

BHARAT HEAVY ELECTRICALS LIMITED
ELECTRONICS DIVISION
MYSORE ROAD, BANGALORE - 560 026

Tender Enquiry No.:**BHEL:EDN:SHP:PKG:2016-18:ENQ** Date: **25.04.2016**

1.0 NOTICE INVITING TENDER FOR PACKING

Bharat Heavy Electricals Limited (BHEL), Electronics Division, Mysore Road, Bangalore – 560026 herein invites application from experienced and reputed Packing Contractors for packing work of its products for a period of Two years, extendable by BHEL for a further period of 6 months. The Contractor, on selection, shall comply with various laws under Contract Labour (R&A) Act, Payment of Minimum Wages Act, ESI Act, PF&MP Act while undertaking the contract of packing work as per our specifications, terms and conditions, using Contractor's material, Labour and Tools etc. **The packing works have to be carried out both at BHEL-EDN at Mysore Road Bangalore – 560 026 and at BHEL-ESD at Electronic City, Hosur Road, Bangalore - 560100.**

Complete details of Tender for Packing is hosted on www.bheledn.com , www.bhel.com & www.tenders.gov.in and can be directly downloaded and used for submission of tender document. **OR the Tender documents can be collected directly from o/o AGM (SHIPPING) , BHEL –EDN ,MYSORE ROAD, Bangaore – 26 free-of cost.**

Date of issue: Tender documents will be issued from Shipping Dept. of BHEL-EDN, Bangalore from 09.00 hours to 15.00 hours 25.04.2016 to 17.05.2016 on all working days, and from 09.00 hours to 11.00 hours on Saturdays. **(Ph: 26998699/9448266363)**

Last date for receipt of completed tender documents:18.05.2016 up to 1.00 PM. Technical bid will be opened at 1.30 PM on the same day, in the presence of bidders desirous to be present.

TENDER NOTIICE

1. Tender Enquiry No. : BHEL:EDN:SHP:PKG:2016-18:ENQ
Dated 25.04.2016
2. Nature of the Work : Rate contract for packing of BHEL products. Viz. CE Panels, Semi-conductor Devices & Photovoltaic Modules, other equipment and associated components.
3. Contract Period : Two Years.
Extendable for a further period of 6 months.
4. Contract Total Value : **Rs. 1642 Lakhs (Estimated value)**
4. Issue of Tender : **From 25.04.2016 to 17.05.2016 on**
Monday to Friday 9.00 hrs to 15.00 hrs,
and on Saturdays 9.00 hrs to 11.00 hrs.
5. Nature of Tender/ bid : **2 Part Bid**
6. Earnest Money Deposit [EMD]: **Rs. 2,00,000/- (Two Lakhs only)**
- 7. Last Date and Time for the receipt of completed Tender. : 18.05.2016 up to 1.00 PM Hours**
- 8. Date , Time and Place of Tender Opening : 18.05.2016 at 1.30 PM near Reception Tender Opening Room [Technical Bid only].
Price Bid will be opened for technically acceptable bidders on intimation at later date.**
09. Places where packing job to be carried out : 1] BHEL-EDN Mysore Road Bangalore and
2] BHEL-ESD Electronic city, Hosur Road, Bangalore.
10. This NIT Document contains : 31 sheets including this Sheet.

Sd/-
For and on behalf of
Bharat Heavy Electricals Limited
Electronics Division
Bangalore - 560 026

Table of Contents

Sl. No.	DESCRIPTION	Page Nos.
1	Notice Inviting Tender for Packing	1- 2
2	About BHEL	3
3	Instructions to Tenderers , statutory liability and Obligations	4-14
4	Minimum Qualifying Criteria for selection in techno commercial Bid	15
5	Scope of work and Tender Specifications	16
6	Other Technical points	17
7	General Terms and Conditions	18
8	Commercial Terms and Conditions	22
9	Appendix	31

2.0 About BHEL

Bharat Heavy Electricals Limited, is engaged in the design, engineering, manufacture, construction, testing, commissioning and servicing of a wide range of products and services for the core sectors of the economy, viz. Power, Transmission, Industry, Transportation, Renewable Energy, Oil & Gas, and Defence. We place strong emphasis on innovation and creative development of new technologies aimed at improving the performance and efficiency of our products, using state-of-the-art technologies and processes. We are strongly customer oriented and are sensitive to their needs and accordingly strives to respond quickly to the changes in the market. The high level of quality & reliability of our products is due to adherence to international standards by acquiring and adapting best technologies and practices across the world. Among other, we have been accredited to Quality Management Systems (ISO 9001:2008), Environmental

Management Systems (ISO 14001:2004) and Occupational Health & Safety Management Systems (OHSAS 18001:2007).

3.0 Instructions to Tenderers, Statutory Liability and Obligations

Contractors experienced in packing works of similar nature may please submit your offer in two parts in separate sealed covers as detailed below and both the sealed covers are to be put into one big sealed cover as mentioned below super scribed with tender reference as “Techno-Commercial Bid for Packing of CE, SC&PV Products and associated components- Tender Reference No. BHEL:EDN:SHP:PKG:2016-18:ENQ”:

[3.1.1] First envelope shall contain the following:

a. **Techno-Commercial bid** A questionnaire (as per clause 9.0) duly filled and signed along with all relevant certificates(copies) and documents as per the questionnaire and EMD of **Rs.2.00 lacs**. Enclosures as required by the Tender and any other documents which the Tenderer wish to submit also shall be enclosed. **All the pages of questionnaire, certificates, documents shall be signed / self attested by authorized representative of your company.**

b. **Unpriced Price Bid - A copy of the price bid without the prices.**

This “Unpriced Price bid “ is required for technical evaluation of the relevant portion of the work, desired to be executed by the contractor. Please indicate in the “unit rate” column ‘YES’ for the job you have quoted in Price bid, and ‘No’ for the jobs you have not quoted. (No values shall be quoted in “Unpriced Price bid”).

c. **Declaration letter**

Declaration that you have gone through the entire tender document, and that you have understood all the clauses of the tender, and shall be abided by the tender clauses while executing the contract.

[3.1.2] Second envelope containing the Price Bid only

Price Bid duly filled & signed with seal must be submitted in another **separate sealed envelope** super scribed with tender reference as “**Price Bid for Packing of CE, SC&PV Products and associated components - Tender Reference No. BHEL:EDN:SHP:PKG:2016-18:ENQ**” DUE ON : .

Price Bid must contain the following details:

- Material cost [Basic Value] for each unit rate for supply of finished shooks/boxes.
- Applicable Taxes / Duty rate and amount for each unit rate.
- Packing service charges [Labor charges] for each unit rate.
- Applicable Service tax Rate on packing service charges,
- Other taxes if any.
- Cost to be indicated by multiplying unit rate & unit quantity.

If the price bid is found to be different from the unpriced price bid for any item of the rate contract, rate quoted for that item will be rejected.

[3.1.3] Sealed envelope of both (1) Techno-Commercial bid and (2) Price bid must be put in a single sealed larger envelope super scribed with Tender reference and due date must be sent within the specified date and time and be dropped in the Tender Box earmarked for "Shipping Dept." which is kept at Reception Counter, BHEL-EDN, MYSORE ROAD, BANGALORE-560026 on or before the due date & time of tender.

Important Note

[3.1.4] All the pages of the tender document shall be signed and stamped by the authorized representative of vendor.

[3.1.5] IMPORTANT POINTS:

- i Price bid will be opened only for those technically qualified for the quoted items.
- ii Please, do not spiral bound the pages, send them in 2 hole clips flat files.
- iii Give annexure numbers to all enclosures, and indicate serial numbers for all the pages & put your signature & seal at the bottom of each and every page.
- iv Send your offer with a covering letter on your company's letter head.
- v If you are attaching a document which is not in English but in other local language, please attach an English translated page along with that.
- vi BHEL reserves the right to call for additional information and/or check, verify all the information furnished in the application.
- vii BHEL also reserves the right to inspect all premises/facilities to confirm the authenticity of information furnished / capabilities mentioned in the application.
- viii BHEL reserves the right to reject any or all the applications which are not as per tender terms without assigning any reasons whatsoever.
- ix BHEL's decision shall be final on all the matters relating to this tender.
- x Taxes and duties quoted by you will be taken for KVAT/Cenvat credit. The taxes and duties prevailing on the date will be considered. However, in case of changes made by the Government from time to time, the same will be considered during the progress of contract for payment and claim purposes. In case, no Tax/Duty is included, a self declaration for exemption may be attached along with the offer.
- xi In this regard, if any clarification is required, the Tenderers may contact the officer mentioned here below.
- xii Tenders should be addressed only to:

**AGM - Shipping
BHEL, Electronics Division,
Mysore Road, Bangalore – 560 026.
Phone: 080-26998571/26998699.**

- xiii All the entries in the Tender Documents should be in one ink. Erasures and over-writings are not permitted. Cancellations and insertions if any, shall be authenticated by the tenderer by signing and affixing his seal.
- xiv Tenderer shall fill in all the required particulars in the blank spaces provided in the Tender documents and also sign at the bottom of each and every page of the Tender document before submitting the Tender.
- xv In case the rates quoted in figures differ from those quoted in words, the lower will be taken as the Tendered rate and shall be binding on the Tenderers.

xvi **In quoting their rates, the Tenderers are advised to take into account all factors including any fluctuations in the market rates for materials, wages for your employees, transportation charges etc. in the future.**

xvii The rates quoted in the Tender shall remain valid for a period of three months from the date of opening of the Price Bid.

xviii Before submission of Tender, the Tenderers are necessarily advised to inspect the site of work and its environment and be well acquainted with the actual working and other prevailing conditions including various best practices adopted by BHEL with respect to position of the materials and labor here. Pre-bid meeting deliberating the aspects involved in the contract can be arranged on request to ensure proper understanding by the Tenderers who wish to participate. The bidders are expected to be well versed with BHEL-General Conditions of Contract (GCC), Instructions to Tenderers, specifications and all other documents, which form part of the Agreement to be entered into subsequent to award of work.

xix Details and quantities of each item of work shown in the Tender schedule attached hereto are only approximate. They are given as a guideline for the purpose of Tendering only and are liable to variations and alterations at the discretion of the competent authority throughout the contract period from the date of commencement of work. The work under each item as executed shall be measured and paid at the corresponding rates to be quoted by the Tenderer in the Tender schedule Format attached hereto. It shall not be based on number of persons deployed or on any other criteria.

xx The Packing work shall normally be done between 7.30AM and 4.36 PM on working days. However, the same shall be done beyond normal working hours on the directions of executing officers whenever the work load is temporarily increased. No overtime wages or additional payments or allowance for you or your employees deployed for such work will be payable by BHEL for working beyond normal working hours.

[3.1.5] **PERIOD OF CONTRACT:** This contract will be for a period of Two years from the date of award of contract. BHEL reserves the right to extend the period of contract on the existing terms and conditions for a further period of Six months, based on requirements of BHEL. BHEL shall have absolute right to terminate the contract at any time during the period of contract without assigning any reason

thereof and the tenderer is not entitled for any compensation on the ground of such termination.

[3.1.6] **DISQUALIFICATION:** If the bidder/contractor attempt to do any act, which defames the goodwill of BHEL it will be treated as disqualification of the party and the contract will be terminated at any time. The offers received from any bidder who had been convicted or against whom any kind of criminal cases are pending on complaint, will not be considered.

[3.2] CONTRACTOR'S STATUTORY LIABILITY:

All statutory requirements under Payment of Minimum Wages Act 1948, Payment of Wages Act 1936, Employees' Compensation Act 1923, Payment of Gratuity Act 1972, ESI Act 1948, the Contract Labour (R&A) Act 1970, Payment of Bonus Act 1965, Income Tax Act 1961, Service Tax rules and all other applicable Acts and rules issued from time to time shall be complied with by the contractor. The Contractor shall apply and obtain License under the Contract Labour (R&A) Act 1970, and comply with the relevant provisions, in respect of the Labour employed by him for executing this Contract. The Contractor shall furnish necessary returns to the authority through the principal employer.

[3.2.1] **PAYMENT OF PRESCRIBED MINIMUM WAGES:** Contractor shall ensure payment of prescribed minimum wages as applicable to his employees deployed in the work, as BHEL - EDN may notify from time to time and maintain proper records of their timely disbursement. BHEL Rates Notified during last 3 years periods taking into account average consumer Price Index is given below:

Category	Wages per day				
	From 01/04/2013	From 01/04/2014	From 01/04/2015		
USW	299.37	331.91	397.68		
SSW	313.34	345.88	419.35		
SW	329.49	362.63	443.19		
HSW	348.08	380.62	469.47		

USW=Unskilled ,SSW=Semi-skilled , SW=Skilled , HSW= Highly skilled labour

[3.2.2] WELFARE MEASURES: As a welfare measure towards his workers who may be deployed under this contract, the Tenderer must consider Rs.30/- per day per person for Transport Allowance, Rs.10/- per day per person towards Attendance Bonus, Washing Allowance @ Rs.75 per month per person and take it into account in your estimate and the quoted rate shall be inclusive of the above incentives/allowances as well.

BHEL reserves the right to advise the contractor to extend any further welfare facility in future for the employees of the contractor (over & above the wage rates envisaged as mentioned above i.e., existing wage structure and also allowances as above) on reimbursement basis with additional service charges from BHEL.

The workmen engaged under this contract shall be provided with 2 pairs of their factory uniform (the color of the uniform should be different from BHEL uniform and the uniform of labors under job contract in BHEL) per annum with stitching charges, 2 pair of shoes covering 2 years period, 4 pairs of socks covering 2 years period, 1 no. of Toilet soap per person per month by the contractor of which the cost shall be included in his quoted unit rates.

[3.2.3] COMPLIANCE WITH ESI / PF LAWS: Contractor should ensure that the employees allowed to enter BHEL premises shall be covered under independent code numbers under EPF and ESI and shall cover his employees under the said codes. The contractor shall also indicate ESI No., PF No., Service Tax No. in the techno-commercial bid if available. In case the contractor do not have the ESI & PF Code while quoting, he should immediately apply for the same after award of the contract and get it in a reasonable time. Contractor shall ensure payment of ESI contribution under ESI Act 1948 and provide ESI membership No. card of each employee. Contractor shall maintain proper records of PF, EDLI, Pension, ESI contribution, administrative charges etc., wherever applicable and shall produce proof of deductions as well as remittances. Contractor shall issue wage slips to his employees. Contractor shall furnish proper Returns to the concerned statutory authorities and provide a copy of the same to BHEL. These returns shall be subject to verification whenever the statutory authorities/ inspectors visit BHEL for inspection of records of the contractors.

Contractor shall be solely responsible for non-payment / delayed payment of wages / allowances, contributions under EPF, ESI Act etc. The basic rates to be quoted by the Tenderer shall be firm for material, labor and shall cover and include all statutory levies and contribution such as ESI, PF etc payable by the contractor for the workers he may deploy to carry out the job. In case, the contractor fails to make payment of wages to his employees or remittance of contribution to the concerned authorities & a claim is made against BHEL for what so ever reason, the security deposit /other dues/ running bills under the contract can be utilized by BHEL to discharge the liability of the contractor.

