
Grade BA Cu P5

5 DIMENSIONS AND TOLERANCES

5.1 Sizes

All dimensions and forms shall be as per the purchase order.

5.2 Tolerances

The variations in dimensions shall comply with table-11 of IS 2927.

6 MANUFACTURE

The brazing alloys may be manufactured by any method that shall yield a product which will be of uniform quality and conform to the requirements of this specification.

7 FREEDOM FROM DEFECTS

The brazing alloys shall be of uniform quality, clean and free from foreign matters.

NOTE — The melting ranges of the filler metals given in IS 2927 are for general information only.

8 TEST SAMPLES

A composite sample of 30 g from each lot of 50 kgs or fraction thereof shall be taken for chemical composition. The sample so selected shall be representative of the lot.

8.1 Samples from wire, strip, shall be taken by sawing or by any other mechanical means through their entire cross section and thoroughly mixed. No lubricant shall be used when sawing or machining.

8.2 Samples of powder or granulated brazing alloys shall contain the grains as supplied.

Revisions:
Brought upto date

APPROVED:
INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC(W)

Rev No.03

Amd No.

Reaffirmed

Prepared

Issued

Dt. of 1st Issue

Dt:31-05-2017

Dt:

Year:

38 HEP, Bhopal

Corp.R&D

01-01-1988

AA77015

Rev No.03

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CORPORATE PURCHASING SPECIFICATION



9 CHEMICAL COMPOSITION

	Min	Max
Silver	14.50	15.50
Phosphorus	4.50	5.00
Copper	Remainder	
Other Elements Total	-	0.15

10 PHYSICAL PROPERTIES

Melting Range (Approx.)

Solidus	Liquidus
643°C	802° C

11 TEST CERTIFICATE

The supplier shall submit 5 copies of test certificate giving the following information

BHEL Order No.

BHEL Spec No. AA77015

Supplier's Name

Chemical composition

Consignment/Identification No.

Size/Form

Cast/Lot No.

12 MARKING AND IDENTIFICATION

On each straight length of wire/strip/powder the classification/grade shall be embossed or stamped at one end for positive identification. Alternatively an adhesive label shall be affixed carrying the classification/grade at one end of each wire/strip/powder such that the label shall not get peeled off while handling or storage for at least one year.

13 PACKING

These brazing alloys shall be suitably wrapped & boxed in wooden crates before despatched to protect it against damage during transport or under normal dry storage conditions.

AA77015: COPPER - PHOSPHORUS BRAZING ALLOY (BA Cu P5)

BHEL Order No.

Manufacturer's Name & Trade Mark.

Size/Form.

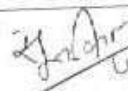
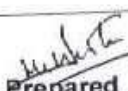
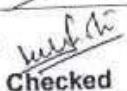
Weight.

