

Instruction to bidders and terms & conditions for supply of Cold Rolled Grain Oriented (CRGO) steel laminations on finished and stacked basis under enquiry (E1453013) for BHEL Bhopal Unit (India).

Offers through GeM's e-procurement portal <https://gem.gov.in> are invited in Two-Part Bid system for purchase of **CRGO Steel laminations (finished and stacked basis) from grade 23HP90d or equivalent as per BHEL specification BP10985 Rev 05 and as per core computer drawing no 34647000419** as per terms and conditions below.

General: Enquiry will be governed by below mentioned technical and commercial terms for supply of CRGO laminations in conformity with BHEL specification BP10985 rev.05 for requirement of BHEL Bhopal.

The supplies against this enquiry shall be subject to GeM's general Terms and conditions of enquiry and PO. In addition, the terms and conditions given under this annexure shall specifically apply to this enquiry.

- Technical terms and condition** detailed herein along with BHEL specification BP10985 rev.08 (**23HP90d** or equivalent or superior) mentioned under scope of contract will govern supply of CRGO Laminations. Clause 5.1.1 in BP 10985 Thickness: The thickness of the sheet shall be 0.23 mm.
- Quantity & bid evaluation:** Tentative quantity for **23HP90d** or equivalent or better grade of CRGO Laminations in terms of core losses is as under:

(all quantities in kg)

(All quantities in kg)						
It. No	Item description	Per set qty.	Total no. of sets	Total qty.	Total qty. with+1% tolerances.	Delivery per set
1	CRGO laminations in grade 23HP90d or equivalent as per BHEL specification BP10985 Rev 05 core computed drg no. 34647000419	120330	3	360990	364599.9	Oct-2025
						Nov - 2025
						Dec 2025
Total			3	360990	364599.9	

Quantity is subject to variation of -0/+1%. Bidders can also quote superior grade material (in terms of core losses). Acceptance / rejection of the same shall be in purview of BHEL. Total supply quantity is to be restricted between 360990 kgs & 364599.9 kgs. Negative tolerance is not permitted.

- Quantity distribution:** The quantity distribution in such cases shall be as below:

Quantity is for 3 sets of CRGO laminations. Quantity shall be distributed between $n - 1$ vendors in the ratio detailed below:

Item no.	Number of qualified suppliers = n	Distribution ratio	
1	3 or more	L1	L2
		2 sets	1 set

Counter Offer: Final accepted rate of L1 shall be counter offered to L2 bidder and beyond as per relative status in tender against each item. On non-acceptance of counter offer by any of the L2 bidders and beyond, counter offer of final L1 rate shall be given to next bidder in sequence of their ranking. Based on the acceptance of counter offer by any two bidders in order of their ranking, quantity shall be distributed in the ratio mentioned above of the total tender quantity. In case, no bidders accept the counter offer, 100% of the quantity for that item shall be awarded to L1 vendor.

In case of only two qualified bidders the distribution among the both the bidders depending upon the committed capacity to BHEL, BHEL's production requirement, acceptance to counter offer etc., if any, at the discretion of BHEL.

- Raw material sources:** CRGO laminations are to be made from prime CRGO steel in BIS grade **23HP90d or equivalent**. For subject requirement raw material – CRGO coils supplying mills must be approved by M/s Odisha Power Transmission Corporation Limited. Approved CRGO mills are as below:

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VENDOR	PROJECT:- OPTCL
M/S AK STEEL INTERNATIONAL B.V.	PLACE
M/S JFE SHOJI STEEL INDIA PVT. LTD.	NETHERLANDS
M/S JFE SHOJI TRADE CORPORATION	PUNE
M/S METAL ONE CORPORATION	JAPAN
M/S POSCO-INDIA PUNE PROCESSING CENTRE PVT LTD.	JAPAN
M/S THYSSENKRUPP ELECTRICAL STEEL GMBH	PUNE
M/S THYSSENKRUPP ELECTRICAL STEEL INDIA PVT. LTD.	GERMANY
M/S BAOSTEEL SINGAPORE PTE LTD.	NASHIK
M/S NLMK INDIA SERVICE CENTER PVT LTD.	SINGAPORE
M/S NLMK TRADING SA.	DAMAN

If, bidder intends to supply CRGO laminations from any other BIS approved mill, same should be approved by OPTCL. Relevant approval letter to be submitted with the offer. Decision regarding acceptance of mill other than those listed above by OPTCL shall be final and binding.

5. PQR (pre-qualifying requirement) conditions:

- As per attached PQR points along with NIT- E1453013 (Annexure-II).

Important note:

- All circulars issued by Government of India affecting any of the above conditions directly / indirectly shall supersede the above-mentioned conditions.
- Vendors to fill the Annexure- III with duly signed and stamped along with Bid submission.
- All the Annexures – I, II, III & IV to be duly signed and stamped and submit along with part – I bid.

6. Supply conditions: Tentative shipment / delivery shall be within 45 days from Purchase order (PO) OR contractual delivery, whichever is later from date of award of formal PO. Expected shipment dates beyond contractual delivery may change subject to mutual consent. Tentative requirement of material against this enquiry for BHEL- Bhopal is one set each in Oct till Dec 2025.

Laminations are to be cut on CNC cropping line only. CRGO laminations are to be made as per BHEL drawing provided for each purchase order. Number of sheets specified per stack per width should be ensured. Stack height is very important and to be maintained, weight may vary slightly. Clarification should be immediately taken from BHEL Bhopal, if stack height is not achieved. Tolerance of + 1% in total weight per PO will be permissible to achieve required stack height and completeness of laminations. If total weight of laminations required exceeds PO quantity with permissible tolerance, prior approval shall be obtained from Transformer Engineering. All the limbs, Centre leg, side leg, yoke and fishes shall be supplied duly stacked in ready to build to core condition. Clarification, if any, to be taken from TRM/ TRE, BHEL Bhopal.

7. Inspection and Test certificates: -

- I. Supplier shall submit Mill TC of raw material CRGO coils along with commercial documents if required by customer (Bill of lading, Bill of entry, commercial invoice and packing list etc.) evidencing purchase of genuine CRGO coils for BHEL's lamination job for each purchase order. Mill TC shall be submitted before processing the job for approval / inspection from BHEL QC / customer to avoid any quality complaints in future.
- II. BHEL Quality/ customer /TPIA will review TC or inspect coil at vendor works and accord clearance for processing laminations within 10 days (considering inspection duration and testing of samples at competent accredited testing lab as per ISO 17025. Certificate shall contain accreditation & Accreditation Symbol) of submission of complete mill TC, clarifications and other documents if required any. Mill TC shall be as per BHEL specifications. No delivery extension request will be considered in case of delay by supplier in submission of complete documents and clarifications. BHEL will not be responsible for LD penalty due to delay in submission of mill TC or clarifications by vendor.
- III. Test certificates should cover result of tests for mechanical and electrical properties as per specification for each coil No/ Heat No.
- IV. Dimensions and tolerances shall be as per specifications and a clause confirming same shall be mentioned clearly in mill TC submitted.
- V. **Inspection shall be done by customer at vendor works. Customer – OPTCL shall witness both raw material – prime CRGO coils and laminations processing at vendor works. Supplier shall give inspection call at least 10 days in advance for both cases.**

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- VI. Raw material and finished laminations testing are in supplier's scope wherever required as per Quality Plan. Inspection both RM and final stage shall be done by customer / BHEL at vendor works. Supplier shall have to inform raw material – RM (CRGO coils) readiness to be inspected by customer / BHEL. Customer / BHEL shall witness laminations processing at vendor works. Supplier to inform the schedule of laminations processing well in advance to BHEL.
- VII. Magnetic properties including Maximum specific total loss and magnetic permeability measurement will be done by Single Sheet method (for domain refined grade) and Epstein method (for other grades) as per IS 3024 & acceptance norm as elaborated in IS 3024. For RM stage and final stage inspection as mentioned in concerned Quality Plan, Samples of shall be selected by BHEL/Customer and testing (in the scope of supplier) shall be done in laboratory having valid accreditation from MRA signatories of ILAC/APLAC against ISO 17025. For final acceptance at BHEL, results obtained at BHEL lab will be final and binding for acceptance of material.
- VIII. TC shall clearly bear BIS mark with license number.

7. Tests and procedure: Test certificate shall clearly indicate following information:

- I. Supplier's name, Grade, Identification no., Size and weight, Packet/ Bundle no.
- II. Test results of dimensions and tolerances
- III. Details of insulation coating
- IV. Type test as required
- V. Properties of Specific total loss of each coil, Mechanical and Electrical properties for one random coil of each lot.
- VI. Results of chemical composition (for information only, if required). Supplier shall enclose one copy of test certificate as per above along with dispatch documents to facilitate clearance/ acceptance of finished laminations. After making core with supplied laminations the core losses shall be measured at BHEL Bhopal in presence of M/s customer.
- VII. It will be reviewed with respect to the Test certificates of raw material / lamination provided by Supplier. Supplier shall be responsible for higher losses if any. In case of higher losses, BHEL reserves the right to reject full lot.

8. **Bid opening:** - The 'Techno-commercial' part of the bid i.e. Bid Part – I of the offers shall be opened on the due date of tender opening **on GeM portal**. Clarifications if required on this part may be obtained from the bidders for their evaluation. The Price bid Part-II of such bidders alone shall be opened on a later date **on GeM portal** whose techno-commercial bids are found acceptable. The date of 'Price bid –Part II' opening shall be intimated to technically qualified bidders later.

9. Price finalization shall be done through price bid opening followed by reverse auction as per GeM terms and conditions.

10. **Delivery period:** Delivery period shall be quoted in number of Days from PO date or as per agreed commercial conditions. BHEL prefers delivery to be 45 days from date of PO. Early deliveries will be acceptable with mutual consent. Item wise PO shall be placed separately. Supply requirement against this enquiry for BHEL- BHOPAL shall be one set each in Oct till Dec 2025.

11. **Terms of delivery:** F.O.R. destination on door delivery basis (BHEL Bhopal).