[3.2.4] **INDEMNITY:** Contractor shall indemnify BHEL against all claims and losses if it suffers under various labor laws, statutes or any civil or criminal law in connection with employees deployed by him. The liability for any compensation on account of injury sustained by an employee of the contractor will be exclusively that of the contractor, as BHEL is not the employer for him. Contractor shall obtain necessary insurance cover at his own cost to mitigate any risk of accidents, losses, damages etc. BHEL shall not be responsible for any losses, damages to the contractor or to his employees.

Payment of bonus under the Payment of Bonus Act, payment of gratuity under the Payment of Gratuity Act, and retrenchment compensation under ID Act will be the sole responsibility of the contractor. Contractor is liable to pay the statutory bonus to their employees, as per Payment of Bonus Act. In case, BHEL advises the contractor to pay any additional amount of Bonus to their workers over and above the statutory bonus, the same has to be paid by the contractor to their employees. The difference, in such an event, can be reimbursed from BHEL with indicated additional service charges.

[3.2.5] **FACTORIES ACT:** Contractor shall observe provisions of Factories Act in respect of working hours, holidays, rest intervals, leaves and overtime to his employees, who may be deployed in BHEL premises & maintenance of necessary registers, forms and statutory formats which shall be always available for inspection by BHEL or Factory Inspectorate. No work shall be done on second / third shift, overtime, Sundays or on other declared holidays without written permission from BHEL. Over and above the daily wages rate, the contractor shall make payment to his employees deployed under this contract towards leave with wages also.

Contractor shall be responsible for making payment of wages before expiry of 7(seven) days from the last day of wage period and to ensure disbursement of wages in the presence of the representative from BHEL.

[3.2.6] **FAILURE OF CONTRACTOR:** In case the contractor does not carry out the contractual / statutory obligations or the services rendered by him are found to be unsatisfactory, BHEL shall bring the same to his notice and he will be obliged to discharge the obligations and rectify the deficiency / anomaly within three days time failing which, BHEL reserves the right to terminate the contract without assigning any reason whatsoever. In such an event, no damages will be payable for short closure of the contract and the contractor shall be liable to BHEL for any loss or hardships it may suffer, such termination shall be for the contractor's default and any money including deposits or bills available with BHEL will be forfeited and any further claim on the contractor may be made by BHEL for recovery of any loss. The decision of BHEL regarding interpretation of any terms and conditions set forth in this agreement shall be final and binding on the contractor.

[3.3] Contractor's Obligations:

Contractor shall decide the number of workmen to be deployed for execution of the work awarded to him and he or his authorized representative will be solely entitled to instruct such workers about the manner in which the awarded work is to be carried out as per the prescribed specifications and as may be directed by Engineer-In-charge. The contractor shall provide Employment certificate to his workmen and also shall obtain License in terms of statutory Regulations from Labour Authorities for enabling him for such work. The Contractor shall be fully responsible for the work awarded to him and shall depute a supervisor to supervise work to be carried out by his workmen. The work shall be executed as per work instructions to the satisfaction of Engineer-In-charge. Contractor shall maintain appropriate records of his employees deployed to carry out the job(s). Contractor will be fully responsible for the good conduct of his employees deployed to execute the work. In case of any misconduct/ misbehavior by any employee, the contractor will replace such employee(s) immediately. The contractor shall be responsible for ensuring that all precautions are taken for safety of his employees and in enforcing all safety regulations as applicable by strictly ensuring wearing of safety equipments by them inside the factory while undertaking the work Tendered. BHEL may provide hand

gloves & other safety protective appliances wherever required. The contractor should ensure that his employees deployed in this work wear a neat and tidy distinct uniform, different from BHEL employees having logo of the contractors firm / company. In the event of termination of contract for any reason whatsoever, the contractor shall withdraw all his employees and his equipments, if any; from the establishment of BHEL.

[3.4] Taxes and Duties:

The bidder shall indicate item wise cost with applicable taxes and duties separately in their quote. Accordingly , indicate separately a) basic unit material cost item- wise, b) applicable Excise Duty rate for material portion with amount, c) basic unit packing service charges item wise, d) service tax rate on packing service charges, e) VAT/CST percentage wherever applicable.

For cost comparison, the item COST to BHEL as per working Schedule enclosed (Part II-A, B,C , E & F) will be considered. BHEL reserves the rights to alter the procedure / methodology for cost comparison after due verification of modvat / cenvat benefit issues which are relevant to this.

[3.5] Payment Terms:

The Contractor shall submit bill once in a month and the payment will be made within 30 **days** of receipt of the bill. For exceptional cases, multiple time bills per month are acceptable, when there is a heavy workload completed by the contractor in a particular month.

[3.5.1] Methodology for Bills raising:

[3.5.1.1] Supply Bill: At the time of supply of packing materials to BHEL, one Supply Bill to be prepared [original for buyer + modvat copy of invoice are required] accompanied by a delivery challan. This bill shall contain the following:

- (a)Packing shookees sizes with quantity, area or volume as applicable and value (This value shall be agreed rate as per the rate contract).
- (b)Applicable Excise Duty and VAT / CST.

The Delivery challan(DC) will be duly verified by Security personnel and counter signed by user dept. and duplicate copy of invoice [modvat copy] will be sent to

excise cell for taking cenvat credit on the supply portion and no payment will be made on these supply bills and original for buyer. Copy of invoice and original DC will be retained at shipping. This will also enable supplier for movement of goods from their works to BHEL Premises by their truck/tempo, and enable hassle free operations, in the eventuality of checking by Government authorities on the road.

Payment for consumables as per Part – II E shall be made upon supply after due receipt and verification. No Service Tax is applicable for consumables.

[3.5.1.2] **Service Bill** : After completion of the packing work and full quantity as per delivery challan is used, the vendor shall submit separate Bill for service cost which includes packing service charges as per rate contract item wise and relevant service tax. Full service tax on packing service charges to be borne by the vendor and to be claimed. One Extra copy of invoice [earlier supply bill] and this service Bill shall be submitted for payment. Relevant Original buyer copy of invoice and Delivery challan which was retained at shipping and this service bill together will be taken for processing of payment of packing charges covering both material and packing service charges. Supportive documents such as packing lists shall be attached for these bills.

[3.5.1.3] No payment will be made without taking cenvat credit at our end wherever applicable. For some of the contractor's, where Excise Duty is not applicable on various grounds[who are outside the purview of Excise Duty payment], normal billing process will be in force till further guide lines. But Service tax is applicable as the case may be depending upon the notifications from time to time from the Dept. on the packing service charges. Service tax paid by contractor will be reimbursed.

[3.5.1.4] Tender Evaluation and Award of contract : BHEL reserves the right to split the quantity and Award the Contract to more than one vendor. Contract will be awarded to a maximum of 5 contractors for each schedule (ie. Part II-A, B,C, E & F) of work.(BHEL reserves the right to limit the allocation to less than 5 contractors also). If required; BHEL will negotiate with the vendor who is L1 for each **schedule** as above, and then counter offer the negotiated L1 rates to other vendors from L2, L3, L4 etc., till a maximum of 5 contractors are available for each schedule. The proposed ratio from L1 to L5 for awarding the contract on L1 rates/negotiated L1 rates will be approximately as follows:

	L1	L2	L3	L4	L5
Lx	% age	% age	% age	% age	% age
L1	100				
L1,L2	60	40			
L1,L2,L3	50	30	20		
L1 TO L4	40	30	20	10	
L1 TO L5	30	25	20	15	10

[3.5.1.5] In addition to the above, the Packing work entrusted to each contractor depends on the following criteria, during the execution of the contract:

- (i) The Number of Workmen employed.
- (ii) Stock of Packing Materials supplied and kept at our works, by the Contractor at any point of time.
- (iii) Performance of the Contractor and timely completion of the work.
- (iv) Readiness of the Contractor to take-up the job at short notice and to meet our monthly schedule that will be issued periodically.
- (v) Raising to the occasion, during peak loads.

[3.6] EARNEST MONEY DEPOSIT

- a) The Tenderer shall furnish **Earnest Money Deposit of Rs. 2,00,000/-** (Rupees Two Lakhs only). Exemption of EMD can be availed by genuine MSE vendors as per guidelines of MSMED act 2006 and public procurement policy for MSME, 2012 by ministry of MSME, government of India.
- b) Please note that MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (format is given below where deemed validity of EM II certificate for five years has expired) applicable for the relevant financial year(latest audited).Date to be reckoned for determining the deemed validity will be the date of bid opening(part I in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to**

be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer.

CA CERTIFICATE FORMAT

Annexure - I

Certificate by Chartered Accountant on letter head

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

Further verified from the Books of Accounts that the investment of the company as per the latest audited financial year as per MSMED Act 2006 is as follows:

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

(Strike off whichever is not applicable)

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

Or

The company has been graduated from its original category (Micro/ Small) **(Strike off which is not applicable)** and the date of graduation of such enterprise from its original category is (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:



(Signature)

Name -

Membership number -

Seal of Chartered Accountant

[3.7] SECURITY DEPOSIT

Successful Tenderer shall furnish Security deposit. The SD amount is based on the value of work order placed on the vendor and is calculated as under.

Value of work order

Upto Rs.10 Lakhs	- 10%
Above Rs.10 Lakhs upto Rs.50 Lakhs	- 1 Lakh + 7.5% of the amount exceeding Rs.10 Lakhs.
Above Rs.50 Lakhs	- Rs. 4 Lakhs + 5% of the amount exceeding Rs.50 Lakhs.

The Security Deposit should be paid before start of the work by the contractor.

4. Pre Qualification Criteria for Selection in Techno-Commercial Bid

- 4.1 Tenderer should have minimum **of 1 year of** experience in packing of similar products of BHEL – EDN, Mysore Road, Bangalore, using rubber wood / ply wood / carton boxes as on tender due date. The experience in packing shall be for the corresponding items (Rubber wood/Ply wood/ Carton Box) for which they have quoted. Experience certificate or PO/Work Order copy shall be furnished and the date of issue of certificate/PO/Work order shall be minimum one year prior to tender due date.
- 4.2 Tenderer should have minimum turn over of **Rs.50 Lakhs** for the last three financial years.(Year 2012-13, 2013-14, 2014-15).
- 4.3 The Tenderer should have a legal status such as that of a Proprietary concern/ Partnership firm/ Company.
- 4.4 The tenderer should have manufacturing facility / Supply facility for the items (Rubber wood/Ply wood/ Carton Box) for which they have quoted, within Bangalore or within 60 KM of radius from BHEL–EDN, Mysore Road, Bangalore or BHEL–ESD Electronics city, Bangalore.

5.0 Scope of work and Tender Specification

The scope of work covers Packing of CE Panel, Semi-conductor Devices, Photovoltaic Modules and associated components and equipment in BHEL EDN, Mysore Road premises as well as at BHEL-ESD, Electronics city premises as per applicable packing plant standards and product standards of BHEL.

5.1 TENDER SPECIFICATION(Guidelines and Procedure).

- Part - I:** A) Technical Specification (Guidelines and Procedure) for Packing of Control Equipment Products, Semi-Conductor Devices etc. as per BHEL-EDN Plant Standard No. ED 049 00 99 Rev 11 (Enclosed as part of Tender).
- Part - I:** B) Technical Specification Guidelines and Procedure for Packing of Control Equipment Products, Semi-Conductor Devices etc. using Plywood as per BHEL-EDN Plant Standard No. ED 049 00 92. Rev 06 (Enclosed as part of Tender)
- Part - I:** C) Technical Specification for Packing of Solar PV Modules. Packing Procedure and Drawing for PV Modules(L20220P & L24270P). (Enclosed as part of Tender)

Part – II

Items list for Packing and supply :

- A] Schedule of quantity for Control Equipment Products, Semiconductor Devices etc. using Rubber Wood / Silver oak wood / Pine wood.
- B] Schedule of quantity for Packing of Control Equipment products Semiconductor Devices etc. using Plywood of different Grades.
- C] Schedule of quantity for Packing of PV Modules in Cartons.
- E] Schedule of quantity for consumables for packing to be supplied by the Contractor.
- F] Schedule of quantity for Packing of Panels and other items with GI sheet.

6.0 OTHER TECHNICAL POINTS

6.1 Quality of Materials

- 6.1.1 The Quality of materials used for Packing shall be as per I.S. Specification / BHEL Specification for each material. Each item (Eg: - Silica Gel, Kraft Paper etc.) is subject to inspection and approval by BHEL before the same is used. Any disapproved / non-standard item identified by BHEL shall be removed by the Contractor.
- 6.1.2 Species of Wood & extent of Chemical treatment will be subject to random check at least ONCE in a year at any reputed Laboratories. The Contractor is bound by the reports of these Laboratories. The charges towards testing are to be borne by the contractor.
- 6.1.3 The Contractor shall submit a certificate confirming the quality of wood supplied by him and the Chemical treatment done is as per the Tender Specification.
- 6.1.4 If, for any reason, Rubber Wood / Silver Oak Wood / Pine wood is not available on a particular occasion, other wood considered equivalent to Rubber Wood/Silver Oak / Pine wood may be used with prior written permission from BHEL.
- 6.1.5 Handling of markings on the cases/panels have to be done using templates / stickers and suitable indelible inks. These have to be provided by the contractor at their cost.

6.2 Calculation of Wood content for the purpose of payment for Rubber wood / Pine wood / Silver oak wood packing.

For Calculation of Wood content for the purpose of payment BHEL will consider

- 6.2.1 For Cubicles and Panels using Rubber wood, Silver oak wood and Pine wood, Length X Breadth X Thickness of FRONT, REAR, TWO SIDES & TOP PLANKS only will be calculated as bare volume, for panels without pallet. Pallet will be supplied by BHEL as part of Panel.
- 6.2.2 Length x Breadth x Thickness of Bottom Pallet will be Considered as bare volume if it is supplied by the Contractor.
- 6.2.3 In case of loose items packed in boxes including bottom pallet, all Six side Planks / shooks will be considered for calculation of bare volume.
- 6.2.4 The Volume of the following wood is taken care while calculating total wood content for the purpose of billing / payment.
- i. Reinforcing battens
 - ii. Support battens
 - iii. Beams given to the bottom side / pallet etc.

To take care of machining loss due on account of tongue and groove and planning, 20 percentage of the bare volume will be added to the bare volume calculated as per 6.2.1, 6.2.2 and 6.2.3. This means for calculation of total volume of wood content, 1.2 times of bare volume of 6.2.1, 6.2.2 and 6.2.3 only is considered.

6.3 Calculation of Wood content for the purpose of payment for Plywood Packing

- 6.3.1 In case of Packing of Cubicles with plywood, as per PART-I 'B' of Tender Specification, Calculations will be based on Area of Front, Rear, 2 sides and Top Planks only. For this, Payment will be made based on Square Area as described in the Schedule of Rates under Part – II 'B'. Pallet will be supplied by BHEL. Whenever pallet is supplied by contractor, area of the same will be considered for payment also. For spares and loose items cases, pallet will be supplied by the contractor.
- 6.3.2 Area of additional reapers, supporting battens and reinforcing battens will not be considered for payment of packing charges. **Hence the costs of these battens necessarily have to be included in the cost of main plywood area along with other packing materials.** Separate charges or rates are not allowed since payment for plywood rates are based on square meter of plywood content i.e., Total area of plywood planks used as per 6.3.1, above.
- 6.3.3 In case of bottom pallets supplied by the contractor, payment will be made on Area of wood content. The calculation is same as at 6.3.1. Additional reinforcement plywood sheet, if used; will be paid extra.
- 6.4 The Dust on the Loose Items & inside and outside the Cubicles shall be removed by the Contractor's workmen before Packing.