14 REFERRED STANDARDS (Latest Publications including Amendments)

Nil

	PRODUCT STANDARD TME DIVISION, BHOPAL				TM 00318																
	TME/2011				PAGE 01 OF 02																
	<u>SPECIFICATION OF ALUMINIUM BRONZE CASTINGS</u>																				
REQUIREMENTS :-																					
The material shall meet all of the requirements of A.S.T.M. B-148* UNS C95300 (Grade B) Aluminum Bronze Castings, the chemical composition and excerpts from physical properties of which appear below :																					
<u>Chemical Composition :</u>																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 55%;"></th> <th style="width: 22.5%; text-align: center;">Minimum</th> <th style="width: 22.5%; text-align: center;">Maximum</th> </tr> </thead> <tbody> <tr> <td>Copper, %</td> <td style="text-align: center;">86.00</td> <td style="text-align: center;">-</td> </tr> <tr> <td>Aluminum, %</td> <td style="text-align: center;">9.00</td> <td style="text-align: center;">11.00</td> </tr> <tr> <td>Iron, %</td> <td style="text-align: center;">0.80</td> <td style="text-align: center;">1.50</td> </tr> <tr> <td>Total named Elements, %</td> <td style="text-align: center;">99.00</td> <td style="text-align: center;">-</td> </tr> </tbody> </table>								Minimum	Maximum	Copper, %	86.00	-	Aluminum, %	9.00	11.00	Iron, %	0.80	1.50	Total named Elements, %	99.00	-
	Minimum	Maximum																			
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Aluminum, %	9.00	11.00																			
Iron, %	0.80	1.50																			
Total named Elements, %	99.00	-																			
<u>Physical Properties :</u>																					
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* <u>NOTE:</u> Latest revision of the above standards to be considered.																					
<u>GENERAL</u> :- (Not Mandatory Requirements)																					
This material has excellent wear characteristics where lubrication is adequate, high strength and impact values, but poorer machinability as compared to weaker bronze.																					
The modulus of elasticity is 16,000,000 p.s.i.																					
The electrical conductivity is approximately 15% I.A.C.S.																					
Revision Details: As per revision sheet			Distribution	Qty.	Approved  S P SINGH Sr.DGM/TME																
Rev. No.	Date of Rev	Reaffirmed Year	CIM TME	02 01	 Prepared S. S. Patel Mgr/TME	 Checked V. Rawtiya DGM/TME															
01	12/12/12	Feb 2022				Dt. of 1st Issue —															

	 PRODUCT STANDARD TME DIVISION, BHOPAL TME/2011	TM 00318 PAGE 02 OF 02
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED. It must not be used directly or indirectly in any way detrimental to the interest of the company	<u>DRAFTING INFORMATION :-</u> The following shall appear on the blue print: MATERIAL : TM00318 ALUMINUM BRONZE Or if heat treatment is required, use the following designation MATERIAL : TM00318 HEAT TREATED ALUMINUM BRONZE <u>NOTE</u> : These specifications were developed without considering whether patents may or may not be involved. In all cases, therefore, the supplier shall be required to assume patent liability. This specification to equivalent to EMD specification no. EMS 211.	

TM 	PRODUCT STANDARD TME DIVISION, BHOPAL		TM 02349	
			PAGE 01 OF 02	
TME/2011				
REQUIREMENTS : (Equivalent to EMS 9)				
1. Standards and Practices : To meet all requirements of ASTM A536 – (latest revision) Grade 65-45-12, as herein amended.				
2. Mechanical Properties :				
Tensile Strength, psi, min 65,000/ 457N/mm ² Yield Strength, (0.2% offset), psi, min. 45,000/317N/mm ² Elongation in 2 inches, %, min. 9 Brinell hardness (3000 kg load, 10 mm ball) max. – 156 – 217				
Note : The above properties are required in the casting and constitute the primary basis for acceptance or rejection. If a test bar of proper proportions cannot be obtained from the casting, the microstructure and hardness of the casting shall serve as a basis for acceptance or rejection (see section –3).				
If a supplier chooses to use separately cast test coupons for foundry control, it shall be his responsibility to correlate the properties of the coupon with those of the casting and be prepared to demonstrate such correlation upon request. The results obtained from test coupons are not the basis final acceptance of actual castings.				
3. Microstructure :				
Graphite Form and Distribution : To be 901, minimum, spheroidal and semi-spheroidal graphite, ASTM A247 types I and II, randomly distributed.				
Matrix Structure : predominately ferritic. No primary carbides allowable.				
4. Welding : No welding permitted.				
5. Quality : Castings shall be free from dross, cracks, gas holes, unfused inserts, flaws and excessive shrinkage. Surfaces top be free burnt-on sand and shall be reasonably smooth.				
6. Test Report :				
The vendor shall furnish test reports showing the mechanical properties of the material supplied and indicating whether the properties were obtained from a casting or separately cast test coupons.				
Revision : 00 Date : 04/09/2001		Distribution	Qty.	Approved :  4/9/02
				Prepared :  Checked :  Date : 4/9/02