12. **Levy of Penalty for delayed performance:** As per latest GeM guidelines. On LD recovery, the applicable GST shall also be recoverable from indigenous vendors. Receipt of material at BHEL (CN date i.e. material entry date in BHEL) will be taken as proof of delivery for indigenous bidders.

13. **Replacement of rejected goods:** Final inspection for acceptance of material shall be at BHEL's works after testing in presence of BHEL as well as customer representative during core building stage and results shall be binding on the suppliers. Rejected goods are to be lifted and replacements to be supplied immediately free of cost by the vendor. It will be dealt as per latest GeM guidelines.

14. **Payment Terms:** - As per latest GeM guidelines.

MSME Suppliers may opt for the below payment terms:

- I. **Micro & Small enterprises** - Within 45 days from receipt & acceptance of materials at BHEL-BHOPAL.
- II. **Medium enterprises** - Within 60 days from receipt & acceptance of materials at BHEL-BHOPAL.
- II. MSME vendors may opt for payment through TReDS (Trade Receivables Discounting System), TReDS benefit can be availed through following platforms: Invoicemart (M/s A.TREDS limited), M1xchange (M/s Mynd Solutions Pvt Ltd) and M/s RxIL. For details please visit respective websites.

15. **Transit Insurance:** - All type of risks to be covered in Insurance policy and in supplier scope only.

16. **Validity of Offer:** Offer should be valid for a period of 90 days from the date of technical bid opening date for finalization of the contract. In case, validity lower than 90 days is provided, bids shall be liable for rejection.

17. **Taxes & Duties:** -

- The bidders are requested to furnish the rate and type of duty / taxes as extra applicable to the product under this enquiry in their bid (along with details like HSN, SAC codes, GSTIN no. of vendor etc).
- Bidders to ensure timely remittance of SGST, CGST, IGST as applicable in time as per law.

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- Vendor to ensure compliance to timely filing of monthly GST return. GST portion of invoice shall be released only upon the invoice being reflected in GSTR 2A of BHEL and invoices being compliant to GST Invoice rules.

BHEL will avail tax credit as per GST rules. Vendors to note that GST portion of invoice amount shall be released only upon:

- Vendor declaring such invoice in his GSTR – 1 and
- Receipt of goods and tax invoice by the BHEL and
- Confirmation of payment of GST thereon by vendor on GSTN portal
- Above is subject to receipt of goods and tax invoice thereof along with vendor declaring invoice in his return and paying GST within timeline prescribed for availing TC by BHEL.

In case, GST credit is delayed / denied to BHEL due to non / delayed receipt of goods and / or tax invoice or expiry of timeline prescribed in GST law for availing such ITC (Input Tax Credit) or any other reasons not attributable to BHEL, GST amount shall be recoverable from vendor along with interest levied / leviable on BHEL.

In case, vendor delays declaring such invoice in his return and GST credit availed by BHEL is denied or reversed, subsequently as per GST law, GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from vendor along with interest levied / leviable on BHEL. Further, any GST liability arising on BHEL under RCM (Reverse Charge) before actual receipt of goods and / or invoice thereof would be subject to recovery of interest leviable for the period between the date of such liability and actual date of eligibility of ITC based on receipt of goods, receipt of invoices and other conditions specified in GST law.

18. Integrity Pact:

- a) The integrity pact submitted along with the current rate contract will be considered valid for the duration of contract.
- b) IP is a tool to ensure that activities and transactions between the Company and its Bidders/Contractors are handled in a fair, transparent and corruption free manner. A panel of Independent External Monitors (IEM) has been appointed to oversee implementation of IP in BHEL.
- c) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory who signs in the offer) along with techno-commercial bid. Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be preliminary qualification. Details of IEMs for this tender is furnished below:

Name	Shri Bishwamitra Pandey	Shri Mukesh Mittal
Designation	IRAS (Retd.), Former Principal Financial Advisor, Indian Railways	IRS (Retd.), Former Principal Commissioner of Income Tax
Email id	iem2@bhel.in	iem3@bhel.in

Please refer section-8 of the IP for Role and Responsibilities of IEMS. In case of any complaint arising out of the tendering process, the matter may be referred to the IEM mentioned in the tender.

No routine correspondence shall be addressed to IEM (phone/post/email) regarding the clarifications, time extensions or any such administrative queries, etc. on the tender issued. All such clarification/issues shall be addressed directly to the tender issuing (procurement) department.

19. Short closure: BHEL reserves right to short close the contract for quantities anytime during the tenure of the contract.

20. Fraud prevention policy: Fraud prevention Policy of GeM is to be complied.

21. Prevention of conflict of Interest among bidders/agent: 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 Authorized distributor (with/ or without the OEM) from quoting equipment manufactured by an Original Equipment Manufacturer (OEM) in procurements under a Proprietary Article Certificate.

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- 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.**

22. Compliance to **MAKE IN INDIA** circular issued by Gol:

“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”

To avail purchase preference under Make in India guidelines, vendor should be categorized as Class 1 supplier. For a vendor to be classified as Class 1 supplier, bidder & their mill from which support letter has been furnished shall have to submit annexure – IV with seal and sign duly ratified / verified by statutory auditor or cost auditor of the company (in case of companies) or from a practicing-chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.

23. **Corrigendum / addendum:** Any corrigendum/addendum related to this tender shall be updated on GeM portal <https://gem.gov.in>. Bidders are requested to regularly visit the BHEL website to keep themselves abreast with updates.

24. Bidders are advised to read the latest Government circular/OM/Notices etc. issued by Government of India & BHEL (wherever applicable to BHEL, shall be follow).

- BHEL's PO conditions for indigenous bidders (attached).
- Latest Order (Public procurement no-4 dtd. 23.02.2023) subject: Restrictions under rule144 (Xi) of general financial rules GFRs, 2017 shall be applicable along with subsequent order issued by Government of India (Ministry of Finance).
- General terms and conditions as per GeM shall be applicable.

25. BHEL shall not be releasing any additional document other than formal PO in case contract is finalized with a bidder. For any queries, please contact the undersigned:

Name:	Dharmendra Singh	Madhurendra Manderwal	Vineet Suman
Designation:	AGM	DGM	Sr. Manager
Department:	CMM – Steel, Copper & FE	CMM – FE & Steel	CMM - Steel
Contact details:	+91 755 – 250 3360	+91 755 – 250 5210	+91 755 – 250 5805
Email:	dharmendra2000@bhel.in	madhurendra@bhel.in	vineetsuman@bhel.in

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Annexure - II

PQR (Pre-Qualifying requirement) conditions of tender no - E1453013.

Sr. No	Parameters	Vendors compliance (Yes/No)
1.	Certificate of conformity by BIS for laminations processors: Lamination processor to submit valid certificate of conformity of BIS as on bid part – 1 opening date as per latest quality control order issued by Government of India.	

(Seal & sign of the bidder)

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Annexure - III (E1453013)

Other salient parameters for compliance in tender E1453013:

Sr. No	Conditions	Vendors compliance/acceptance (Yes/No)
1	Confirmation about UOM (Unit of Measurement) & currency in which you have quoted i.e. INR / kg OR INR / MT.	(Yes / No)
2	Confirm whether you have quoted your rate inclusive of GST. (*please quote rate inclusive of GST only.)	(Yes / No)
3	Acceptance to supplies as per BHEL's specification BP10985 rev.05 as per technical requirement as per sl.no. 1 of annexure – I.	(Yes / No)
4	Confirmation that tendered quantity for item has been offered.	(Yes / No)
5	Quoted delivery period. Material requirement shall be one set each in Oct till Dec 2025.	(Delivery period to be quoted in no. of days)
6	Acceptance of penalty clause as per standard GeM terms	(Yes / No)
7	Acceptance to distribution as per clause 3 of annexure – I	(Yes / No)
8	Acceptance to sourcing BIS grade CRGO coils from mills holding valid BIS license and customer approved mills listed at clause 4 of annexure – I.	(Yes / No)
9	Acceptance to bid evaluation criteria as per clause 2 of annexure - I	(Yes / No)
10	Acceptance to general terms and conditions as per GeM.	(Yes / No)
11	Acceptance to fraud prevention Policy of GeM.	(Yes / No)
12	Acceptance of inspection clause: Inspection to be carried out as per applicable QA plan of customer.	(Yes / No)
13	Acceptance of standard payment term of GeM.	(Yes / No)
14	Acceptance to Integrity Pact clauses. Integrity Pact duly signed & filled to be submitted with the offer.	(Yes / No)

(Seal & sign of the bidder)

MAKE IN INDIA format (to be filled by OEMs of the participating bidders)

BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL

MATERIAL MANAGEMENT – STEEL DIVISION

For this Procurement, Government of India Public Procurement (Preference to Make in India), Order 2017 with its amendments and subsequent Orders issued by the respective nodal ministries shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/WO against this NIT.

*As per the Provisions of this order, please submit **a self-certification complying with the conditions below on company letterhead duly signed by competent authority.***

I _____, hereby declare on behalf of M/s. _____ that we are participating in the Enquiry No. _____ floated by BHEL, Bhopal (MP), India and shall comply with following:

1. Public Procurement (Preference to Make in India), Order 2017 *with its amendments* and subsequent Orders issued by the respective nodal ministries shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/WO against this NIT.

- (a) A supplier will be treated as “**Class-I Local Suppliers**”, if the items quoted by bidder have local content equal to or more than 50%.
 - (b) ‘**Local Content**’ means the amount of value added in India, which shall be total value of item quoted (excluding net domestic indirect taxes) minus the value of imported content in the item (including all custom duties) as a proportion of the total value, **in percent**.

2. I hereby declare that our firm qualifies as “**Class-I Local Suppliers**”.

a. The Local Content in the items quoted under this Enquiry is _____ Percent

b. Details of location(s) in India where this value addition shall be done, is/are as follows:

- (a) _____
- (b) _____
- (c) _____

(_____)

For M/s. _____

(Seal & Sign)

Annexure-1

INTEGRITY PACT**Between**

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART


Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for CR90

laminate as per tender enquiry EMS3013
 _____ (hereinafter referred to as "Contract"). The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).