7.0 GENERAL TERMS AND CONDITIONS.

1. The Contractor shall take, at his own cost, the necessary License in respect of his Trade/Business, in respect of this work. The expenses in completing the formalities in executing the agreement including expenses on Stamp Paper, will also be met by the Contractor.
2. Except where otherwise provided for in the contract all questions and disputes relating to the meaning of the Specifications, Designs, Drawings and Instructions herein before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in anyway arising out of or relating to the Contract, Designs, Drawings, Specifications, estimates, Instructions, orders or these conditions or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the sole arbitration of the Arbitrator who would be appointed by BHEL from the panel of arbitrators of Bharat Heavy Electricals Limited., If the said arbitrator is unable or unwilling to act, the same would be referred to some other person appointed from such panel willing to act as such arbitrator who will be the

Sole arbitrator. There will be no objection if the arbitrator so appointed is an employee of Bharat Heavy Electricals Limited, Electronics Division and that he had to deal with the matters to which the contract relates and that in the course of his duties as such he had expressed views on all or any of the matter in dispute or difference.

It is a terms of the contract that the party invoking arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute.

The work under the Contract shall if reasonably possible continue during the arbitration proceedings and no payment due or payable to the Contractor shall be with-held on account of such proceedings.

The arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties fixing the dates of the first hearing.

The arbitrator shall give a separate award in respect of each dispute or difference referred to him.

The venue of arbitration shall be such place as may be fixed by the arbitrator in his sole discretion.

The award of the arbitrator shall be final, conclusive and binding on all parties to this contract.

3. The BHEL General conditions of Contract shall also apply to this work, except to the extent modified in these conditions. The Contractor shall scrutinize the GCC available in BHEL-EDN and acquaints himself with the provisions thereof, to his satisfaction.
4. Failure to employ adequate number of persons, or failure to supply required qty of packing materials, resulting in dislocation of the work will be construed as breach of the terms and conditions under this agreement, and will entail termination of the Contract forthwith and re-arrangement of the work through other agencies, at the risk and cost of the Contractor.
5. Cleanliness has to be maintained by the Contractor's workmen in the Packing/Dispatch Area. Scrap materials to be removed and Shop floor of Shipping Section to be kept clean at the end of each day. Cut Pieces / Scrap belonging to Contractors materials to be removed and taken back with necessary paper works after duly certified by concerned executive.
6. The Management of BHEL shall have the right to with-hold Payment of, or make recoveries from claims due to them in respect of any loss or damage caused or occasioned in respect of the properties of BHEL under the Terms and Conditions of this arrangement or any payments necessitated due to infringement of any statutory obligations, by the Contractor.
7. The Contractor shall not transfer or sublet the work to anyone without the prior written approval of BHEL. The Contractor shall, either by himself or through a competent Agent approved by BHEL Authorities, perform the said work.

8. Whenever under the Contract any sum of Money shall be recoverable from, or payable by the Contractor, the Contractor on demand shall pay the same. Such amount may also be deducted from any sum then due, or from any sum which at any time thereafter become due, to the Contractor under this Security Deposit, in respect of this work or in respect of any other work.
9. All the employees of the Contractor engaged for the work shall be paid by him their normal wages, for the National Holidays and Public Holidays declared by BHEL for that Calendar year.
10. Without prejudice to any rights or remedies under this Agreement if the Contractor dies/becomes insolvent/bankrupt/wound-up, the BHEL authorities shall have the right to terminate this agreement without any liability whatsoever as regards enlistment of the work for the balance Contract period after the death/ insolvency/bankruptcy/winding up of the Contractor.
11. In the event of the Contractor committing a default or breach of any of the provisions of the contractor's Labour Regulations, as amended from time to time or furnishing any information or submitting or filling any Form / Register / Slip under the Provisions of these regulations which is materially incorrect, then, on the report of the Inspecting officers as defined in the Contractors Labour Regulations, the Contractors shall, without prejudice to any other liability, pay to BHEL, a sum not exceeding 10% of contract value as liquidated damages for every default, or furnishing, making, submitting, filling materially incorrect statement as may be fixed by BHEL. Such amount will be deducted from the running Bills/Security Deposit of the Contractor and the amount would be credited to the Welfare Fund constituted under Regulations.

12. **Model Rules for Labour Welfare:-**

The Contractor, at his own expense comply with or cause to be complied with Model Rules and Labour Welfare as appended to these conditions or rules framed by Government from time to time for the protection of Health of the Labourers. In case, the contractor fails to make arrangements as aforesaid BHEL will be entitled to do so and recover the cost thereof from the Contractor.

13. The Contractor should take full care regarding safety aspects. In case of any Accidents / Injuries to the Contractor's Labourers within the premises of the Company (BHEL), the Contractor is solely responsible and no claims whatsoever on the Company (BHEL) is permissible.
14. Successful tenderer should provide the following safety Personal Protective items to his labourers during working period and shall ensure safe working habits and safe working conditions. All these expenditures have to be borne by the tenderer only. **BHEL will not reimburse the same.**

Sl. No. Personal Protective. Eqpt. - qty: / Items

1. Safety spectacle - 1 no |

- | | | | |
|----|----------------------|----------|------------------|
| 2. | Ear Muff | - 1 no | Makes & Specifi- |
| 3. | Ear Plug | - 1 set | cation as per |
| 4. | Dust Mist respirator | - 1 no | enclosed Sheet. |
| 5. | Hand gloves | - 1 pair | |

Indicated approximate cost of these safety items excluding Shoes will be approx. Rs.800/-.

15. The Contractor shall be equipped to pack at least 4 Cubic Metres of Wood content or equivalent to 10 Cubicles of Control Equipment Products per day.
16. In case there is any delay in completion of the job as referred above, Company will be at liberty to levy penalty on the Contractor at the rate of 0.01% of the total value of equipment to be packed per day of delay subject to a maximum of 1%.
17. The Company does not give any Guarantee on minimum work load during the Day / Month / Year. The workload varies within the Month and within the year.
18. In case of emergency, if the contractor fails to do the packing work within the stipulated time, the same will be got done elsewhere / through others. Penalty may be levied on the Contractor as applicable.
19. In case it is found that the species of Wood/ASCU treatment do not conform to the Specification, Penalty not exceeding 10% of the value of the packing cost of that packing work will be levied and deducted from the monthly bill.

In addition, the Company (BHEL) will have the option to terminate the Contract.

20. The Contractor and his workmen shall abide by the Rules relating to maintenance of discipline and Security checks of the Company.
21. All Tools, Equipments, required for Packing shall be supplied by the Contractor which will be returned after closure of the contract duration.
22. Packing of Small Boxes for Speed Post, R.P.P. Airfreight, Personal Carry, if done with BHEL material labour charges will be paid as per contract rate for labour charges for respective items.
23. If any Packing material individually is required, the Contractor shall supply these at rates offered as per Schedule 'E' of Part – II –Rate Schedule
24. All Tools, Equipment and Materials brought by the contractor shall be shown to the security at gate and to be entered in the Register kept in the Security Department and DCs are to be preserved by the contractor to take back the items at a later date.
25. The Tenderer should submit EMD of Rs.2.00 lacs along with Technical Bid (If not exempted as per MSME guidelines) . Offer without EMD shall be rejected.

26. The Tenderers should have categorically confirmed acceptance of all the Tender terms and condition including the payment terms. In case of non-compliance / non- conformity, the offer is liable for rejection.

27. Tender Committee decision is final for evaluation and acceptance of techno-commercial Bid, taking into account information furnished by the tenderer, visit to the tenderers works, documents verification etc.

28. Tenderer should have facility, infrastructure and man power to execute the order for which they have opted for quoting.

29. The tenderer should not have blacklisted by any Public Sector Undertaking / Public Departments.

30. Tenderer should have facility, infrastructure and man power to execute the order.

8.0 COMMERCIAL TERMS AND CONDITIONS

EARNEST MONEY DEPOSIT

- a] The Tenderer shall furnish **Earnest Money Deposit of Rs. 2,00,000/-** (Rupees Two Lakhs only). (Please refer clause 3.6, in case of exemption from EMD).
- b] Tenderer shall furnish Earnest Money Deposit in the Form of Bank Demand Draft in favour of BHARAT HEAVY ELECTRICALS LTD., ELECTRONICS DIVISION. This Demand Draft shall be submitted along with the Techno-commercial Bid. Offers not accompanied by EMD will be rejected.

The EMD given by unsuccessful Tenderers will be returned after the Tender is finalized. EMD amount shall not carry any interest. EMD amount can also be adjusted towards the Security deposit.

8.1. SECURITY DEPOSIT

a] Successful Tenderer will have to furnish Security deposit. The amount will be decided based on the work order being given to each of the successful tenderer after Award of Contract. [As per clause 3.7 ,above]

b] The Security Deposit may be furnished in the form of Cash / Bank Draft / Bank Guarantee immediately after the award of the Contract. Earnest Money Deposit

already received would be returned on receipt of Security Deposit as above. The Security Deposit will be released / returned after the successful completion of the Contract. The Security Deposit shall not bear interest. This Security Deposit will be forfeited and credited to BHEL in the event of breach of any of the Terms and Conditions of the Contract by the Contractor.

8.2.1. The Security Deposit shall be paid by the vendor before start of the work by the vendor.

8.2.2. Security Deposit may be furnished in any one of the following forms.

- i) Cash (as permissible under the Income Tax Act)
- ii) Pay Order, Demand Draft in favour of BHEL
- iii) Local Cheques of Scheduled Banks, subject to realization
- iv) Securities available from Post Offices such as National Savings Certificates, Kisan Vikas Patra etc.,

(Certificates should be held in the name of Contractor furnishing the Security and duly pledged in favour of BHEL and discharged on the back)

- v) **Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL.**
- vi) Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The FDR should be in the name of the contractors, A/c BHEL, duly discharged on the back.
- vii) **Security Deposit can also be recovered at the rate of 10% from the running bills. However in such cases at least 50% of the Security Deposit should be collected before start of the work and the balance 50% may be recovered from the running bills.**
- viii) EMD of the successful tenderer shall be converted and adjusted against the Security Deposit.
- ix) The Security Deposit shall not carry any interest.

NOTE:

Acceptance of Security Deposit against Sl. No. (iv) and (vi) above will be subject to hypothecation or endorsement on the documents in favor of BHEL. However, BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith.

8.3. TERMS OF PAYMENT:

- 8.3.1 The Contractor shall submit his bill once in a Month and payment will be made **within 30 days** of date of receipt of the bill. However submission of bills twice in a Month may be considered in special cases at the discretion of Management of BHEL-EDN, where packing load is heavy.
- 8.3.2 The Tenderer who are not adhering to BHEL's Terms of Payment is likely to be rejected. All statutory deductions under Income Tax Act., works contract Act. or any other Law will be deducted by the BHEL as per rate in force.
- 8.3.3 The Company is not bound to accept the lowest Tender and decision of the Management of the Company is final. No reasons, whatsoever will be given by the Company for not accepting the offer of any Tenderer.
- 8.3.4 The Tender shall be kept valid for acceptance by BHEL up to 3 months from the date of opening of Price Bid. Tenderers will not be allowed to alter the Prices during the validity period.
- 8.3.5 The Company may short close / cancel the Contract if the Performance of the Contractor is found unsatisfactory.

9.0 Techno Commercial Bid

Tenderer Data (Technical bid) - Questionnaire

Questionnaire - Data to be filled in by the Tenderer i.e., sl.no .9 with all relevant documents and sealed in cover super scribing as "**TENDER FOR PACKING - Techno Commercial Bid - Questionnaire** " and required to be dropped in the Tender Box.

QUESTIONNAIRE

A. DATA TO BE FILLED BY THE TENDERER

Note: The question with mark 'M' is Mandatory

1. Name in Full under which :
the Tenderer is trading [M]

2. Address of the Official :
Premises [M]
 - a) Office:
 - b) Works :

3. Telephone No. [M]
 - a) Office :
 - b) Works :
 - c) Residence of Partner / Proprietor / Director.

4. Registered as: Public Limited Company/Private Limited
Company / Proprietary Company [M]
(Strike whichever is not applicable)

5. Names & Address of Partners/Directors if any : i)
ii)
iii)
iv)
6. Details of Saw Mill [M] :
- a) Is the plot on which Saw Mill / workshop is situated owned /leased by you.
- b) Are the Materials and Machinery & Building Insured against Fire etc. :
- c) Area of the Plot :
- d) Size of the Building :
- e) Details of Machines and associated facilities. :
- i)
- ii)
- iii)
- iv)
- v)
- vi)
- f) No. of Labourers employed at the Mill.
- g) No.of Laborers shall be deployed at BHEL-EDN for Packing works.
- h) Since how long are you running the said Mill / workshop?.
7. Have you obtained permission? from Karnataka Forest Dept. to run the Saw Mill.(**If applicable**)

OR

(Alternatively have you got
No Objection Certificate from
Karnataka Forest Department
to run the Saw Mill.(**If applicable**)

8. Please furnish the following:
Registration Nos. (Copies of
certificates to be necessarily
enclosed)

a) K S T Registration No. :

b) C S T Registration No. :

c) Shops & Establishment Act
Registration No.

d) Forest License No.(**If applicable**) :

e) Service Tax Registration No:

f) TIN no [M] :

g) PAN No: [M] :

9. a) Has your Firm been assessed:
from Sales Tax Authorities ?
Please enclose latest Sales Tax
Assessment Certificate) for
a period of 3 years.

b) Has your Firm been assessed:
from Income Tax Authorities?
(Please enclose latest Income Tax
Assessment Certificate) for a
period of last 3 years.

10. Does your firm have Independent Code Nos. in respect of
following and if yes, mention the same.

a) Employees State Insurance Act 1948 (ESI) : Yes / No
-Code No.

b) Employees Provident Fund Act 1952 (EPF) : Yes / No
-Code No.

11. Your Banker's Name & Address :

12. a) Your Annual **Financial " Turn Over "**
For

2012 - 13

2013 - 14

2014- 15

13. a) Experience of having :
successfully completed /
undertaken similar works
during previous 1 Years [M]

b) indicating Names of Clients to whom :

i) Packing Cases are being
supplied by you. [M]

ii) Packing work is being :
done by you. [M]
(Please enclose copies of
Purchase Orders / work orders).

14. Earnest Money Deposit DD details: [M]

a) Bank Draft No. and date :

b) Banker Name :

c) Amount taken : **Rs. 2,00,000/- [] **

15. I / We also read the tender terms and conditions[M] : Yes / No
completely and understood the same.

16. We give our acceptance to supply as per [M] : Yes / No
tender specifications.

17. We hereby give our declaration that we have read the : Yes / No
Tender completely and understood the same. [M]

18. Please give the details of documents enclosed to your offer which include applicable
Registration certificates and other necessary documents to support your techno
commercial bid.

i]

ii]

iii]

iv]

v]

vi]

vii]

viii]

ix]

x]

xi]

xii]

I / We hereby certify that to the best of my/our knowledge, the particulars furnished above are true. It is understood that the information furnished will be treated as confidential and will not be divulged to unauthorised persons.