TM 02349 PAGE 02 OF 02	 PRODUCT STANDARD TME DIVISION ,BHOPAL TME /2011
	GENERAL INFORMATION : This specification covers a medium strength ferritic ductile iron intended for general usage. It may be supplied as cast or as heat, treated, at the vendor's option, provided that all requirements are met. In very general terms the above specification should be considered for ferrous casting applications which require better castability and wear resistance than low carbon steel and greater ductility, strength and elastic modulus than gray iron. It should not be specified for welding application. For general requirements refer BHEL specification AA19721. DRAFTING INFORMATION : Application of this material to drawings should be done only with the approval of Materials Engineering Section. Wherever use of this material is specified, it shall be designated as : MATERIAL : NODULAR IRON OR MATERIAL : NOD, IRON Note : These specifications were developed without considering whether patents may or may not be involved. In all cases, therefore, the supplier shall be required to assume patent liability.

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TME/2011

PRODUCT STANDARD
TME DIVISION, BHOPAL

TM 02363

PAGE 01 OF 02

SPECIFICATION OF EPOXY MOULDING COMPOUND, GLASS AND MINERAL FILLED

1.0 REQUIREMENTS :-

ASTM Test *

1.1 PROPERTIES

Tensile Strength, N/mm ² minimum	D638-77a	62
Compressive Strength, N/mm ² , minimum	D695-77	172
Flexural Strength, N/mm ² , minimum	D790-71	96
Specific Gravity	D792-66	1.97-2.02
Water Absorption, 24 hr. at 23°C, %, maximum	D570-77	0.20
Weight Loss, 24hr. at 175°C, %, maximum	-	1.0
Dielectric Strength, short-time, KV/mm, minimum	D149-75	13.8
Arc Resistance, seconds, minimum	D495-56T	150

1.2 Colour : To be blue, unless otherwise specified on engineering drawing.

1.3 Quality : Moulded parts to be uniform in colour, texture, finish, mechanical properties and density. Parts to be free from checks, cracks, blisters and irregular surfaces.

* Note : Wherever the specification or test of any society is referred to herein with its date number or revision letter stated, no other dated or more recent revisions are acceptable except by revision of this specification.

2.0 GENERAL INFORMATION :

These is a fiber glass and mineral filled epoxy moulding compound with excellent dielectric and mechanical strengths, low water absorption, and high dimensional stability. Because of its higher cost, it is preferred to moulded phenolic compounds only where requirements are stringent as regards the foregoing properties. The first use of this material was to insulate alternator collector rings for synchronous generators.

Some typical data for this material are :

Coefficient of Linear Thermal Expansion (in./in./°F.)	1.21 x 10 ⁻⁵
Flexural Modulus, N/mm ²	13760
Impact Strength, (N-m/m) notched	23
Flammability	Self-extinguishing

Revision Details: As per revision sheet			Distribution	Qty.	Approved S P SINGH Sr.DGM/TME		
Rev. No.	Date of Rev	Reaffirmed Year	CIM TME	02 01	 Prepared S. S. Patel Mgr/TME	 Checked V. Rawtiya DGM/TME	Dt. of 1 st Issue 25/03/03
00	25/03/03	Feb 2022					



TME/2011

PRODUCT STANDARD

TME DIVISION, BHOPAL

TM 02363

PAGE 02 OF 02

3.0 DRAFTING INFORMATION :

Where use of this material is specified, it shall be designated as:

MATERIAL : TM02363 MOLDED EPOXY

NOTE : These specifications were developed without considering whether patents may or may not be involved. In all cases, therefore, the supplier shall be required to assume patent liability.

4.0 REFERENCE TO EMD STANDARDS:

This specification is identical to EMD Standard No. EMS 2072.