In order to achieve these goals, the Principal will appoint panel of Independent External Monitor(s) (IEMs), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

- 
- 1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -
 - 1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - 1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
 - 1.1.3 The Principal will exclude from the process all known prejudiced persons.
 - 1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

- 2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. The Bidder(s)/ Contractor(s) commits himself to observe the following principles during participation in the tender process and during the contract execution.

- 
- 2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. 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.
- 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and shall await their decision in the matter.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process, terminate the contract, if already awarded, exclude from future business dealings and/ or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages


- 4.1 If the Principal has disqualified the Bidder (s) from the tender process before award / order acceptance according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.
- 4.2 If the Principal is entitled to terminate the Contract according to Section 3, or terminates the Contract in application of Section 3 above, the Bidder(s)/ Contractor (s) transgression through a violation of Section 2 above shall be construed breach of contract and the Principal shall be entitled to demand and recover from the Contractor an amount equal to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher, as damages, in addition to and without prejudice to its right to demand and recover compensation for any other loss or damages specified elsewhere in the contract.

Section 5 - Previous Transgression

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 (three) years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason or action can be taken as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 6 - Equal treatment of all Bidder (s)/ Contractor (s) / Sub-contractor (s)


- 6.1 The Principal will enter into Integrity Pacts with identical conditions as this Integrity Pact with all Bidders and Contractors.
- 6.2 In case of Sub-contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-contractor(s) and ensure that all Sub-contractors also sign the Integrity Pact.
- 6.3 The Principal will disqualify from the tender process all Bidders who do not sign this Integrity Pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 -Independent External Monitor(s)

- 8.1 The Principal appoints competent and credible panel of Independent External Monitor (s) (IEMs) for this Integrity Pact. The task of the IEMs is to review independently and objectively, whether and to what extent the parties comply with the obligations under this Integrity Pact.
- 8.2 The IEMs are not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The IEMs shall be provided access to all documents/ records pertaining to the Contract, for which a complaint or issue is raised before them as and when warranted. However, the documents/records/information having National Security implications and those documents which have been classified as Secret/Top Secret are not to be disclosed.
- 8.4 The Principal will provide to the IEMs sufficient information about all meetings among the parties related to the Contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the IEMs the option to participate in such meetings.

- 
- 8.5 The advisory role of IEMs is envisaged as that of a friend, philosopher and guide. The advice of IEMs would not be legally binding and it is restricted to resolving issues raised by a Bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some Bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.
- 8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process or during execution of Contract, the matter should be examined by the full panel of IEMs jointly, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.
- 8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to the CMD, BHEL at the earliest. They may also send their report directly to the CVO, in case of suspicion of serious irregularities requiring legal/ administrative action. Only in case of very serious issue having a specific, verifiable Vigilance angle, the matter should be reported directly to the Commission. IEMs will tender their advice on the complaints within 30 days.
- 8.8 The CMD, BHEL shall decide the compensation to be paid to the IEMs and its terms and conditions.
- 8.9 IEMs should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the Principal should be looked into by the CVO of the Principal.
- 8.10 If the IEMs have reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code / Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the IEMs may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.11 After award of work, the IEMs shall look into any issue relating to execution of Contract, if specifically raised before them. As an illustrative example, if a Contractor who has been awarded the Contract, during the execution of Contract, raises issue of delayed payment etc. before the IEMs, the same shall be examined by the panel of IEMs. Issues like warranty/ guarantee etc. shall be outside the purview of IEMs.
- 8.12 However, the IEMs may suggest systemic improvements to the management of the Principal, if considered necessary, to bring about transparency, equity and fairness in the system of procurement.
- 8.13 The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

- 9.1 This Integrity Pact shall be operative from the date this Integrity Pact is signed by both the parties till the final completion of contract for successful Bidder, and for all other Bidders 6 months after the Contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.
- 9.2 If any claim is made/ lodged during currency of this Integrity Pact, the same shall be binding and continue to be valid despite the lapse of this Pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 - Other Provisions

- 10.1 This Integrity Pact is subject to Indian Laws and exclusive jurisdiction shall be of the competent Courts as indicated in the Tender or Contract, as the case may be.
- 10.2 Changes and supplements as well as termination notices need to be made in writing.
- 10.3 If the Bidder(s)/ Contractor(s) is a partnership or a consortium or a joint venture, this Integrity Pact shall be signed by all partners of the partnership or joint venture or all consortium members.
- 10.4 Should one or several provisions of this Integrity Pact turn out to be invalid, the remainder of this Integrity Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 10.5 Only those bidders / contractors who have entered into this Integrity Pact with the Principal would be competent to participate in the bidding. In other words, entering into this Integrity Pact would be a preliminary qualification.
- 10.6 In the event of any dispute between the Principal and Bidder(s)/ Contractor(s) relating to the Contract, in case, both the parties are agreeable, they may try to settle dispute through Mediation before the panel of IEMs in a time bound manner. In case, the dispute remains unresolved even after mediation by the panel of IEMs, either party may take further action as the terms & conditions of the Contract. The fees/expenses on dispute resolution through mediation shall be shared by both the parties. Further, the mediation proceedings shall be confidential in nature and the parties shall keep confidential all matters relating to the mediation proceedings including any settlement agreement arrived at between the parties as outcome of mediation. Any views expressed, suggestions, admissions or proposals etc. made by either party in the course of mediation shall not be relied upon or introduced as evidence in any further arbitral or judicial proceedings, whether or not such proceedings relate to the dispute that is the subject of mediation proceedings. Neither of the parties shall present IEMs as witness in any Alternative Dispute Resolution or judicial proceedings in respect of the dispute that was subject of mediation.

विनीत सुमन / VINEET SUMAN

वरि. प्रबंधक / Sr. Manager
For & On behalf of the Principal
सी. एम. एम. - स्टील / CMM - Steel Division
(Office Seal) बी.एच.ई.एल., भोपाल / B.H.E.L., BHOPAL

Place

Date

Witness:

(Name & Address)

अतुल कुमार / ATUL KUMAR

वरि. अभियंता (क्रय) / Sr. Engineer (Purchase)
सी. एम. एम. - स्टील / CMM - Steel
बी.एच.ई.एल., भोपाल / B.H.E.L., BHOPAL

For & On behalf of the Bidder/ Contractor
(Office Seal)

Witness:

(Name & Address)

Integrity Pact (IP)

Clause on IP in the tender

- (a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

SI	IEM	Email
1.	Shri Otem Dai, IAS (Retd.)	iem1@bhel.in
2.	Shri Bishwamitra Pandey, IRAS (Retd.)	iem2@bhel.in
3.	Shri Mukesh Mittal, IRS (Retd.)	iem3@bhel.in

- (b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.
- (c) Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEM(s). All correspondence with the IEMs shall be done through email only.

Note:

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below:

Details of contact person(s):

(1)
Name: Vineet Suman
Deptt: CMM-Steel
Address: BHEL, Bhopal
Phone: (Landline/ Mobile) 5805

Email: vineetsuman@bhel.in
Fax: _____

(2)
Name: ATUL KUMAR
Deptt: CMM-Steel
Address: BHEL BHOPAL
Phone: (Landline/ Mobile) 07552505421

Email: atul_kumar@bhel.in
Fax: _____



PLANT PURCHASING SPECIFICATION BHOPAL

BP 10985

REV NO. 05

PAGE 1 of 7

SUPERSEDES
BP 10985 Rev 04

COLD ROLLED GRAIN ORIENTED SHEET STEEL **27HP90d**

1. **GENERAL:**

This specification governs the quality requirements of double side insulated, cold rolled, grain oriented magnetic steel sheets of thickness 0.27mm manufactured by means of laser scribing or plasma flame irradiation or any equivalent process.

2. **APPLICATION:**

Used in transformer cores.

3. **CONDITION OF DELIVERY:**

Cold rolled and annealed.

The sheet shall be supplied in side trimmed continuous coils, with insulation coating on both sides, as specified in clause 6.

4. **COMPLIANCE WITH NATIONAL STANDARDS:**

There standard is based on IS:3024

5. **DIMENSIONS AND TOLERANCES:**

5.1 **Sizes:**

The steel sheet shall be supplied to the dimensions specified on the order.

5.1.1 **Thickness:**

The thickness of the sheet shall be 0.27 mm.

5.1.2 **Width:**

The nominal standard width of the coil shall be 790, 840, 915 or 1000 mm.
The order shall clearly specify the width of the coil required.

5.1.3 **Weight:**

The nominal weight of the coil-shall be between 1800 - 2500 kg.

Revision :

Reviewed and brought upto date .

Issued by :

STANDARDS AND MATERIALS GROUP
TECHNICAL SERVICES DEPTMENT

Rev. 05

Date : 08.02.2023

Date of first Issue: 17.7.1979

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5.2 Tolerances:

5.2.1 Thickness:

Tolerance on thickness when measured with a contact micrometer at any location, not less than 9.5 mm from an edge shall not deviate more than ± 0.025 mm from the average thickness of the test lot or coil. The outer limits of acceptable thickness shall be within the range of 0.241 to 0.305 mm.

5.2.2 Width:

The tolerance of width for side trimmed coil shall be - 0 and + 3 mm.

5.2.3 Edge Camber:

The deviation of a side edge from a straight line over 2440 mm length or fraction thereof shall not exceed 3.2 mm.

5.3 Waviness:

Sharp, short waves and buckles are extremely detrimental to the effective use of grain oriented electrical steel in flat laminations and shall be avoided in the delivered materials.

For material of width greater than 150 mm, the deviation from flatness (Wave Factor) expressed as a percentage, shall not exceed 1.5 %

6 MANUFACTURE:

The sheet shall be of low carbon, silicon steel having silicon content around 3.15%. High permeability and low core-loss in the direction of rolling is to be achieved by appropriate metallurgical processes.