I / We also agree to the General Terms and Conditions & Commercial Terms and Conditions as per the Tender Notification.

I / We also agree to keep the validity of our Quotation for acceptance for a period of 3 months from the date of opening of the price bids.

Date :
Place:

Signature of the Tenderer

NAME:
DESIGNATION:

Appendix

1. Plant Standard ED 049 0092 Rev 06
2. Plant Standard ED 049 0099 Rev 11
3. Un Priced Price Bid Format
4. Price Bid Format
5. PV Packing Box Drawing L24270P -28 IN 1
6. PV Packing Box Drawing L20220P -28 IN 1
7. PLY WOOD RPP BOX DRAWING
8. E P PACKING BOX DRAWING
9. E P PACKING CORNER BLOCK DRAWING
10. PACKING PROCEDURE THYRISTOR
11. PACKING DRAWING THYRISTOR MODULE
12. HVDC THYRISTOR PACKING ABB 1JNL00107-593
13. DESSICANT DETAILS for THYRISTOR PACKING



A4 - 15

PLANT STANDARD

ED 049 00 92

REV NO 06

Page 0 of 26

REVISION HISTORY SHEET**COPYRIGHT & CONFIDENTIAL**

The information contained in this document is the property of BHEL. It must not be used directly or indirectly in any manner detrimental to the interest of the company.

REV NO.	DATE	NATURE OF CHANGE	REASONS	CHANGED BY	APPROVED BY
00	11/05/1995		-	VS, SHG	NJ
01	05/06/1995	ANNEXURE ADDED	ACCEPTANCE CRITERIA INCLUDED FEED BACK FROM QUALITY	SHG	NJ
02	06/03/1997	CL.6.4.1 ALTERED	FEEDBACK FROM SHIPPING	SHG	NS
03	20/12/1999	IS YEAR OF ISSUE REMOVED	-	CCR	NS
04	15/12/2009	INCLUSION OF MR GRADE PLYWOOD SHEET FOR PACKING (Commercial Grade)	FEEDBACK FROM SHIPPING & GENERAL REVIEW	PGD / KPN	MSR
05	21.03.2013	Inclusion of recommendations pertaining to spares in page 12 and 26	Recommendations from corporate systems and IT	HRN	MS
06	11/01/2016	Cl 3.1.1.5, 3.8, 3.9 and 3.22 revised	FEEDBACK FROM SHIPPING & GENERAL REVIEW	HRN/E K Prakash	BKD

REV-06

APPROVED: B. K. DHARMARAJU

PREPARED: HRN/E K Prakash ISSUED: STDS GROUP DATE: 11/01/16



A4 - 13

PLANT STANDARD

ED 049 00 92

REV NO 06

Page 1 of 26

PROCEDURE FOR PACKING OF CONTROL EQUIPMENTS USING PLYWOOD.

1. **PURPOSE:** To describe the materials and procedure for Packing.
2. **SCOPE:** Applicable for packing of control cubicles, loose items, spares of Control Equipment and Transmission System Control products.

3. MATERIALS

3.1. WOOD

3.1.1 For Inland contracts:

3.1.1.1 Plywood of Boiling Water Resistance (BWR) grade and termite, fungus proof as per IS: 303 of 12 mm thick for control cubicles, single and multi cubicles, loose items and spares cases. The plywood shall be bonded with high Quality Phenol Formaldehyde Synthetic Resin and specially treated with preservatives to repel termites and wood destroying organisms. The plywood shall with stand the stress caused by cyclic changes in weather conditions. It shall be durable and resistant to heat, sun and moisture. The sheets such procured shall have IS mark IS 303 and BWR grade stamped on it.

3.1.1.2 Silver oak wood of cross section 45x45 mm as support battens for Loose items, spares and single suit, two suit, three suit Cubicles and 70x45 mm for longer sections to be used. These Silver oak wood battens shall be treated with ASCU solution as defined in 4.0. In the case of plywood, treatment with ASCU solution need not be done.

Alternative to silver oak battens, Plywood support battens of suitable cross section and combination of thickness can also be used as per clause 3.1.1.4

REV-06

APPROVED : B.K.DHARMARAJU

PREPARED: HRN/E K Prakash
ISSUED: STDS GROUP
DATE: 11/01/16

 <p>A4 - 14</p>	<p>PLANT STANDARD</p>	<p>ED 049 00 92</p> <p>REV NO 06</p> <p>Page 2 of 26</p>
--	------------------------------	--

3.1.1.3

Plywood for general purposes i.e. moisture resistance or MR grade (Commercial ply wood) and termite, fungus proof as per IS: 303 of 9 mm / 12 mm thick for control cubicles, single and multi cubicles, loose items and spares cases. The plywood shall be bonded with high quality Phenol Formaldehyde Synthetic Resin and specially treated with preservatives to repel termites and wood destroying organisms. The plywood shall with stand the stress caused by cyclic changes in weather conditions. It shall be durable and resistant to heat, sun and moisture. The sheets such procured shall have IS mark IS 303 and MR grade stamped on it. 9 mm thick plywood can be used with additional plywood support/ reinforcement suitable battens both for small cases and also for panels. Support batten as indicated at 3.1.1.4 shall be used.

Sample drawings of panels & loose boxes are attached for ready reference.

[Fig : 10 to 13]

3.1.1.4 Support Battens:

Ply wood sheet of cross section 18 mm x (100 mm) for support batten for loose items, spares, and plywood sheet of cross section 18 mm thk x 100 to 150 mm width as support batten for standard panels up to 2450 x 1350 x 2500 mm panels. Support batten of plywood cross section 12 thk x 75 to 100 mm can also be used for small cases apart from 18 mm x 100 mm cross section. These plywood support battens can also be used in place of silver oak support battens as referred in clause 3.1.1.2. Additional support battens/ cross battens of suitable sizes are to be provided on need basis.

Sample drawings of panel's .i.e. single suit, two suite and three suit cubicles are attached for ready reference [Fig: 10 to 13].

Special support battens for Rlys and similar panels:

Plywood of cross section 18 mm x 75mm x 3 no's at both bottom end and top end of front and back shook's , and also at top portion of both corner shook's for fixing with bolt and nut/ clamps, and 18 mm x 150 mm x 2 nos cross section as support batten/ slanting reinforcement batten on all sides. On need basis 18mm x 125 mm x 2 to 3 no's of plywood cross section can also be used additionally depending upon the size and weight of the panel.

Plywood shook's can be fixed with both Bolts and mechanical latching clamps or combination of both as the case may be.

Sample drawings of panels are attached for ready reference.

[Fig : 8 & 9]

3.1.1.5

Tolerance of ply wood thickness: Tolerance of plywood for inland packing shall be +/- 1 mm.

 <p>A4 - 14</p>	<p>PLANT STANDARD</p>	<p>ED 049 00 92</p> <p>REV NO 06</p> <p>Page 3 of 26</p>
--	------------------------------	--

3.1.2 For Export Contracts

- 3.1.2.1** Plywood of Marine grade as per IS: 710 of 9 / 12 mm Thick for control cubicles of single / two / three suite for loose items and spare cases. For suit of four and longer cubicle sections, 19mm thick is to be used.

It shall be highly resistant to attacks from fungi, termites and wood destroying organisms including marine borers. The plywood shall withstand the stress caused by cyclic changes in weather conditions. It shall be durable and resistant to heat, sun and moisture. The sheet shall have IS: 710 and marine grade marking.

3.1.2.2 Same as clause 3.1.1.2.

- 3.1.3** BHEL_EDN will be carrying out test on ISI marked ply Wood whenever required.

3.2 Fasteners:M8 x 130 mm and M8 x 150 long zinc plated Bolts and M8 zinc plated nuts for fixing, and spring Washers or suitable size can also be used.

3.3 Nails: Nails of dia 3.15 mm and about 40 mm for nailing of plywood and silver oak batten. Suitable smaller size is to be used for other nailing.

3.4 Polyethylene sheet: The polyethylene sheets are used to make covers for the jobs individually. The material shall have a minimum thickness of 0.175 mm (175 microns).

The polyethylene sheet shall be clear and transparent manufactured out of virgin material. Reprocessed material shall not be used.

3.5 Bituminised water proof kraft paper - used for lining the inside of shooles of cubicles.

3.6 Bitumen coated Hessian polyethylene kraft paper used for lining the inside of top cover for cubicles and all inner and top sides for small boxes.

3.7 Rubberised Coirs- used for cushioning and to fill the gap inside packing boxes.The coir shall be about 100 mm wide and 25mm thick.

3.8 Foam rubber/U Foam - This is used for covering the delicate items. This material shall be provided by the vendor.

3.9 Thermocole(Expanded polystyrene) sheets - This is used for covering delicate items. This material shall be provided by the vendor.

3.10 Silica gel - shall be of indication type to conform to IS: 3401: shall be blue in colour while usage.

 <p>A4 - 14</p>	<p>PLANT STANDARD</p>	<p>ED 049 00 92</p> <p>REV NO 06</p> <p>Page 4 of 26</p>
--	------------------------------	--

- 3.11 Cotton bag - These are used for holding silica gel. The bags shall have the following matter indicated on them:

BHEL-EDN		BANGALORE-560026
SILICA GEL		
INDICATING TYPE		
BLUE	: ACTIVE	
ROSE	: REDUCED ACTIVITY	
WHITE	: NO ACTIVITY. TO BE REPLACED	WITH FRESH
	SILICA GEL	

- 3.12 Cotton / Plastic tape-This is used for tying small items and also to prevent vibrations of moving parts within the cubicles.
- 3.13 Polyethylene bags - These are to be used for keeping the packing slips. The bag shall be of size 70 mm X 100 mm (minimum).
- 3.14 Hessian cloth, twine thread, paint will have to be used in packing certain items.
- 3.15 Marking plate - This shall be of anodized aluminium sheet. Details and specifications are given in Fig-3.
- 3.16 Marking ink - Ink used shall be normally black in colour. The ink shall be indelible, non fading and non washable in water.
- 3.17 Packing Slip Holder - This shall be of galvanised iron tinned sheet / aluminium sheet.
- 3.18 Mechanical Latching clamps : For CLW Railway panels and similar Panels self locking clamps can also be used on need basis in conjunction with or apart from regular bolt and nut fixing arrangement. Sample drawing attached [refer Fig.7]. For reusable boxes, these clamps provides easy locking and unlocking arrangement. These clamps will be made available from BHEL in some cases.
- 3.19 Flex/Vinyl digital print media for labeling:
Labels made out of Flex/Vinyl/ other digital media shall be used for export contracts & some prestigious domestic contracts on need basis apart from existing present marking/ labeling system.
- 3.20 Aluminium foil for packing:
On need basis, suitable size & thickness of aluminium foil shall be used for packing of electronic panels and loose items for both indigenous & export contracts.
- 3.21 Pallets :
All cubicles are mounted on the pallets by BHEL. For loose items, HMI items & small cabinets for which no pallets are available, suitable size pallets have to be arranged by the contractor.

 A4 - 14	PLANT STANDARD	ED 049 00 92 REV NO 06 Page 5 of 26
--	-----------------------	---

3.22 : STICKERS The following stickers to be put by the vendor on cubicles/Boxes after packing.

1. Case No sticker : 2 nos. Size 25 mm x 4.5 mm
2. BHEL Monogram sticker : 1 no . Size 17.5 mm x 23 mm
3. Address sticker : 2 nos. Size 38 mm x 30 mm
4. Direction sticker " Front " & " Back " - 4 nos .Size 20 mmx7.5 mm
5. Chain Mark Sticker : 4 Nos. Size - 30 mmx 7.5 mm
6. "Fragile " sticker : 2 Nos Size. 21mmx15 mm
7. "DO NOT STACK " sticker - 2 Nos. Size 30 mm x 22 mm

4.0 Chemical treatment for silver oak preservation

4.1 The silver oak battens are to be treated with ASCU solution. For plywood wood treatment is not required.

4.2 The chemical used shall be ready mix ASCU paste. This consists of Arsenic, copper sulphate, sodium dichromate. This paste shall be mixed at the rate of 1 kg of paste per 10 liters of water. Alternate to this CCA can also be used as indicated at para 4.4

4.3 The chemical treatment shall be done at the premises of the contractor. A cement concrete tank of capacity to hold a minimum of 2000 liters of solution shall be constructed. The solution shall be prepared in the presence of BHEL- EDN's representative by contractor. The wooden battens shall be soaked in the solution for a minimum of 12 hours.

The solution shall be replenished after treating a maximum of 12 cubic meters of wood for 2000 liters of solution. A log book shall be maintained by the contractor to give the details of date of preparation of solution, quantity of solution prepared, quantity of chemicals used, quantity of wood treated and the details of replenishment.

Samples of solutions [only paste before mixing] shall be tested at the laboratories designated by BHEL. The testing fees to be paid to the laboratories will have to be borne by the contractor. The solution [paste] shall be tested as and when required.

4.4 Specifications for water soluble type wood preservatives:

Copper - Chromium - Arsenic [CCA]:

Copper - Chromium - Arsenic preservative formulation shall be as per IS : 10013 Part - II - 1981 shall consist of following active ingredients in nominal proportions by weight as shown below:

Arsenic Pentoxide	$AS_2O_5 \cdot 2H_2O$	12.5
Copper Sulphate	$CuSO_4 \cdot 5H_2O$	37.5
Sodium Dichromate	$Na_2Cr_2O_7 \cdot 5H_2O$	50.0
Or		
Potassium Dichromate	$K_2Cr_2O_7$	

5.0 Jointing of plywood- to the extent possible, single plywood sheet shall be used in case of equipment of large size, jointing is allowed as bellow.

 <p>A4 - 14</p>	<p>PLANT STANDARD</p>	<p>ED 049 00 92</p> <p>REV NO 06</p> <p>Page 6 of 26</p>
--	------------------------------	--

- 5.1 The joining shall be as close to the center of equipment as possible, but not less than 500 mm from one edge.
- 5.2 While joining (2 or more plywood sheets), care shall be taken to fix the sheets in the direction of the grain structure.
- 5.3a For joining Plywood and Silver oak wooden batten:
While joining, 2 sheets shall be kept close to each other and treated silver oak batten of 100 mm width and 45 mm thick to be used and nailed to both plywood sheets alternately (2 numbers) in zig-zag manner.
- 5.3b For Joining plywood with plywood sheets :
While joining, 2 sheets shall be kept close to each other and plywood sheet batten of minimum 100 to 200 mm width and 18 mm thick to be used depending upon the size of the box/ case and nailed to both plywood sheets alternately (2 numbers) in zig-zag manner. Suitable size nails to be used.
- 5.4 Jointing of silver oak batten : Only single length silver oak batten shall be used. In case of height or width of equipment is more than 2400 mm, jointing of batten is acceptable. The jointing of batten shall be such that two batten are kept together and one more batten of width & length of about 200 mm to be nailed on both the planks as in Clause 5.3 above.