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TME/PQR/1856

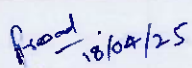
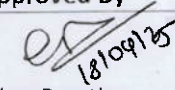
Date – 18/04/25

Technical Pre-Qualification (T-PQR) for procuring Slip Ring Assembly of TA9901AZ

S. No.	Description	Supplier/ Vendor to Comment	
		Complied/ Not Complied	Documents to be submitted.
1	Vendor shall supply Slip Ring Assembly exactly as drawing mentioned in BHEL enquiry.	Yes/ No	-
2	Supply experience in preceding 5 years (from original enquiry due date) of same/similar* item to Indian Railways or any Traction Machine Manufacturer.	Yes/No	Un-price PO copies of same/ similar item in preceding 5 years from original enquiry due date to Indian Railways or any Traction Machine Manufacturer. & Supply proof (Delivery Challan/invoice etc.) of corresponding PO in preceding 5 years from original enquiry due date.
3	Supplier should be an Original equipment manufacturer and not a trader.	Yes/No	-
4	First lot/ sample shall be approved by BHEL before start of bulk/regular supply in case of PO placement for vendor supplying this item for first time in BHEL Bhopal.	Yes/No	-
5	Manufacturing & Testing facility assessment may be carried by BHEL at suppliers works. Vendor to confirm the same.	Yes/No	-

Notes:-

1. Compliance of all the points in above PQR is mandatory. In absence of compliance of above, vendor's offer is liable to be rejected
2. Declaration by vendors regarding information / compliance submitted by vendor shall be correct in all respect. In case any deviation/false information is revealed later on, BHEL is free to initiate appropriate punitive proceeding as per prevalent processes and guidelines of company.
3. * (Stainless steel slip ring assy/ Epoxy moulding with brass ring slip ring assy shall of more than 200 mm outer diameter be considered as similar item.

Prepared By	Approved By
 Prasad Telang Manager/ TME	 Vikas Rawtiya Sr. DGM/ TME

BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL

QUALITY ASSURANCE PLAN FOR SLIP RING ASSY TO BHEL ORDERING SPECIFICATION/DRAWING AS PER PO

QUALITY PLAN NO. – QAP/QTM/VENDOR QAP/2023-24/SLIP RING ASSY DTD 21.02.2024 REV 00

Reference Document- PO DRAWING/SPECIFICATION

Page : 1 of 1

COMPONENT	CHARACTERISTICS	TYPE OF CHECK	QUANTAM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	INSPECTION AGENCY	REMARKS
			TP	TPIA					
Raw material TC	a) Mechanical properties b) Chemical properties	Record review	100%	100%	As per drawing, sub drawing & relevant specification	As per drawing, sub drawing & relevant specification	MTC	BHEL/TPIA	TEST LAB NABL/EQUIVALENT ACCREDITED/SOURCE MILL /Supplier to get the raw material correlated with material TC.
Dimension 47	Dimension	TC verification & Measurement	100%	10%	As per drawing & specification	As per drawing & Specification	Supplier record	BHEL/TPIA	Witness
Testing	(HV TEST, IR and joint Resistance)	Testing	100%	10%	As per drawing & specification	As per drawing & specification	Supplier record	Supplier record	Witness
Identification of grade of vendor name, PO & job serial no.,	Visual	Visual	100%	10%	As per drawing & specification	As per drawing & Specification	Supplier record	BHEL/TPIA	Witness
Packing to avoid transit damage	Visual	Visual	100%	10%	As per drawing & specification	As per drawing & specification	Packing list for each kit box	BHEL/TPIA	Packing to be such that no damages should occur during transit. 1 kit items should be placed in on 1 box

Prepared by

S. K. MIT SEN

Engineer

Q.T.M. Div

BHEL

BHEL

BHEL

BHEL

BHEL

BHEL

BHEL

BHEL

BHEL

Approved by

S. K. MIT SEN

Manager

Q.T.M. Div

BHEL

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