The thermally flattened material shall be coated with an inorganic surface coating type C2 and an inorganic surface coating, type C5, applied over the inherent C2 coating to provide extra surface insulation resistance on both sides

The steel sheets shall be uniformly coated on both sides with an insulation as stated above, as part of its manufacturing process, and the magnetic domain may be finely sub-divided to achieve lower core loss by suitable means other than by mechanical scribing.

The insulation, coating shall be uniform throughout the length of the coil. There shall be no line marks, rough spots, dots and patches etc.

Note: Not to be confused with some discoloration/shade difference of the insulation inherent to the manufacturing process.

7 FREEDOM FROM DEFECTS:

The material shall be clean, bright, smooth and free from dents, surface defects such as holes, scabs, pits, blisters, slivers, mill marks etc. and also free from oil, grease, dust scale and rust.

The sheet surface shall not exhibit any of these defects.

8 TEST SAMPLES:

Test samples shall be selected from the consignment as follows:

8.1 Maximum Specific Total Loss:

One from each coil.

8.2 Electrical & Mechanical Tests:

One sample per consignment/lot for Mechanical Tests and Electrical Tests (Surface Insulation Resistivity and Magnetic Permeability Tests).

8.3 The test samples shall be sufficient in size to provide the necessary test pieces.

9 TEST METHODS:

Unless otherwise specified, the test shall be conducted in accordance with the relevant method specified in IS 3024

10 MECHANICAL TESTS:

10.1 Ductility:

Material shall possess good shearing and punching properties and shall be sufficiently ductile to permit normal working.

The bend test shall be carried on transversely cut test specimen of not less than 152 mm long and 30 mm wide.

The test specimen shall be initially bent through 90 degrees, this bend not being counted. The specimen shall then be bent backward and forward through 160 degrees. The specimen shall complete one bend without fracture.

10.2 Stacking Factor:

The surface quality of the material when measured in terms of stacking factor (viz. a minimum of 16 samples under a pressure of 0.35 MPa) shall be 95% minimum.

11. ELECTRICAL TESTS:

11.1 Surface Insulation Resistivity:

When tested as per IS 649 Section-2, the surface insulation resistivity per lamination (two surfaces of single strip specimens (5 on each side), shall show the following readings.

Average Value - 10 ohms cm², minimum.

Individual Value - 5 ohms cm², minimum

11.2 Maximum Specific Total Loss:

11.2.1 Cutting of Test Specimen:

The test specimen for the single sheet tester shall consist of one sheet having the following dimensions as per IS:3024

Length: 500 mm to 530 mm

Width : 500 +0/-5 mm

The test specimen shall be cut parallel to the direction of rolling.

11.2.2 Testing:

When tested in accordance with IS 649, the specimens prepared as described in clause 11.2.1 without stress relief annealing and shall be tested at a peak magnetic flux density of 1.7 T and a frequency of 50 Hz. the specific total loss shall not be greater than 0.90 watt/kg as measured with single sheet tester

11.3 Magnetic Permeability Test

The induction value at 800 A/m magnetizing force shall not be less than 1.85 Tesla.

12. TYPE TEST: - Ageing*

When tested at a peak Magnetic Flux Density of 1.7T and at a frequency of 50 Hz, the specific total loss of the specimen which has been heated at a temperature of 225 deg.C for 24 hours shall not deteriorate by more than 4% of the measured specific total loss (clause 11.2) of the coil concerned.

*Note: Type tests shall be carried out when "Type Approval" to a supplier is given and repeated once in two years for the approved sources.

13 TEST CERTIFICATES:

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

In addition, the supplier shall ensure to enclose one copy of the test certificate along with their dispatch documents/shipping list to facilitate quick clearance of the material.

The test certificate shall bear the following information.

BP 10985 - Rev. 05: Cold Rolled Grain Oriented Sheet Steel Gr: 27HP90D

Order No,

Supplier's Name/Grade/ Identification No,

Size & Weight,

Packet/Bundle No,

Test Results of Dimensions & Tolerances,

Freedom from Defects,

Details of Insulation Coating,

Type Test, Properties of

(a) Specific Total Loss of each coil

(b) Mechanical & Electrical properties for one random coil of each lot/consignment,

(c) Results of chemical composition for information only.

14 PACKING AND MARKING:

The material shall be supplied preferably in coils of continuous length. However, if it becomes unavoidable, the coils of the order can be supplied with maximum of three butt weld joints, The supplier shall ensure than the welds are made in such a manner without causing damage to the areas of coil adjacent to the weld. The welds shall be clearly marked by suitable tags projecting outside the coil.

Sheets shall be packed vertically/horizontally according to the instructions given in the Annexure.

A Metal label / tag shall be securely attached with each coil or drum or bundle outside its wrapping and shall be legibly marked with the following information.

BP 10985 : Cold Rolled Grain Oriented Sheet Steel Gr : 27HP90D

BHEL Order No.

Manufacturer's/Supplier's name. Identification/Coil No.

Size and Quantity supplied.

GENERAL INFORMATION FOR CALCULATION

Density - 7.65 Kg/dm³.

ANNEXURE

DETAILED INSTRUCTIONS FOR PACKING

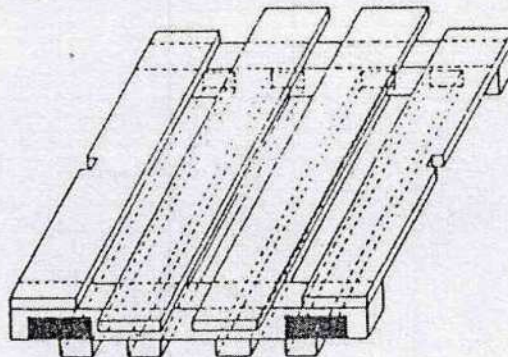
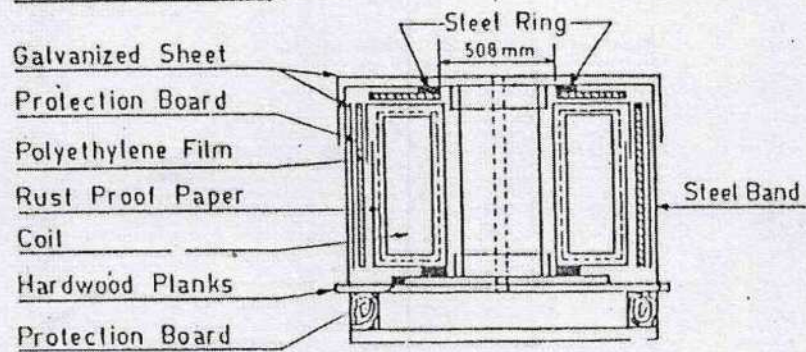
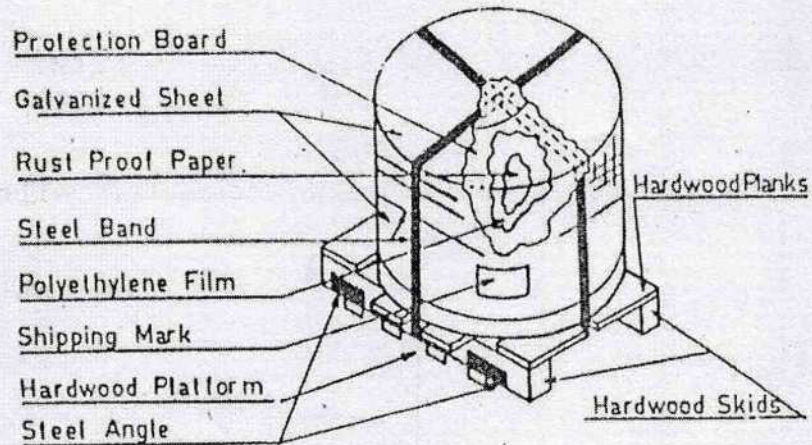
The nominal weight of each coil shall be 1800-2500 Kg.

The nominal internal diameter of coil shall be 508 mm.

Packing shall be sea-worthy and shall protect the coils from damage and rusting during transit.

Coils shall be vertically/horizontally packed according to the instructions given below.

1. An annular protection board shall be placed at either end of the coil. Protection Board sleeve shall be provide at ID of the coil.
2. The coil shall then be wrapped with waterproof anti-rust crepe kraft paper by lapping axially all around the circumference.
3. The coil shall then be covered by polyethylene sheet or anti-rust waterproof paper and the ends sealed properly.
4. A galvanised sheet shall be wrapped on the outside of the coil and the top and bottom of the coil. Care shall be taken to ensure that the ends of the top and bottom of the coils extend sufficiently over the inside diameter of the coil.
5. A galvanised sheet shall be wrapped on the inside of the coil care shall be taken that it overlaps sufficiently over the ends of the sheet mentioned in (4) above.
6. Steel rings made from thick angle sheets shall be placed on the rim of the inner diameters at both ends of the coil. The rings shall be held at either ends at four points by steel bands.
7. The coil shall then be mounted on wooden skids, held together by steel bands. Wooden skids must have cutouts to house the steel bands for tight fit and to avoid slippage.
8. The packing shall ensure that there is no seepage of moisture and the coil reach BHEL in completely rust free condition. It should be strong enough to withstand handling at the docks, at sea and on the road.
9. Coils shall be sufficiently tight wound to prevent collapse to an extent that would preclude their being mounted on a mandrel appropriate to the ordered internal diameter.
10. Each package shall indicate the, Sling Position, for lifting without damage. It is preferable to fix a suitable size of, 'Sheet Steel Angle', at the position where the Sling Rope is to be fitted to avoid slippage/damage/ breakage of the wooden skid at four places.