5.5 The above jointing is to be done close to center of equipment.

6.0 Packing procedure

- 6.1 Packing of cubicles for inland contracts.
- 6.1.1 Packing to be done using materials given in clause 3.0.
- 6.1.2 The cubicles are fixed on wooden pallets. Hence the contractor need not arrange the bottom pallets.
- 6.1.3 Loose parts : All loose parts in the cubicles, shall be tied using cotton/ plastic tape. Wooden battens shall be provided wherever necessary.
- 6.1.4 Additional loose items which may be kept inside the cubicle.
- a. The components which are removed from cubicle for loose shipping, such as meters shall be kept inside the cubicle individually kept in wooden box and tied firmly to the bottom of cubicle.
 - b. Other items which are given loose in addition to cubicle, shall be packed in separate boxes (like cables).
 - c. For transformer cubicles loose items shall be packed in separate boxes and these boxes may be tied firmly in bottom of cubicles.
 - d. Items which are bigger in size such as impulse tubes may be kept at

 <p>A4 - 14</p>	<p>PLANT STANDARD</p>	<p>ED 049 00 92</p> <p>REV NO 06</p> <p>Page 7 of 26</p>
--	------------------------------	--

the top of cubicles firmly bunched and tied.

- 6.1.5 Wooden batten : This batten shall be silver oak wood .In case of Cubicle which are not rectangular in shape like control desks, sufficient number of wooden rafters/ battens of proper size shall be provided to give strength to the package.
- 6.1.6 Silica gel: Silica gel (as in 3.10) packed in cotton bag (as in 3.11) shall be kept at different place inside the cubicle as per BHEL-EDN directions. Each suit of cubicle shall provided with 1 kg of silica gel (for a suit of 4 cubicles, 4 kg of silica gel shall be used).
- 6.1.7 Polyethylene sheet covering: Cubicles shall be covered with polyethylene petticoat (sheet as in 3.4). This shall be tailor made to fit the cubicle. The sealing shall be such as not to allow any moisture to enter the cubicle. This sheet is to be folded to the bottom pallet with wooden planks on 2 larger sides.
- 6.1.8 After completion of this, the arrangement is as shown in Fig.1.
- 6.1.9 Rubberised coir: (as in 3.7) to be nailed from inner side of plywood after pasting kraft paper for full length with a pitch less than 500mm with a min. of 2 rows of cover is to be used.
- 6.1.10 Bituminised water proof kraft paper: (as in 3.5) to be pasted with glue on 4 inner sides of plywood. Whenever 2 pieces of kraft paper are used, the joint shall have an over lap of min 20 mm.
- 6.1.11 Bitumen coated Hessian polyethylene kraft paper (as in 3.6) to be nailed using nails (as in 3.3) on top cover inner surface. This sheet shall project outside on 4 sides by atleast 100 mm and shall be folded and nailed on to the sides. Joining of 2 sheets shall have an overlap of min 20 mm.
- 6.1.12 After completion of above steps, the arrangement shall be as given in Fig.2.
- 6.1.13 Marking Plate : One no (as in 3.15) shall be nailed to the front side of case, item as shown in Fig.3.
- 6.1.14 Case Marking : After complete packing, marking of various details and symbols as given by EDN shall be done using indelible ink (as in 3.16)
- 6.1.15 Packing Slip : Packing slip kept in polyethylene bag (as in 3.18) shall be placed inside the box at appropriate place before closing the top. in addition one more packing slip covered in polyethylene cover and packing slip holder (as in 3.17) shall be nailed to front or rear of shook.
- 6.1.16 At the end of this stage, the arrangement is as shown in Fig.4. Front and rear shook fixing arrangement to the bottom of the pallet is as shown in Fig.5

 <p>A4 - 14</p>	<p>PLANT STANDARD</p>	<p>ED 049 00 92</p> <p>REV NO 06</p> <p>Page 8 of 26</p>
--	------------------------------	--

- 6.1.17 The lifting arrangement of the packed case is **shown in Fig.6**
- 6.2 Packing of cubicles for export contracts Procedure is same as that given in 6.1 except for the following changes:
- Two Polyethylene petticoat (as in 6.1.7) instead of one
 - Fumigation may have to be done if required (BHEL Scope).
- 6.3 Packing of empty Cubicles Procedure is same as that given in 6.1 except For following changes
- Bituminised kraft paper, bitumen coated Hessian polyethylene paper, silica gel need not be used.
- 6.4 Packing of loose items/spares for inland contracts
- 6.4.1 All the materials and procedure are same as in 6.1 except that :
- No joining of plywood and silver oak batten
 - Inner sides of all 6 sides shall be nailed with bitumen coated Hessian polyethylene kraft paper (as in 3.6) using nails.
 - Kraft paper (as in 3.5) is not required
 - Silica gel quantity is 100 gm approx per box.
 - Rubberised coir is to be nailed to inner surfaces of bottom 4 sides of box.
 - Bottom plywood sheet / pallet shall be of 18 mm thick for all practical purposes and 12 mm thick for smaller boxes on need basis. Suitable bottom beams made out of plywood/ any other wood of suitable cross section 75x36 mm, 75x54 mm, 75x75 mm, 100x100 mm.
 - Support battens of cross section 12x75 mm, 12x100mm, 18x75 mm, 18x100 mm can be used depending upon the size of the boxes. Plywood support battens can be used in the place of silver oak battens.
 - Clause 6.1.10 is not applicable. Individual items to sealed with polyethylene sheet (as in 3.4) and one full cover of polyethylene sheet covering of all items is to be made.
- 6.4.2 In few cases gabled roof (single or double gable) may have to be made, details of which will be given by EDN.
- 6.4.3 Internal Packing: Items that go into the box shall be packed using polyethylene sheet/ U foam/ thermocol sheets/air bubbled sheets/ paper cartoons and cotton tape. Any space left between the job and the sides and the top of the box shall be filled with rubberised coir/air bubbled sheet /thermocole to get proper cushioning effect. Certain items like transformers, reactors, breakers, etc shall be bolted to the bottom of the box using bolts, nuts and washers.
- 6.5 Packing of Loose items/ Spares for Export Contracts: Procedure is same as that given in 6.4 except for following changes:
- Two polyethylene covers to be provided,
 - Fumigation may have to be done, if required, for which payment will be made by EDN.

 <p>A4 - 14</p>	<p>PLANT STANDARD</p>	<p>ED 049 00 92</p> <p>REV NO 06</p> <p>Page 9 of 26</p>
--	------------------------------	--

6.6 Any other changes/ new methods/ alternative packing systems can be undertaken with prior information and approval from the dept. For other parameters and further details concerned agency may please be contacted.

7.0 **ACCEPTANCE CRITERIA OF PLYWOOD :**

**PLYWOOD FOR GENERAL PURPOSE
GRADE FOR PACKING - AS PER IS:303**

1. Plywood sheets shall have IS:303 & BWR / MR grade stamped on each sheet.
2. Packing/contractor should give a certificate to this effect.
3. Contractor shall identify each sheet with their name/firm in suitable place.
4. Visual checks to be done by packing contractor and EDN-QC CE shipping.
5. For other parameters, testing will be done at authorised laboratories/institutions by EDN on sample basis.

7.1 **FOR BWR GRADE : TABLE-1 QUALITY REQUIREMENTS OF PLYWOOD**

Sl NO	Defect Category	Maximum Number of Defect Permitted on any one surface of panel (as applicable to Type A Surface of IS:303)
1.	Blister	Nil
2.	Check	Individual check not more than 50mm in length and the total length not more than 300mm/m ²
3.	Discoloration	Nil
4.	Dote	5cm/m ²
5.	Insect hole	Scattered up to 12 holes/m ²
6.	Joints	One joint for every multiple of 200mm provided no individual piece is less than 100mm in width
7.	Knots (dead)	2 up to 12mm dia/m ²
8.	Pin knots (dead)	2/m ²
9.	Pin knots (live)	No restriction
10.	Knots (tight)	6 up to 25mm dia/m ²

 A4 - 14	PLANT STANDARD	ED 049 00 92 REV NO 06 Page 10 of 26
--	-----------------------	--

- | | |
|-------------|---|
| 11. Patches | 4 patches/m sq provided they are all tight patches & do not mar the appearance |
| 12. Splits | 2 splits each not more than 1mm wide and length not more than 100mm provided they are filled with suitable filler |
| 13. Swirl | Unlimited provided they do not mar the |

7.2 FOR MR GRADE : TABLE -2 QUALITY REQUIREMENTS OF PLYWOOD

Sl NO	Defect Category	Maximum Number of Defect Permitted on any one surface of panel (as applicable to Type A Surface of IS:303)
1.	Blister	Nil
2.	Check	Individual check not more than 100mm in length and the total length not more than 1000mm/m ²
3.	Discoloration	5 %
4.	Dote	15cm/m ²
5.	Insect hole	Scattered up to 24 holes/m ²
6.	Joints	: No restrictions
7.	Knots (dead)	4 up to 20mm dia/m ²
8.	Pin knots (dead)	: 6/m ²
9.	Pin knots (live)	No restriction
10.	Knots (tight)	: No Restrictions
11.	Patches	Any number provided they are all tight patches & do not mar the appearance
12.	Splits	3 splits each not more than 4 mm wide and length not more than 150 mm provided they are filled with suitable filler
13.	Swirl	NO restrictions

7.3 Thickness of Plywood sheets:

The plywood boards shall be of uniform thickness within specified tolerance limit specified. The faces of plywood boards shall be reasonably smooth.

 <p>A4 - 14</p>	<p>PLANT STANDARD</p>	<p>ED 049 00 92</p> <p>REV NO 06</p> <p>Page 11 of 26</p>
--	------------------------------	---

7.4 PERMISSIBLE DEFECTS:

Gaps in cores and cross-bands may be permitted except for 3 ply plywood, provided the width of the gap does not exceed 1mm in case of and 2 mm in case of plywood of more than 5 ply and provided such gaps, if more than one, shall be spaces not less than 80mm away from each other and are staggered not less than 50mm away as between ply, the next ply having the same grain direction.

7.5 WORKMANSHIP AND FINISH:

The plywood boards shall be of uniform thickness.

The faces of plywood boards shall be reasonably smooth and face veneers shall be reasonably uniform thickness.

7.6 TESTS:

For testing any other mechanical property of general purpose plywood, Subject to agreement between the purchaser and the supplier, reference shall be made to the provisions of IS 1734 Part 1 and 20)

8.0 Details of Drawings / Figures attached:

- Fig- 1 : Packing of panel - Preparation
- Fig- 2 : Shookes preparation
- Fig- 3 : Marking Plate
- Fig- 4 : Packed panel with plywood and silveroak battens
- Fig- 5 : Detailed joining of pkg shookes with battens
- Fig- 6 : Lifting of packed case
- Fig- 7 : Mechanical Latching clamps
- Fig 8 & 9 : CLW Railway panel packing
- Fig 10 to 13: Packing of panels and spares packing cases.

 A4 - 14	PLANT STANDARD	ED 049 00 92 REV NO 06 Page 12 of 26
--	-----------------------	--

Additional points to be taken care for :

Easy spares [Initial and O&M] Traceability and Identification at units and as well as at sites:

(Recommendations from Corporate Systems & IT)

Sl	Activity
1	All Initial and O&M spares preferably supplied in one lot to site and progressive inventory till all spares are accumulated could be kept at units.
2	Spares (Initial and O&M) should be supplied in separate Boxes / Containers and not mixed in main supply boxes.
3	i) Initial spares Box / Container to be labeled as "INITIAL SPARES " in RED. Ref fig: 14 (Page-26). ii) O & M spares Box /Container to be labeled as" O&M SPARES " in GREEN. Ref fig: 14 (Page-26).
4	iii) Initial Spares Box to have red Color strip as per diagram. Ref fig: 14 (Page-26). iv) Majority of spares (initial and O&M) are for indoor storage at site. v) O&M spares box to have green Color strip as per diagram. Ref fig: 14 (Page-26).
5	vi) Spares (Initial and O&M) Packing list kept inside the boxes and affixed securely outside the box to contain vii) Custom name viii) Project / Power station Name ix) Customer PO No and date x) Sl no of customer PO. xi) Quantity total & dispatched. xii) Unit work order number xiii) All above to be developed from Unit IT System
6	xiv) All spares (Initial and O&M) items to have tags (wono, item customer order no, customer item.description)
7	xv) Supply of spares by Vendor should also be instructed for following point 2,3,4,5,6 mentioned above.

Action By : Sites on arrival of spares (Initial and O&M)Receipt .

	Activity
1	Material utilized if any from Initial and O&M spares , should have prior written approval of concerned MUs. Such MUs shall also confirm replacement dates which should be entered in the system for creation of repository.



A4 - 14

PLANT STANDARD

ED 049 00 92

REV NO 06

Page 13 of 26

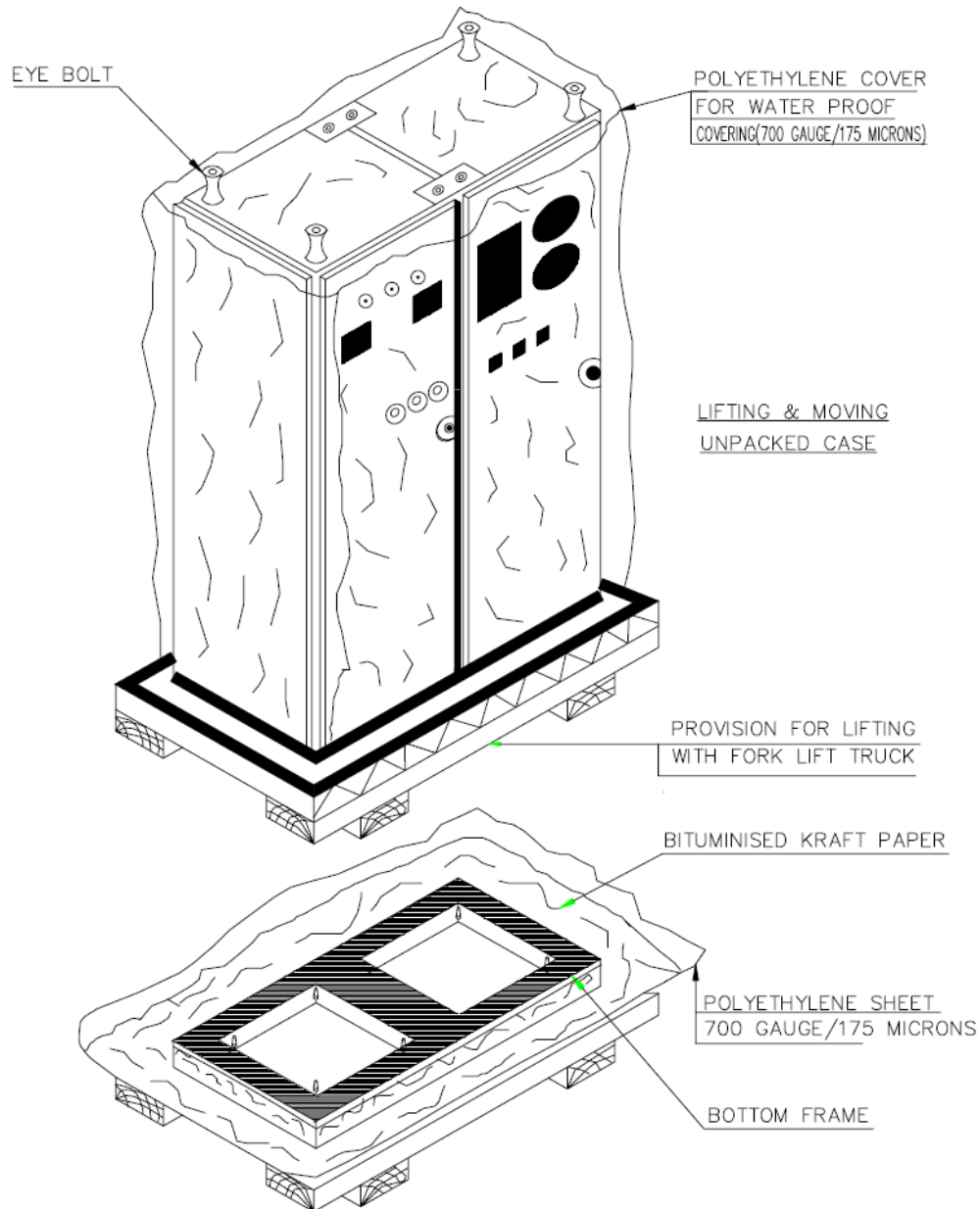


FIGURE-1



A4 - 14

PLANT STANDARD

ED 049 00 92

REV NO 06

Page 14 of 26

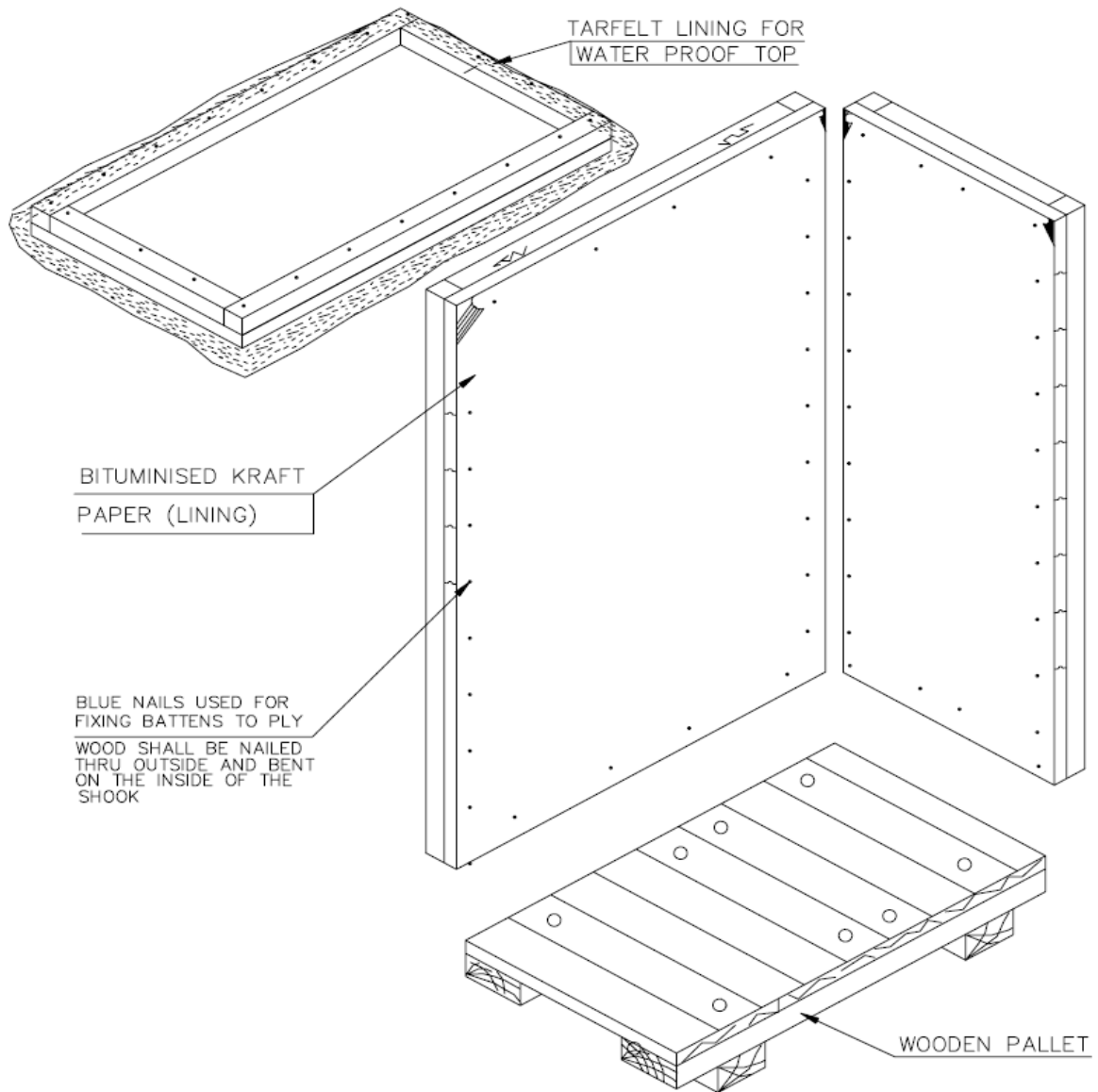


FIGURE-2



A4 - 14

PLANT STANDARD

ED 049 00 92

REV NO 06

Page 15 of 26


225		170	
	BHEL-EDN-BANGALORE-26		
CONSIGNEE			
MATERIAL			
CUSTOMER REF.	MO. NO.		
DESPATCH ADVICE NOTE NO.	CASE NO.		
DIMENSIONS(MM) LXBXH	NET WT -KGS		GROSS WT -KGS
SPECIAL INSTRUCTIONS	HANDLE WITH CARE - KEEP DRY DO NOT DROP - DO NOT TILT		

FIG-3 : MARKING PLATE



A4 - 14

PLANT STANDARD

ED 049 00 92

REV NO 06

Page 16 of 26

PLYWOOD SHOOKS BOLT TYPE WITH SILVER OAK BATTONS

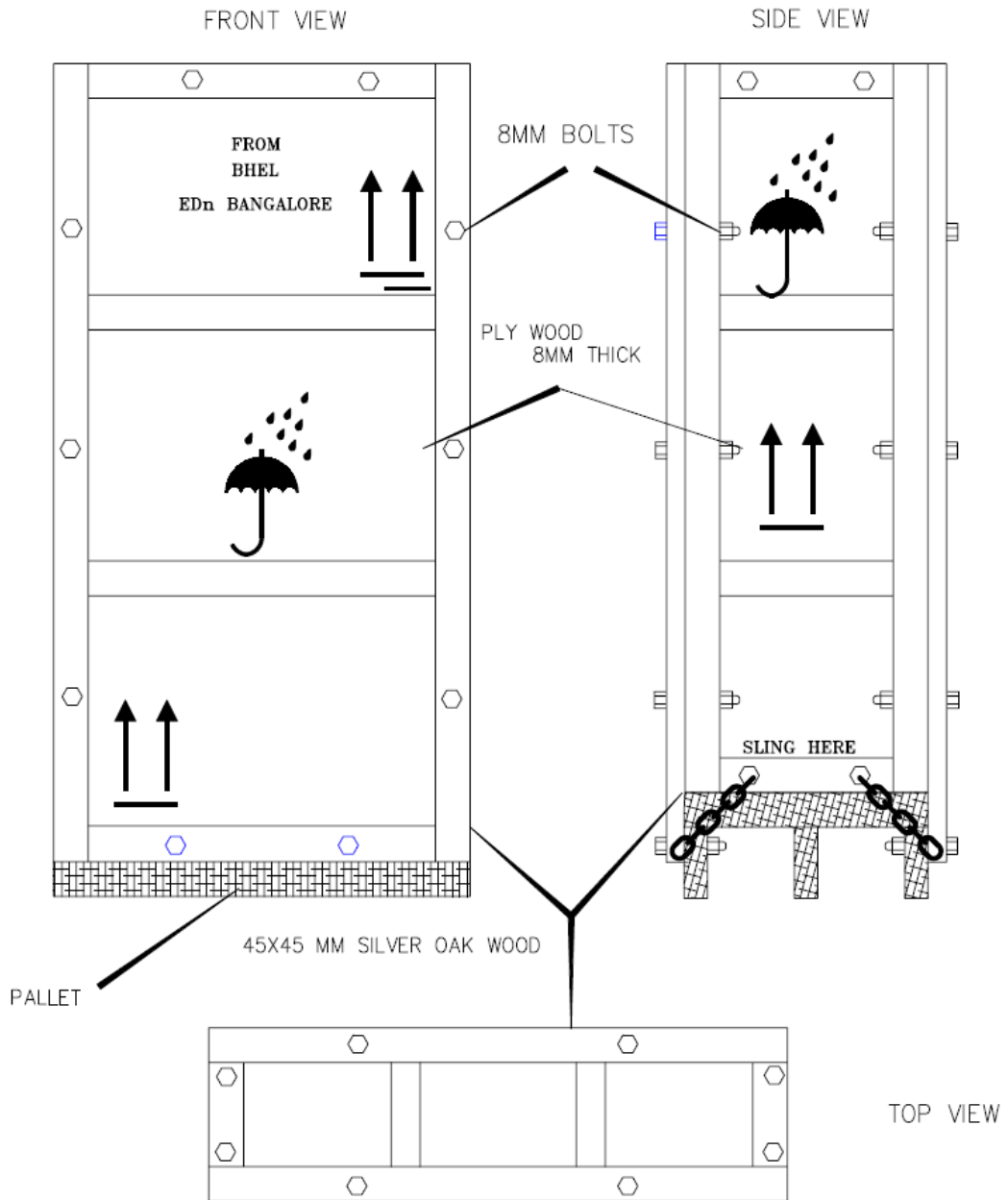


FIG-4



A4 - 14

PLANT STANDARD

ED 049 00 92

REV NO 06

Page 17 of 26

LAP JOINTS

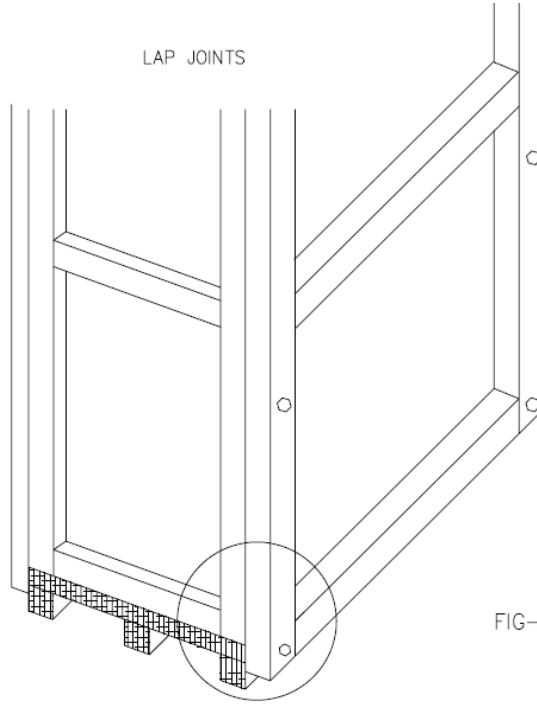
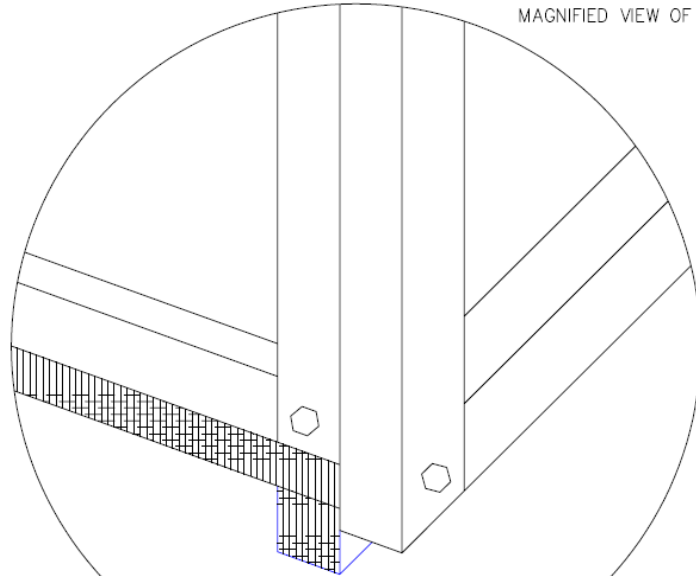