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First Angle Projection

61700047347C ON SHEET

All dimensions in mm

NO.	PKT-THK DUCT PKT-HT	LEGLAM	---WYOKLAM---		---AYOKLAM---		ALEGLAM	
			Top	Bot	Top	Bot	Top	Bot
1	67	2	69.0	1070.0	595.0	595.0	475.0	475.0
2	31		100.0	1060.0	590.0	590.0	470.0	470.0
3	43		143.0	1040.0	580.0	580.0	460.0	460.0
4	32		175.0	1020.0	570.0	570.0	450.0	450.0
5	22	4	201.0	1000.0	560.0	560.0	440.0	440.0
6	23		224.0	980.0	550.0	550.0	430.0	430.0
7	30		294.0	950.0	535.0	535.0	415.0	415.0
8	26		280.0	920.0	520.0	520.0	400.0	400.0
9	23		303.0	890.0	505.0	505.0	385.0	385.0
10	21		324.0	860.0	490.0	490.0	370.0	370.0
11	15	4	343.0	830.0	475.0	475.0	355.0	355.0
12	22		365.0	790.0	455.0	455.0	335.0	335.0
13	21		386.0	750.0	435.0	435.0	315.0	315.0
14	18		404.0	710.0	415.0	415.0	295.0	295.0
15	17		421.0	670.0	395.0	395.0	275.0	275.0
16	15		438.0	630.0	375.0	375.0	255.0	255.0
17	13		449.0	590.0	355.0	355.0	235.0	235.0
18	16		465.0	540.0	330.0	330.0	210.0	210.0

NO.	PKT-THK DUCT PKT-HT	LEGLAM	---WYOKLAM---		---AYOKLAM---		ALEGLAM	
			Top	Bot	Top	Bot	Top	Bot
19	13		478.0	490.0	305.0	305.0	185.0	185.0
20	10		488.0	440.0	280.0	280.0	160.0	160.0

CROSS SECTION AREA - GROSS, SQ. CM				Net, SQ. CM	
Main Leg				8473.5	8219.4
Main Yoke Top				4810.4	4666.1
Main Yoke Bot				4810.4	4666.1
Aux Yoke Top				3663.2	3553.3
Aux Yoke Bot				3663.2	3553.3
Aux Leg				3663.2	3553.3

DISTRIBUTION OF POINTS
M.O. 63202A51201

BHARAT HEAVY ELEC. LTD

BHOVAL

REV	DATE	BY	CHKD	DATE	BY	CHKD	DATE	BY	CHKD
TITLE									
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500MVA 400/250/33 KV OPTCL									
DRAWING NO									
34647000419									
SHEET NO. 2									
NO OF SHEETS 17									
REV									
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SIZE A3

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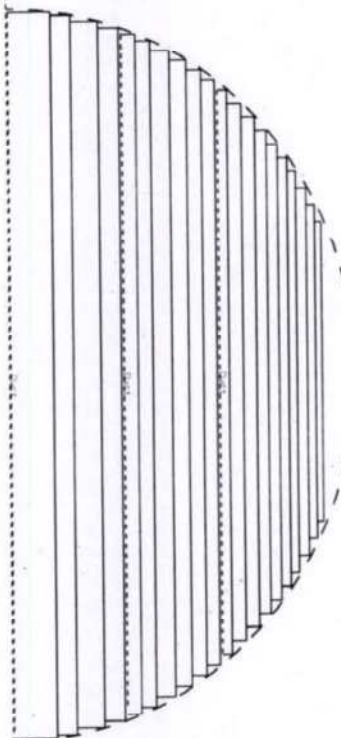
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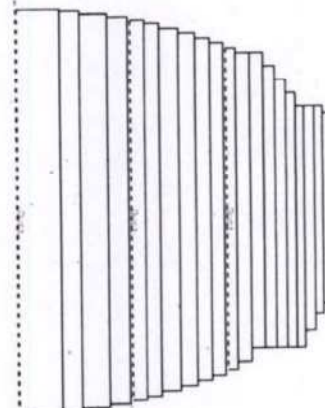
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All dimensions in mm

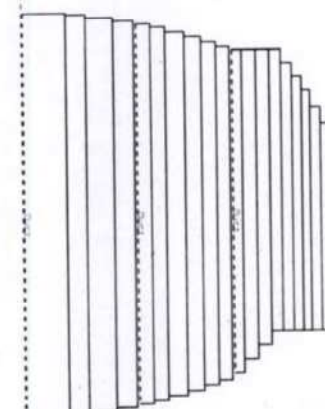
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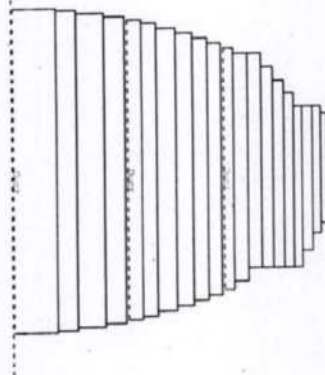
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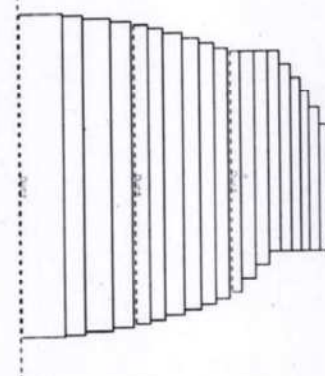
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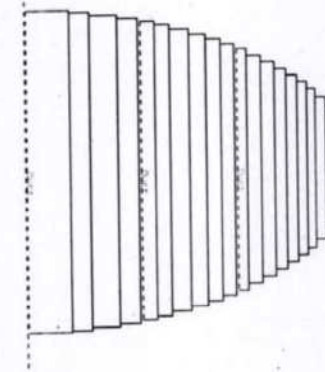
Top Aux Yoke Cross Sect



Bot Aux Yoke Cross Sect



Aux Leg Cross Sect



DISTRIBUTION OF MAINS

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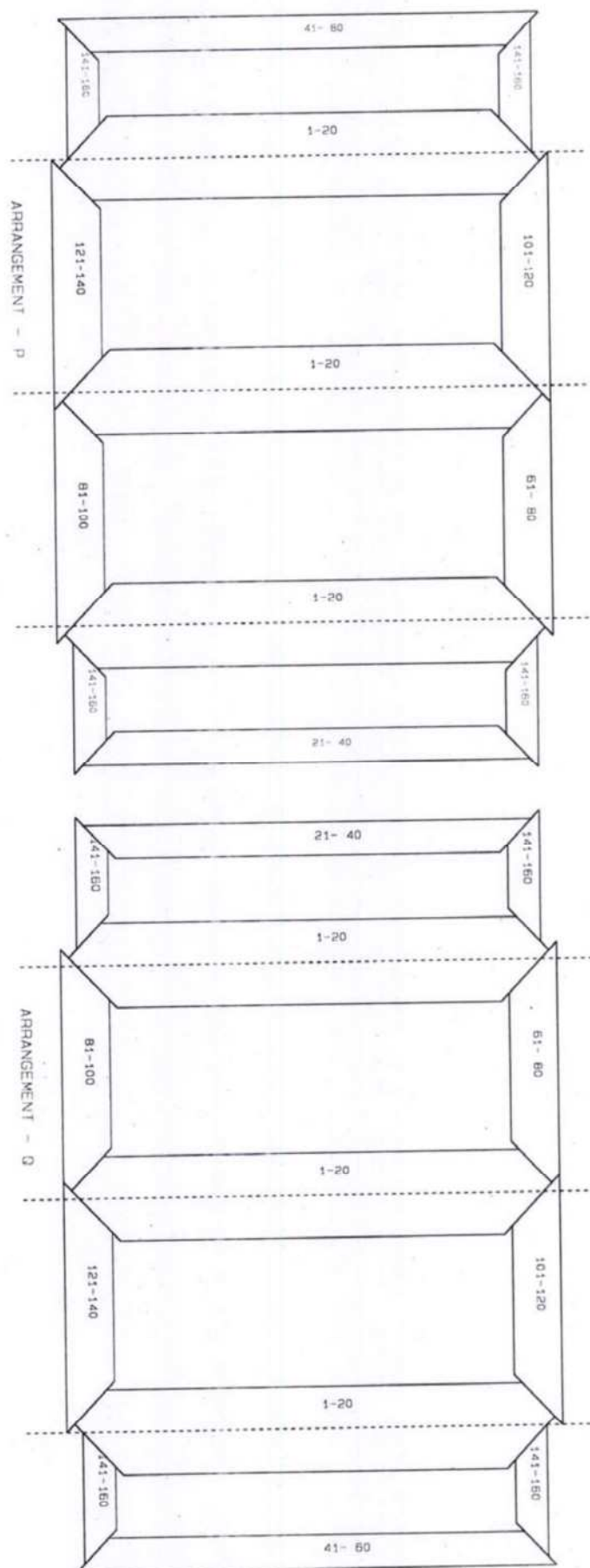
REV

First Angle Projection

34647000419

Dwg No.

All dimensions in mm



NOTE : -

For items 1 to 20, each of the items with lamination width greater than 750 mm appears in two split parts. Part A and Part B and item nos. are suffixed by A and B respectively. However for lamination width less than 750 mm the items appear as single parts only and so item nos. do not have suffixes

DISTRIBUTION OF SHEETS

K.O. 53202A51201



BHARAT HEAVY ELEC. LTD

BHEL



SCALE

1 : 5

WEIGHT

NO. OF SHEETS

17

DRAWING NO

34647000419

HEV

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10/11/24

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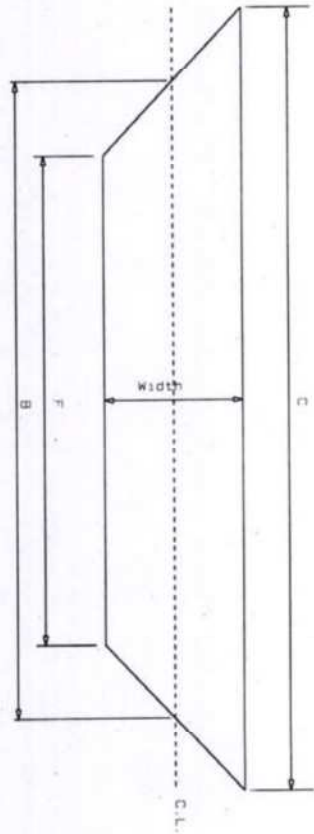
34647000419

First Angle Projection

34647000419

ON DWG

All dimensions in mm



Item	Width	Thick	B	C	F	Weight
1A	520.0	402	3080.0	3600.0	2560.0	4777.6
2A	515.0	186	3080.0	3595.0	2565.0	2189.3
3A	505.0	258	3080.0	3585.0	2575.0	2877.8
4A	495.0	192	3080.0	3575.0	2585.0	2172.2
5A	485.0	132	3080.0	3565.0	2595.0	1463.2
6A	475.0	138	3080.0	3555.0	2605.0	1498.2
7A	460.0	180	3080.0	3540.0	2620.0	1892.4
8A	445.0	156	3080.0	3525.0	2635.0	1586.6
9A	430.0	138	3080.0	3510.0	2650.0	1356.2
10A	415.0	126	3080.0	3495.0	2665.0	1195.1
11A	400.0	90	3082.5	3482.5	2682.5	823.5
12A	380.0	132	3095.0	3475.0	2715.0	1152.0
Total						23084.0

DISTRIBUTION OF PARTS
M.O. 63202A51201



BHARAT HEAVY ELEC. LTD.



SCALE

N.T.S

WEIGHT

REF TO ASSY DWG

17 NO

TITLE

Main Leg Laminations

500MVA 400/220/33 KV DPTCL

DRAWING NO

34647000419

SHEET NO. 5 NO OF SHEETS 17

REV

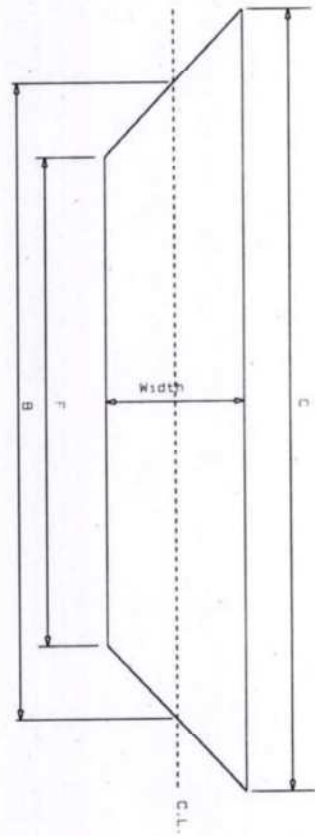
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SIZE A3

First Angle Projection

6170004294E DW-950

All dimensions in mm



Item	Width	Thick	B	C	F	Weight
1B	550.0	402	3050.0	3600.0	2500.0	5004.1
2B	545.0	185	3050.0	3595.0	2505.0	2294.3
3B	535.0	258	3050.0	3585.0	2515.0	3124.0
4B	525.0	192	3050.0	3575.0	2525.0	2281.4
5B	515.0	132	3050.0	3565.0	2535.0	1538.6
6B	505.0	138	3050.0	3555.0	2545.0	1577.3
7B	490.0	180	3050.0	3540.0	2560.0	1996.2
8B	475.0	156	3050.0	3525.0	2575.0	1677.1
9B	460.0	136	3050.0	3510.0	2590.0	1436.7
10B	445.0	126	3050.0	3495.0	2605.0	1265.0
11B	430.0	90	3052.5	3482.5	2622.5	876.6
12B	410.0	132	3065.0	3475.0	2655.0	1230.9
Total						24305.9

DISTRIBUTION OF PRINTS

M.O. 63202A51201

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TITLE
Main Leg Laminations
500kVA 400/220/33 KV DPTCL

DRAWING NO
34647000419

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SIZE A3

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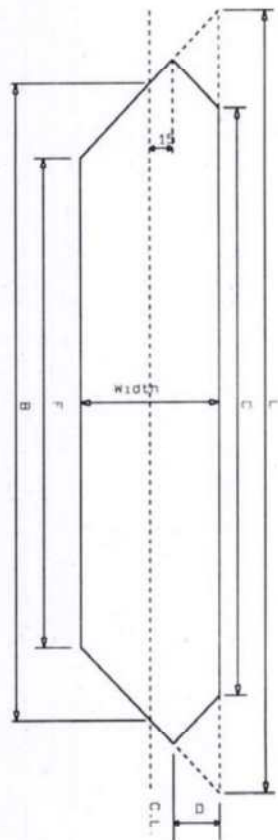
Must not be used directly or indirectly in any way detrimental to the interest of the company.

First Angle Projection

6147000419

NO. 590

All dimensions in mm



Item	Width	Thick	B	C	L	D	F	Wt-Pinch	Wt-Cut
13	750.0	126	3445.0	2755.0	4195.0	360.0	2695.0	2173.4	2415.8
14	710.0	108	3425.0	2775.0	4135.0	340.0	2715.0	1763.6	1948.8
15	670.0	102	3385.0	2775.0	4055.0	320.0	2715.0	1561.6	1715.0
16	630.0	90	3345.0	2775.0	3975.0	300.0	2715.0	1287.2	1407.4
17	590.0	78	3305.0	2775.0	3895.0	280.0	2715.0	1037.9	1128.6
18	540.0	96	3280.0	2800.0	3820.0	255.0	2740.0	1169.1	1261.7
19	490.0	78	3255.0	2825.0	3745.0	230.0	2755.0	923.2	923.2
20	440.0	60	3240.0	2860.0	3680.0	205.0	2800.0	597.3	634.7
Total									10451.9 11436.8

DISTRIBUTION OF POINTS

M.D. 63202A51201

REV	DATE	REASON	BY	CHKD
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		BHARAT HEAVY ELEC. LTD. BHEL SCALE: 1:1		NAME: DES: SS/RS: REF. TO ASSY Dwg: DATE: NO. OF SHEETS: NO. OF VARS: REV: 0d	
TITLE Main Leg Laminations 500MVA 400/220/33 KV. OPTCL		DEPT: INTR. DIM. IN: N.T.S.		DRAWING NO 34647000419 SAT NO: 7 NO. OF SHEETS: 17	

SIZE A3

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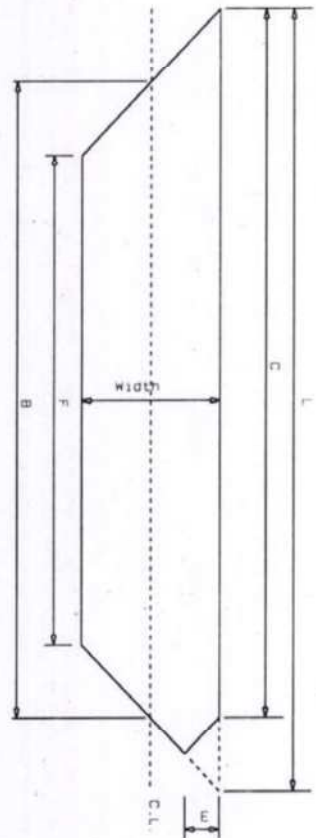
Must not be used directly or indirectly in any way detrimental to the interest of the company.

First Angle Projection

6170002499C

ON SHEET

All dimensions in mm



Item	Width	Thick	B	C	L	E	F	Wt-Piece	Wt-Cut
51	595.0	134	2139.0	2610.0	2730.0	60.0	1540.0	1259.6	1253.1
52	590.0	62	2140.0	2610.0	2730.0	60.0	1550.0	579.2	580.9
53	580.0	66	2150.0	2610.0	2730.0	60.0	1570.0	793.5	795.8
54	570.0	64	2160.0	2610.0	2730.0	60.0	1590.0	583.0	584.7
55	560.0	44	2170.0	2610.0	2730.0	60.0	1610.0	395.6	396.8
56	550.0	46	2180.0	2610.0	2730.0	60.0	1630.0	408.0	409.3
57	535.0	60	2195.0	2610.0	2730.0	60.0	1660.0	521.2	522.8
58	520.0	52	2210.0	2610.0	2730.0	60.0	1690.0	442.0	443.4
59	505.0	46	2225.0	2610.0	2730.0	60.0	1720.0	382.3	383.5
70	490.0	42	2240.0	2610.0	2730.0	60.0	1750.0	341.0	342.1
71	475.0	30	2255.0	2610.0	2730.0	60.0	1780.0	237.6	238.4
72	455.0	44	2275.0	2610.0	2730.0	60.0	1820.0	336.8	338.0
73	435.0	42	2295.0	2610.0	2730.0	60.0	1860.0	310.0	311.1
74	415.0	36	2315.0	2610.0	2730.0	60.0	1900.0	255.7	256.6
75	395.0	34	2335.0	2610.0	2730.0	60.0	1940.0	231.8	232.7
76	375.0	30	2355.0	2610.0	2730.0	60.0	1980.0	195.8	196.6
77	355.0	26	2375.0	2610.0	2730.0	60.0	2020.0	162.0	162.7
78	330.0	32	2400.0	2610.0	2730.0	60.0	2070.0	197.2	198.1

DISTRIBUTION OF POINTS

N.O. 63202A51201

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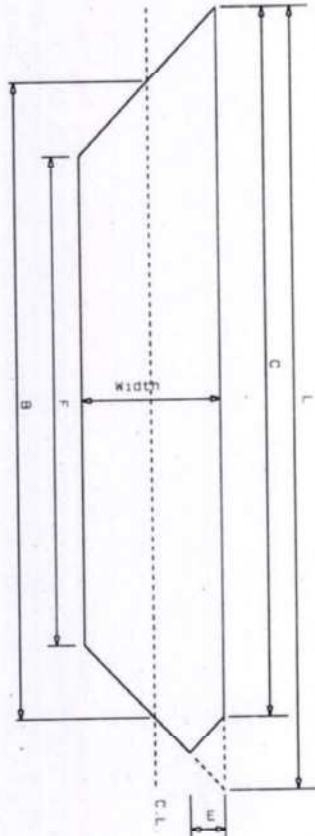
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TITLE Main Yoke Laminations 500MVA 400/220/33 KV. OPTCL.		DRAWING NO 34647000419		REV 00		SHEET NO 17		NO OF SHEETS		NO OF SHEETS		NO OF SHEETS	

SIZE A3

First Angle Projection

34647000419

DN-DWG



Item	Width	Thick	B	C	L	E	F	Mt-Pinch	Mt-Cut
79	305.0	26	2425.0	2610.0	2730.0	60.0	2120.0	142.0	142.7
80	280.0	20	2450.0	2610.0	2730.0	60.0	2170.0	101.3	101.8
Total									7955.7 7991.2

All dimensions in mm

W.O. 63202A51201

DISTRIBUTION OF PRINTS



BHARAT HEAVY ELEC. LTD.