FIG-5

MAGNIFIED VIEW OF THE LAP JOINT



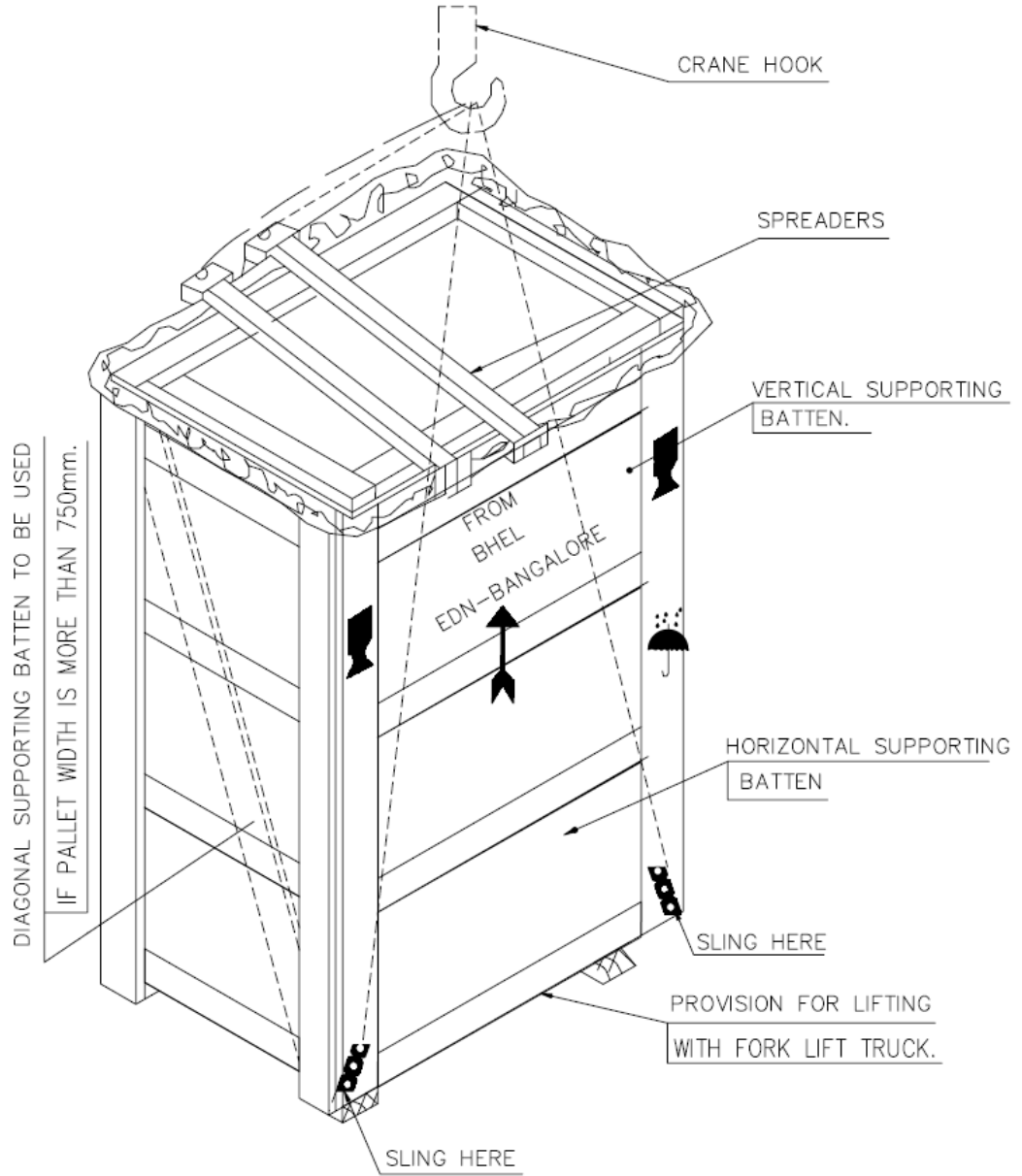


FIG-6 : LIFTING OF PACKED CASE



A4 - 14

PLANT STANDARD

ED 049 00 92

REV NO 06

Page 20 of 26

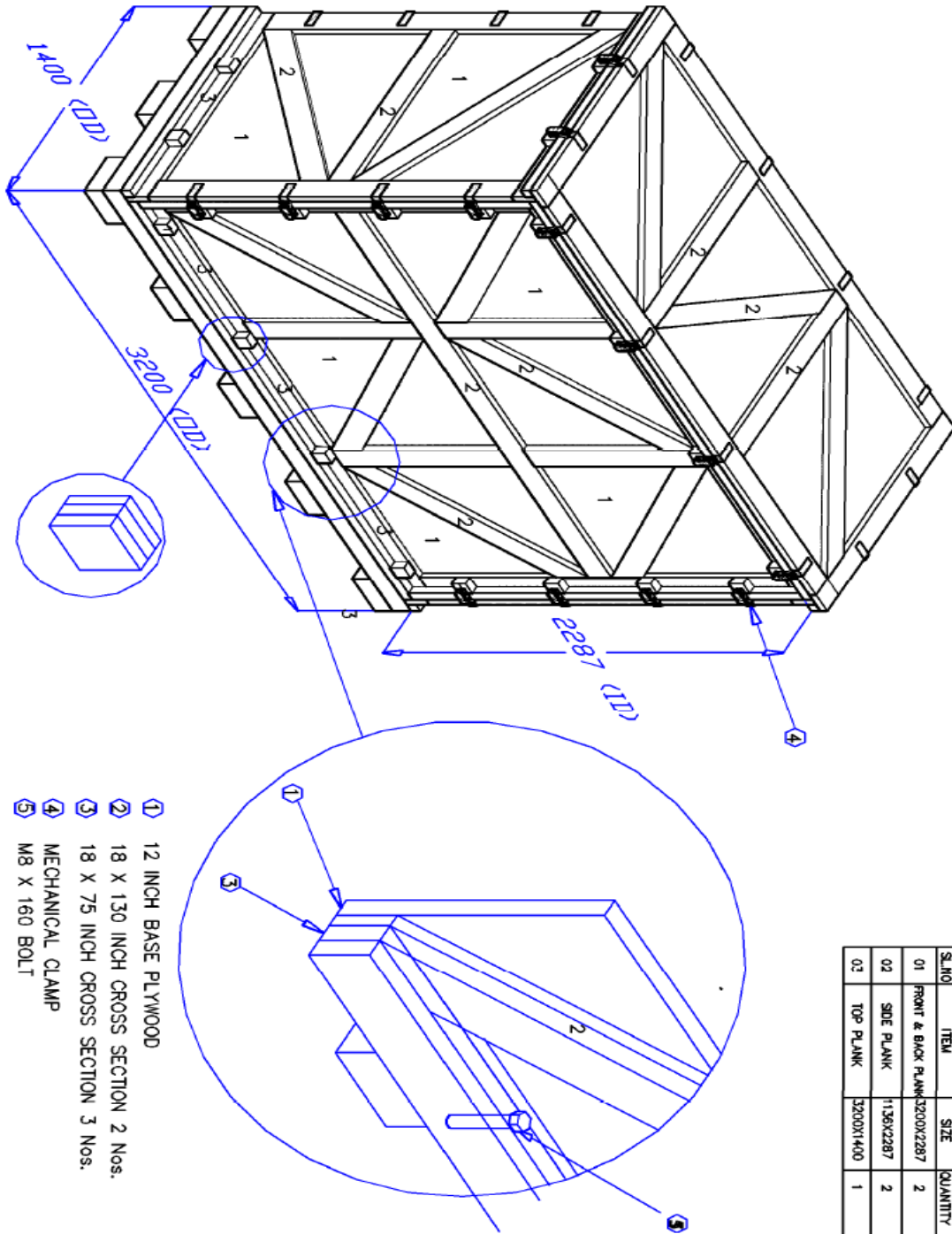


Fig - 8 : CLW Railway Panel Packing with Plywood & Plywood Support Battens



A4 - 14

PLANT STANDARD

ED 049 00 92

REV NO 06

Page 21 of 26

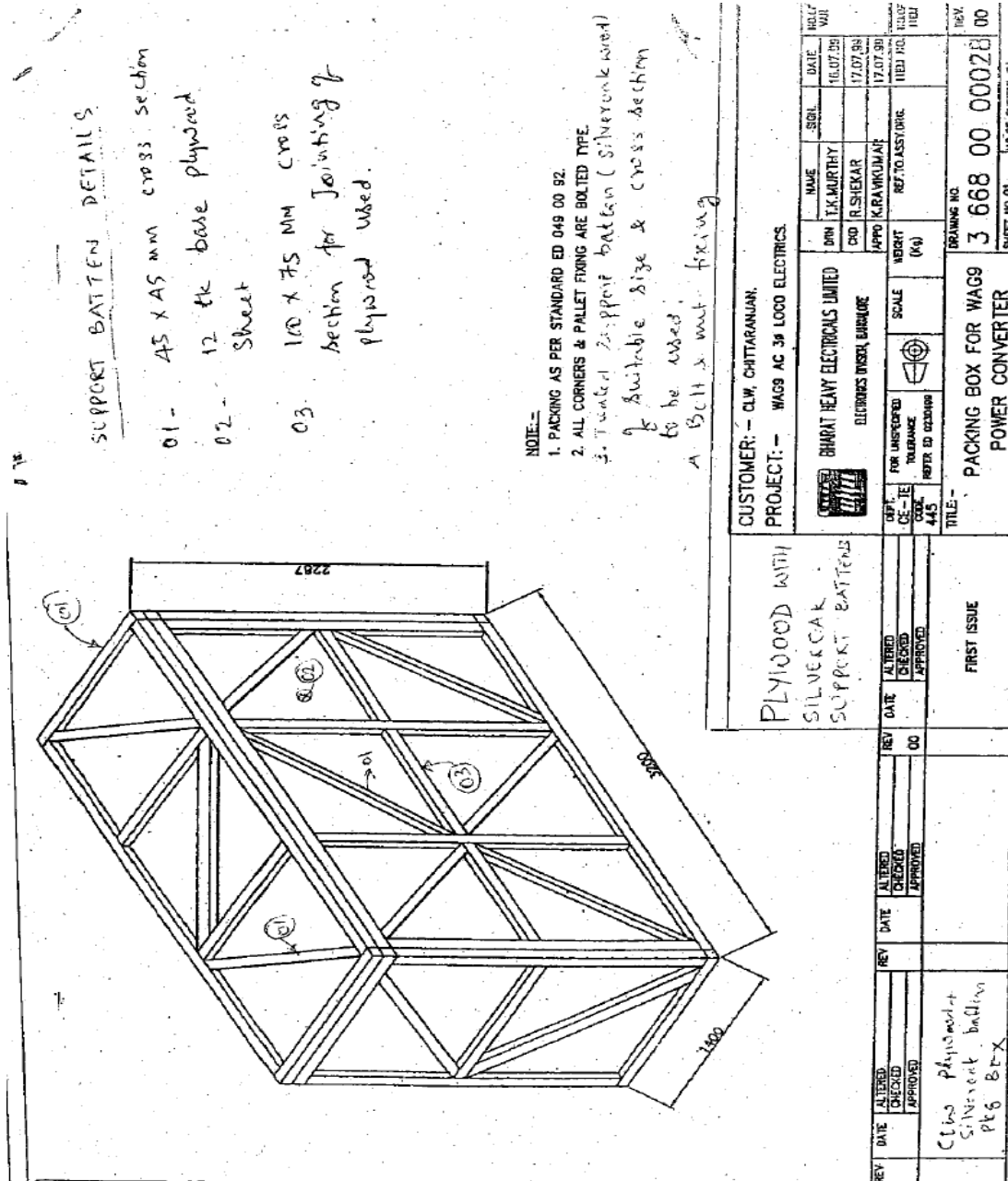


Fig - 9 : CLW Railways Panel Packing with Plywood & Silver Oak Battens



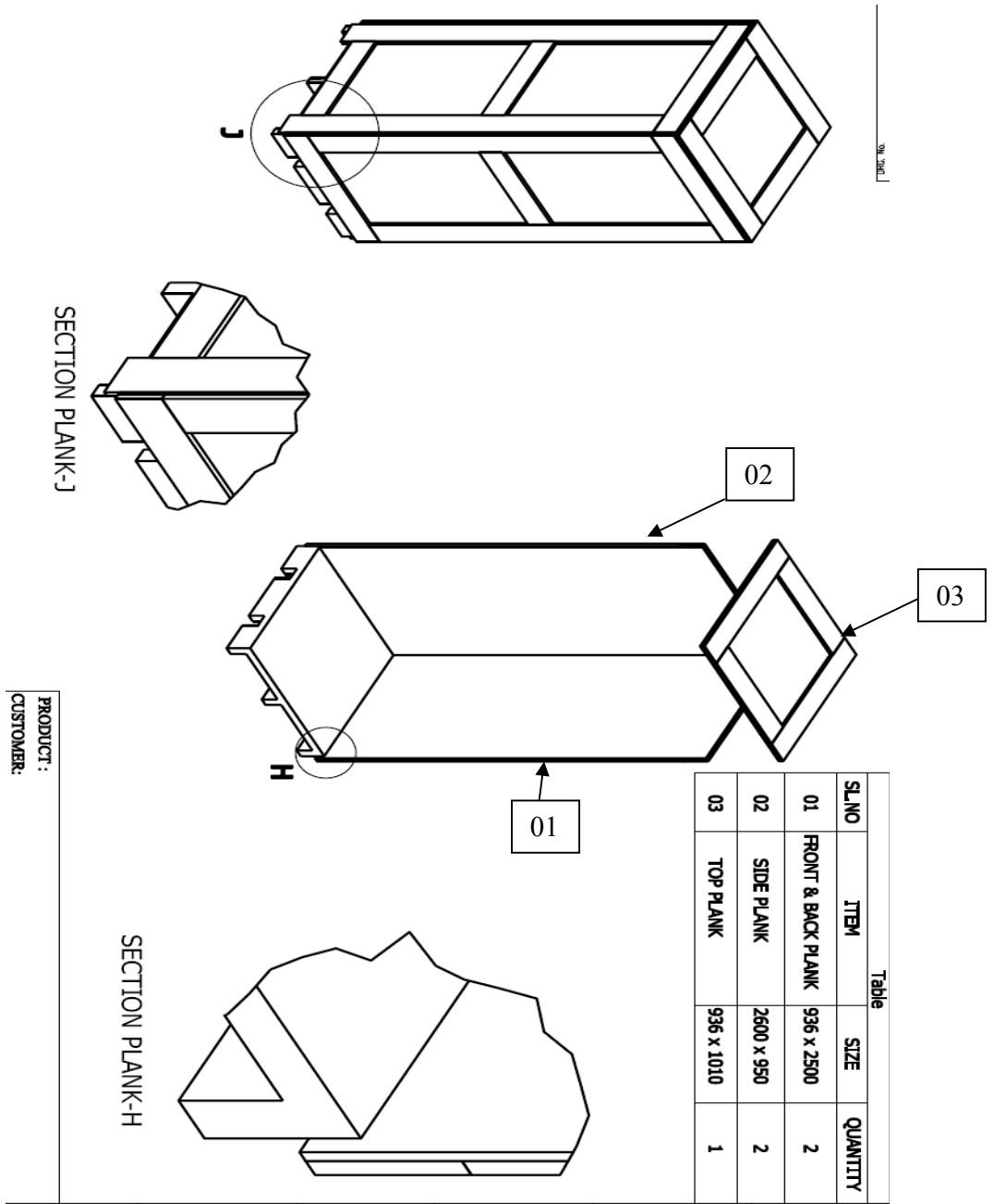
A4 - 14

PLANT STANDARD

ED 049 00 92

REV NO 06

Page 22 of 26



PRODUCT :
CUSTOMER :

Fig-10 : Plywood Packing for Single Suit Panel.



A4 - 14

PLANT STANDARD

ED 049 00 92

REV NO 06

Page 23 of 26

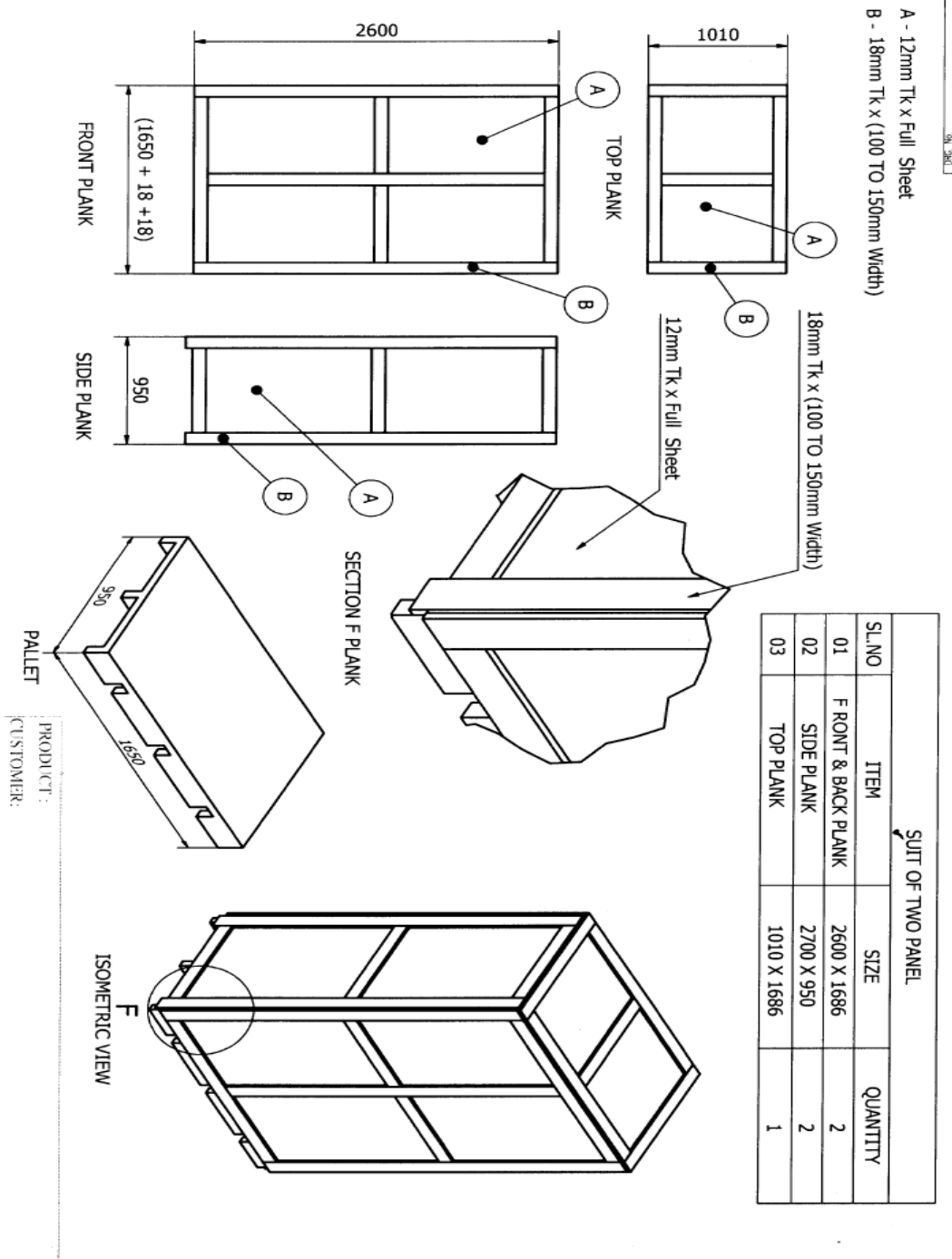


Fig - 11 : Plywood Packing for 2suit panel.