SCALE

N. 1/1

WEIGHT

REF TO ASSY DWG

DATE

5/11/22

11/1/24

TITLE

Main Yoke Laminations

500MVA 400/220/33 KV OPTCL

DRAWING NO

34647000419

9

REV

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SIZE A3

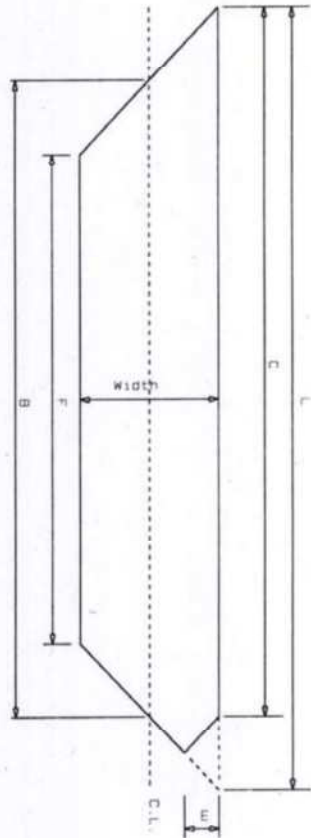
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First Angle Projection

34547000419

ON SHEET



Item	Width	Thick	B	C	L	E	F	Wt-Pnch	Wt-Cut
99	305.0	26	2425.0	2610.0	2730.0	60.0	2120.0	142.0	142.7
100	280.0	20	2450.0	2610.0	2730.0	60.0	2170.0	101.3	101.8


Total: 7065.7 7091.2

All dimensions in mm

DISTRIBUTION OF POINTS

M.O. 63202A51201

REV	DATE	ALTERED	BY	CHKD

		BHOPAL		SCALE 1:1		WEIGHT 17.0		REF. TO ASSY Dwg.		DATE 10/11/24		NO OF 17	
TITLE Main Yoke Laminations 500MVA 400/220/33 KV. OPTCL.		SHARAT HEAVY ELEC. LTD.		SCALE 1:1		WEIGHT 17.0		REF. TO ASSY Dwg.		DATE 10/11/24		NO OF 17	

DRAWING NO
34547000419

REV
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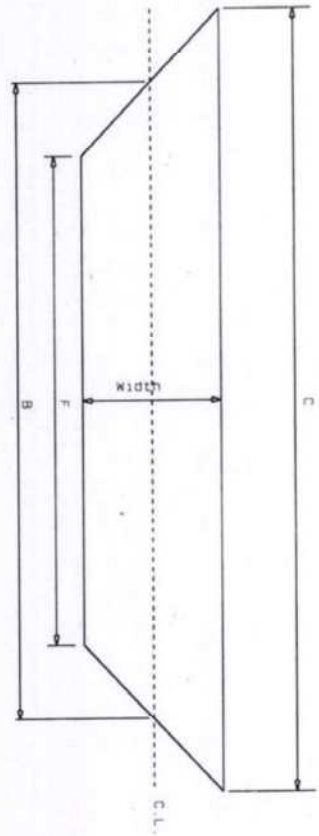
SIZE A3

First Angle Projection

614000419

346A7000419

All dimensions in mm



139 305.0	26	2425.0	2730.0	2120.0	142.7
140 280.0	20	2450.0	2730.0	2170.0	101.8
Total					7591.2

It	Width	Thick	B	C	F	Wt-Cut
121	595.0	134	2135.0	2730.0	1540.0	1263.1
122	590.0	62	2140.0	2730.0	1550.0	580.9
123	580.0	86	2150.0	2730.0	1570.0	795.8
124	570.0	64	2160.0	2730.0	1590.0	584.7
125	560.0	44	2170.0	2730.0	1610.0	395.8
126	550.0	46	2180.0	2730.0	1630.0	409.3
127	535.0	60	2195.0	2730.0	1660.0	522.8
128	520.0	52	2210.0	2730.0	1680.0	443.4
129	505.0	46	2225.0	2730.0	1720.0	383.5
130	490.0	42	2240.0	2730.0	1750.0	342.1
131	475.0	30	2255.0	2730.0	1780.0	238.4
132	455.0	44	2275.0	2730.0	1820.0	338.0
133	435.0	42	2295.0	2730.0	1860.0	311.1
134	415.0	36	2315.0	2730.0	1900.0	256.6
135	395.0	34	2335.0	2730.0	1940.0	232.7
136	375.0	30	2355.0	2730.0	1980.0	196.6
137	355.0	26	2375.0	2730.0	2020.0	162.7
138	330.0	32	2400.0	2730.0	2070.0	188.1

DISTRIBUTION OF PAINTS

M.O. 63202A51201



BHARAT HEAVY ELEC. LTD.

BHEL

REV	DATE	REVISION
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REV	DATE	REVISION
1		

TITLE
Main Yoke Laminations
500kVA 400/220/33 KV OPTCL

DRAWING NO
346A7000419

REV
00

SIZE A3



Total	14627.9
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100

All dimensions in mm

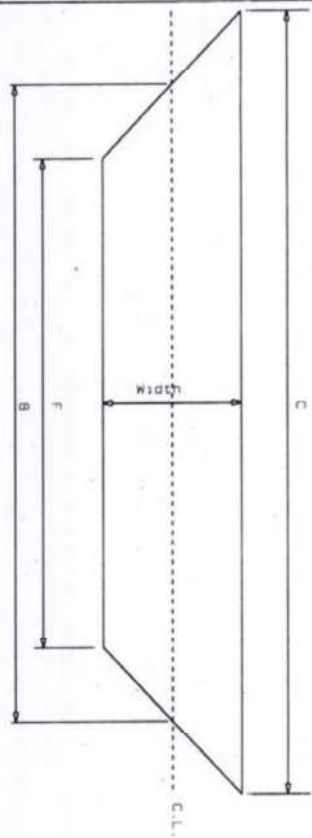
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First Angle Projection

51470002494E

ON 19/05



Item Width Thick	B	C	F	Weight
59	185.0	26	3010.0	107.4
60	180.0	20	3020.0	71.7
Total				825.1

All dimensions in mm

Item Width Thick	B	C	F	Weight
41	475.0	134	3035.0	1433.5
42	470.0	62	3035.0	656.3
43	450.0	86	3035.0	890.5
44	450.0	64	3035.0	648.6
45	440.0	44	3035.0	436.0
46	430.0	46	3035.0	445.5
47	415.0	50	3035.0	560.8
48	400.0	52	3035.0	468.4
49	385.0	46	3035.0	398.9
50	370.0	42	3035.0	350.0
51	355.0	30	3037.5	240.0
52	335.0	44	3050.0	333.6
53	315.0	42	3070.0	301.4
54	295.0	36	3070.0	241.9
55	275.0	34	3050.0	211.6
56	255.0	30	3030.0	172.0
57	235.0	26	3010.0	136.5
58	210.0	32	3010.0	150.1

DISTRIBUTION OF SHEETS

N.O. 63202451201



BHARAT HEAVY ELEC. LTD.

BHEL

REV.	DATE	REVISION

REV.	DATE	REVISION

REV.	DATE	REVISION

TITLE
Aux Leg Laminations
500MVA 400/220/33 KV. OPTCL.

REV.	DATE	REVISION

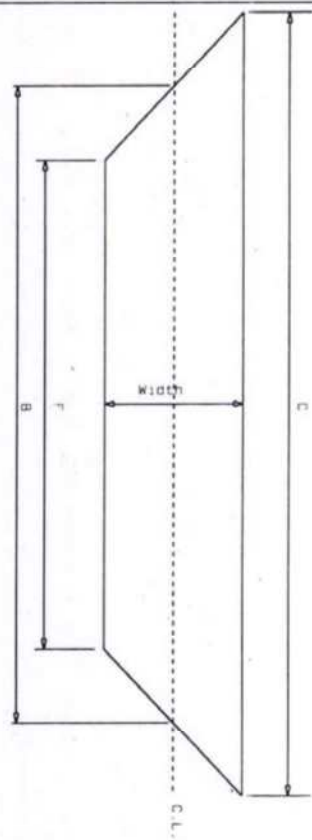
SIZE A3

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First Angle Projection

614000479PC ON SHC



Item	Width	Thick	B	C	F	Weight
39	185.0	26	2950.0	3135.0	2765.0	105.3
40	160.0	20	2960.0	3120.0	2800.0	70.3
Total						8092.0

All dimensions in mm

Item	Width	Thick	B	C	F	Weight
21	475.0	134	2975.0	3450.0	2500.0	1405.1
22	470.0	62	2975.0	3445.0	2505.0	543.3
23	460.0	06	2975.0	3435.0	2515.0	873.3
24	450.0	64	2975.0	3425.0	2525.0	635.8
25	440.0	44	2975.0	3415.0	2535.0	427.4
26	430.0	46	2975.0	3405.0	2545.0	436.7
27	415.0	60	2975.0	3390.0	2560.0	549.7
28	400.0	52	2975.0	3375.0	2575.0	459.2
29	385.0	46	2875.0	3360.0	2590.0	391.0
30	370.0	42	2875.0	3345.0	2605.0	343.1
31	355.0	30	2877.5	3332.5	2622.5	235.3
32	335.0	44	2890.0	3325.0	2665.0	327.0
33	315.0	42	3010.0	3325.0	2695.0	295.5
34	295.0	36	3010.0	3305.0	2715.0	237.2
35	275.0	34	2990.0	3265.0	2715.0	207.5
36	255.0	30	2970.0	3225.0	2715.0	169.6
37	235.0	26	2950.0	3185.0	2715.0	133.8
38	210.0	32	2850.0	3160.0	2740.0	147.1

DISTRIBUTION OF POINTS

M.D. 63202A51201



BHARAT HEAVY ELEC. LTD

BHO PAL

REV.	DATE	REVISION
1	12/04	1

REV.	DATE	REVISION
1	12/04	1

REV.	DATE	REVISION
1	12/04	1

TITLE	DRAWING NO.	REV.
Aux Leg Laminations 500MVA 400/250/33 KV DBTL	34647000419	00

SIZE A3

First Angle Projection

6170002494E ON 06/05

All dimensions in mm

NO.	Width	SLIT-WT	S-LEN(M)	NO.	Width	SLIT-WT	S-LEN(M)	NO.	Width	SLIT-WT	S-LEN(M)	NO.	Width	SLIT-WT	S-LEN(M)
1	160.0	281.4	999.5	2	185.0	420.5	1291.7	3	210.0	584.9	1563.0	4	235.0	529.5	1280.7
5	255.0	663.0	1477.8	6	275.0	810.4	1674.8	7	280.0	407.2	826.6	8	295.0	920.5	1773.3
9	305.0	570.8	1063.6	10	315.0	1142.7	2061.8	11	330.0	752.3	1295.6	12	335.0	1264.4	2145.1
13	355.0	1559.1	2496.1	14	370.0	1321.5	2029.9	15	375.0	786.4	1191.8	16	380.0	1152.0	1723.0
17	385.0	1502.1	2217.4	18	395.0	930.8	1339.3	19	400.0	2583.0	3670.1	20	410.0	1230.9	1706.3
21	415.0	4322.5	5919.7	22	430.0	3897.3	5151.1	23	435.0	1244.6	1626.1	24	440.0	2261.0	2920.5
25	445.0	2855.6	3647.1	26	450.0	2414.9	3050.0	27	455.0	1351.9	1688.6	28	460.0	6640.4	8204.4
29	470.0	2434.8	2944.2	30	475.0	9442.5	11298.1	31	485.0	1463.2	1714.5	32	490.0	4297.7	4973.2
33	495.0	2172.2	2494.0	34	505.0	6089.2	6853.0	35	515.0	3727.9	4114.0	36	520.0	6551.4	7160.5
37	525.0	2281.4	2469.7	38	535.0	5215.3	5540.4	39	540.0	1261.7	1328.0	40	545.0	2294.3	2392.5
41	550.0	6041.1	6862.6	42	560.0	1587.1	1610.7	43	570.0	2338.8	2332.0	44	580.0	3183.2	3113.2
45	590.0	3452.2	3325.5	46	595.0	5052.6	4826.2	47	630.0	1407.4	1269.5	48	670.0	1716.5	1456.1
49	710.0	1948.8	1550.0	50	750.0	2415.8	1830.5								

Total Slitting Weight = 121366.6 KG

Nett Core Weight = 120330.6 KG

Core steel to be drawn = 124400.8 KG
(With 2.5 % wastage)

DISTRIBUTION OF POINTS

W.D. 63202A51201



BHARAT HEAVY ELEC. LTD

BHO-PAL

REV. DATE

CHECKED

DESIGN

JAYLO. 20/06/20

SCALE

N. 1/5

WEIGHT

REF TO ASSY Dwg

11 NO

NO

DATE

NO OF

REV

00

TITLE
Summary of Weights
500MVA 400/220/33 KV. OPTCL.DRAWING NO
34647000419

REV NO

17

NO OF SHEETS

L7

SIZE A3

satyendrasingh

From: Kirti Nath Patir(Sr Dy GM/RODBSRCOM/ROD) <knpatir@bhel.in>
Sent: 18 April 2024 14:04
To: Abhishek Kumar Sharma, Sr Manager/QTR333/HEP; Satyendra Kumar Singh, Engineer/QTR333/HEP
Cc: Kamlesh Kumar Agrawal(Sr Manager/TRE40607/HEP); Pawan Prajapat; Jitendra Singh, Manager/TRE40601/HEP; Shri Kumar-HEP; A Mittal; R K Singh-HEP; Santosh Kumar R Meena, Addl GM/QTR333/HEP; 2866676; 0000000; Harendra Kumar Sa
Subject: Fwd: (Power transformer /Shunt reactor) BHEL commented Std Mfg Quality Plan after VC meeting with OPTCL for acceptance.(WORK ORDER No. 63202A)

Dear Sir,

Please see the trailing mail from M/s OPTCL. They have confirmed the acceptance of MQP in line with VC held between BHEL & OPTCL during March'24 against supply of 1no. 500MVA 400/220/33KV ICT (Without OLTC).

धन्यवाद व सादर/ Thanks & best regards.

कीर्ति नाथ पातिर / Kirti Nath Patir
 वरिष्ठ उप महाप्रबंधक / Sr Dy General Manager
 क्षेत्रीय प्रचालन प्रभाग / Regional Operations Division
 बी.एच.ई.एल/ भुवनेश्वर/ BHEL/Bhubaneswar 751001
 Mob-7381539889

From: "Chief General Manager" <cgm.enq@optcl.co.in>
To: "Kirti Nath Patir, Dy GM/RODBSRCOM/ROD" <knpatir@bhel.in>
Cc: "sgm cpc" <sgm.cpc@optcl.co.in>
Sent: Thursday, April 18, 2024 12:16:46 PM
Subject: Re: (Power transformer /Shunt reactor) BHEL commented Std Mfg Quality Plan after VC meeting with OPTCL for acceptance.

MQP CLAUSE Number	ITEM	Discussed point	Witness (W) OR Verification (V)
CI No 1.11	CRGO Steel	CHP witness of the CRGO laminations after slitting/cutting for random sample selection and testing at NABL lab covered as witness under cl no 2.2.8 .	(V) Review of records. Before cutting & Slitting test witnessed as per 2.2.8 & 2.3.1(a-h)
CI No 1.11.10	Core Cheese(packets) for Shunt Reactors	Records shall be provided for verification.	(V) Review of records.
Cl. No. 1.15.4	Condenser Bushings (RIP/RIS)	Test of Bushing Insulators shall be verification other points shall be Witness.	(V) Review of records All TTR of Insulator to be submitted for approval.
CI No. 1.33 (1.33.1,1.33.2,1.33.3)	Steel Fabricated Parts	Documents shall be provided for record review	(V) Review of records

1

6

No. HEP-TCB06MO(Misc)/618/2024 HEP-TRM20606 (Computer No. 107016)

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STANDARD MANUFACTURING QUALITY PLAN									
EHV TRANSFORMERS AND SHUNT REACTORS (UP TO 400 KV)					CUSTOMER ADDRESS:				
DATE OF ISSUE :- 25.06.2021 REV :- 00 QAP NO :- OPTCL/EQ/MQP/EHVTRF-RTR					OPTCL CORPORATE OFFICE JAMPATH, BHONAGAR, BHUBANESHWAR, ODISHA, PIN-751022				
SL NO.		ITEM / TEST / OPERATION		TYPE OF CHECK		SAMPLING RATE		REFERENCE DOCUMENT	
								ACCEPTANCE NORMS	
								RECORD FORMATS	
								RESPONSIBILITY	
								S	
								M	
								C	
1.10.8		Tensile Strength	ME	- DO -				CM-TC	P
1.10.9		Elongation	ME	- DO -				CM-TC	P
1.10.10		Breaking Load = Tensile x Elongation	ME	- DO -				CM-TC	P
1.10.11		LACQUER COATED TAPE (IF APPLICABLE)						CM-TC	P
1.11		CRGO STEEL (Patent material)							
Inspection of packed prime CRGO coils at port of discharge for Manufacturer's Identification slip/ unique numbering of prime CRGO coil as per OPTCL's Specification									
Check the following document:									
1. Manufacturer's Identification slip/ unique numbering of prime CRGO coil									
2. Invoice of supplier									
3. Mill's Test certificate									
4. Packing List									
5. Bill of Lading									
6. Bill of Entry									
1.11.1		Check for coil grade, width & thickness from name plate	VI	100% of coils				As per OL/CM-NS	P
1.11.2		Specific Core Loss before and after aging test	MM	10% of coils (Random selection)				EM-TC/CM-TC	P
1.11.4		Stacking Factor	EL	One sample per lot				EM-TC	P
1.11.5		Surface Insulation Resistivity	EL	- DO -				EM-TC	P
1.11.6		Minimum Magnetic Polarization at 60Hz (mT/m)/mW/Hz	EL	- DO -				EM-TC	P
1.11.7		Accelerated aging test	EL	- DO -				EM-TC	P
1.11.8		Ductility/ Bend test	ME	- DO -				EM-TC	P
1.11.9		Chemical Composition	CM	SS				EM-TC	P
1.11.10		CORE CHEESE (PACKETS)						EM-TC	P
1.11.10.1		Visual Check	VI	100%				AL-TC	-
1.11.10.2		Surface fineness Check	ME	10% sample (Random Selection)				EM-TC	P
1.11.10.3		Placement of Ceramic Spacers	VI	- DO -				EM-TC	P
1.11.10.4		Total Height and Diameter	MM	One Sample Per Lot				EM-TC	P

EM - EQUIPMENT MANUFACTURER
CM - COMPONENT MANUFACTURER
AL - ACCREDITED LAB
TC - TEST CERTIFICATE
AS - APPLICABLE STANDARD
VI - VISUAL
MM - MEASUREMENT
VE - VERIFICATION
PH - PHYSICAL
EL - ELECTRICAL
ME - MECHANICAL
CH - CHEMICAL
SS - SAMPLE SELECTION
DO - DESIGN Datasheet
RECORD REVIEW
AS - APPROVED DRAWING/OTIC - CUSTOMER - WITNESS
NS - MANUFACTURING STANDARD OF MATERIAL SPECIFICATION
QS - OPTIC TECH SPECIFICATION
M - MANUFACTURE - PERFORM
S - SUB-VENDOR - VERIFY

CHECKED APPROVED

APPROVED BY: CUSTOMER SEAL MANUFACTURER SEAL Page 9