A4 - 14

PLANT STANDARD

ED 049 00 92

REV NO 06

Page 25 of 26

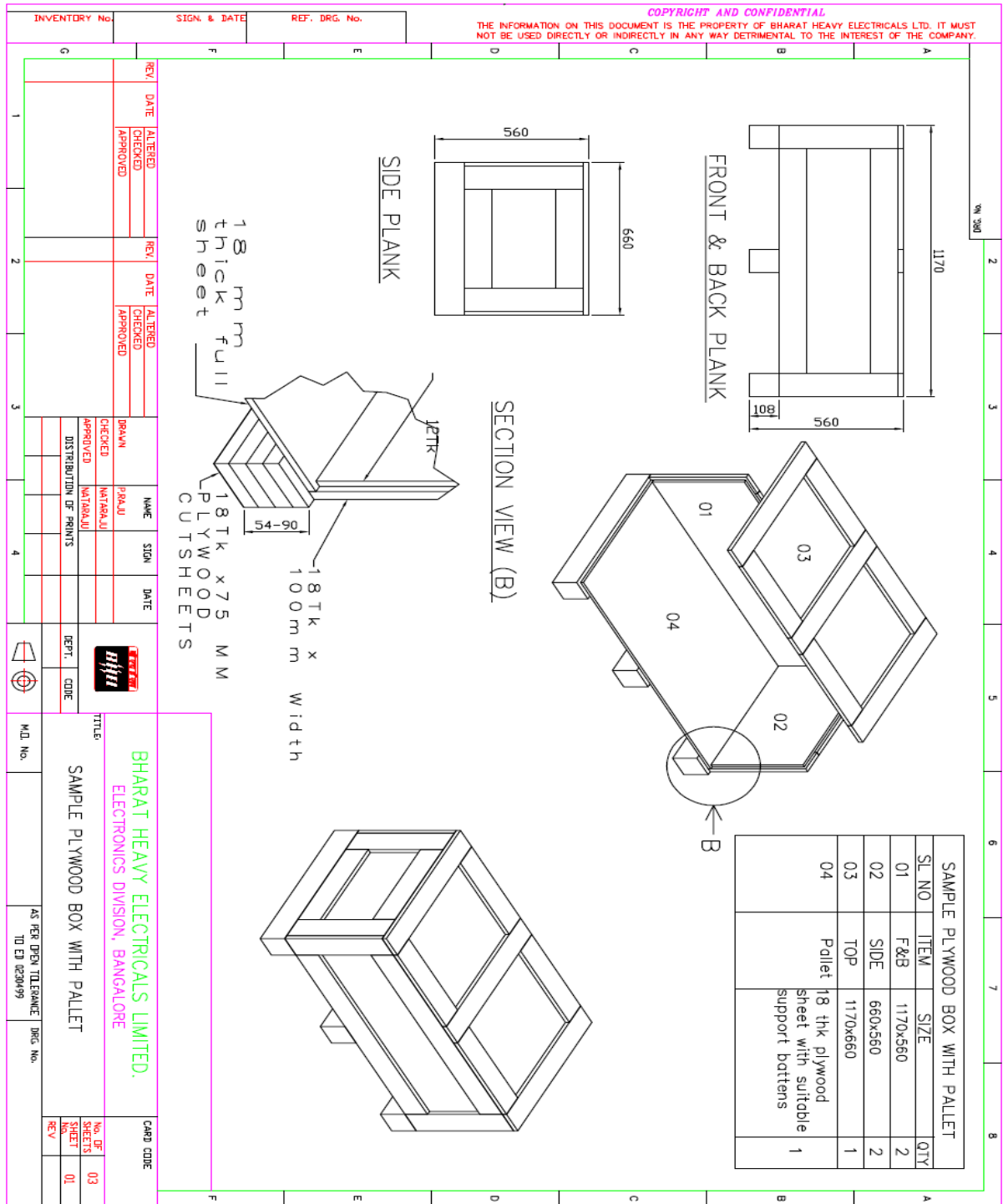
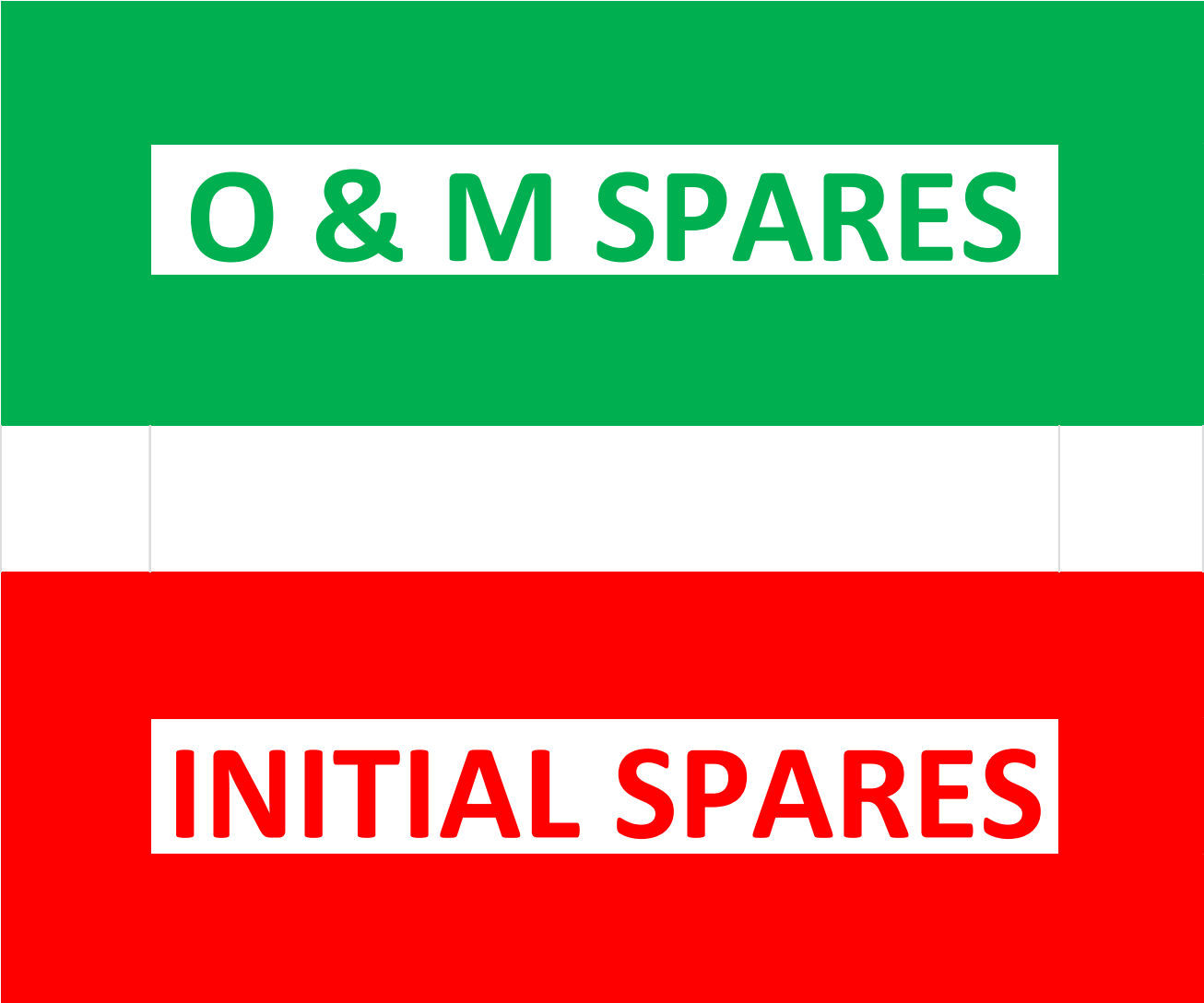


Fig - 13 : Plywood small case with Pallet

 <p>A4 - 14 A4 - 14</p>	<p>PLANT STANDARD</p>	<p>ED 049 00 92 REV NO 06 Page 26 of 26</p>
--	------------------------------	---

Easy spares [Initial and O&M] Traceability and Identification at units and as well as at sites:

Fig: 14





A4 - 15

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 1 OF 28

REVISION HISTORY SHEET

REV NO.	DATE	NATURE OF CHANGE	REASONS	CHANGED BY	APPROVED BY
00	06/03/92	SUPERCEDES CN43000	-	VS MAS SHG	N.J
01	19/06/93	GENERAL	FEEDBACK FROM QUALITY	SHG	N.J
02	24/06/93	CL 3.4.10	FEEDBACK FROM QUALITY	SHG	N.J
03	01/07/93	SEMICONDUCTOR & PHTOVOLTAIC PANELS ADDED	FEEDBACK FROM DESPATCH	SHG	N.J
04	17/10/94	TOTALLY REVISED	FEEDBACK FROM QUALITY	SHG	N.J
05	08/06/95	ANNEXURE ADDED	FEEDBACK FROM QUALITY & ACCEPTANCE CRITERIA OF WOOD ADDED	SHG	N.J
06	17/11/95	CL 2.5.10 ALTERED	FEEDBACK FROM QUALITY & SHIPPING	SHG	N.J
07	05/03/97	UNDER CL 3.0 & 3.9.1 RPP ADDED ACCEPTANCE CRITERIA REMOVED	FEEDBACK FROM SHIPPING & QC	SHG	N.S
08	29/08/2001	CL 2.2.8 & 4.1 CHANGED	FEEDBACK FROM SHIPPING & QC	SHG	NS
09	15.12.2009	INCLUSION OF PINE WOOD AND SOME CLAUSES HAVE AMENDED	FEEDBACK FROM SHIPPING	PGD / KPN	MSS
10	21.06.2013	Inclusion of recommendations pertaining to spares in page-11&28	Recommendations from Corporate systems & IT	HRN	MSS
11	11.01.2016	CL 2.5.5,2.5.6,2.5.11,2.5.1 2,2.5.22 REVISED.	Feedback from shipping and after general review	HRN /EKP	BKD

REV-11.

APPROVED: B.K.DHARMARAJU- DGM

PREPARED: EKP/HRN

ISSUED: STDS GROUP

DATE: 11/01/16



A4 - 13

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 2 OF 28

PROCEDURE FOR PACKING OF CONTROL EQUIPMENTS PRODUCTS USING RUBBER WOOD, SILVER OAK WOOD, PINE WOOD AND CARTONS

1.0 SCOPE: This standard covers the guidelines for packing of Control Equipments, semiconductor devices and Photo voltaic panels/cells.

2.0 MATERIALS:

2.1 WOOD:

2.1.1 INLAND: The wood shall be Rubber wood (*Havea Brasiliensis*) for packing of cubicles, loose items, spares and photovoltaic items meant for customers in India.

2.1.2 EXPORT: Silver Oak (*Grevillea Robusta*) / Pine wood shall be used for packing of cubicles and loose items meant for export.

2.2 DIMENSIONS:

2.2.1 Thickness of planks for Front, rear, top and bottom sides and binding, jointing battens shall be 25 +2/-3 mm.

2.2.2 Width of all planks including the tongue shall be more than 125 mm after planing, except to adjust total height of item to be packed.

2.2.3 Minimum number of planks shall be used for a shook.

2.2.4 In any case, only one plank can be of width less than 125 mm, but greater than 100 mm.

2.2.5 Horizontal, vertical, diagonal planks shall be given for binding (number of such planks depend on the dimension of panel, as given in Figure-2).

2.2.6 External sides of front and rear planks to be planed to facilitate writing of address and other markings.

2.2.7 Width of binding planks shall be minimum 100 mm.

REV-11

APPROVED: B.K.DHARMARAJU- DGM

PREPARED: EKP/HRN

ISSUED: STDS GROUP

DATE: 11/01/16



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 3 OF 28

2.2.8 Distance between any 2 binding planks shall be less than 750 mm. As shown in Fig-3, diagonal planks shall be used in between vertical binding planks when distance between inner to inner of vertical planks is more than 750 mm

2.2.9 Distance of the outer edges of these planks from the edge of case shall be less than 250 mm.

2.2.10 Diagonal planks are not required for top planks and width side also, if the width of pallet is less than 750 mm.

2.2.11 **Jointing of planks:** Single length planks shall be used for cubicles whose overall length is less than 2400 mm. For cubicles of length more than 2400 mm, jointing is permitted. The jointing shall be done with one single or maximum of 2 planks of wood same as other planks of width 250 mm (minimum) with two rows of nails on either side of the joint in zigzag manner. From the joint along height side it shall be of lap joint with over lap of at least the width of plank.

2.2.12 **Tongue and Groove joints:** Two Consecutive planks shall be joined by tongue and groove joint. Depth of tongue shall be 12 ± 1 mm, thickness of tongue shall be 8 ± 1 mm. The groove dimensions shall be such that the tongue fits tightly into the groove to make a good joint.

2.3 **PERMISSIBLE DEFECTS:** - Wood shall be free from knots, bows, visible sign of infection and any kind of decay caused by insects, fungus, etc.

End splits: Longest end splits at each end shall be measured and lengths added together. The added length shall not exceed 60 mm per meter run of shook's. Wood pins shall be used to prevent further development of split.

Surface cracks: Surface cracks with a maximum depth of 3 mm are permissible. A continuous crack of any depth all along the length is not allowed.

2.4 .0 CHEMICAL TREATMENTS FOR PRESERVATION OF WOOD:-

2.4.1 This treatment provides protection to the packing wood against deterioration due to fungi and attack by termites, borers and marine organism and any kind of infections.

2.4.2 The wooden planks, after making tongues / grooves shall be treated with chemicals. For pine wood, treatment with ASCU/ CCA solution need not be done.

2.4.3 The chemical used shall be ready mix ASCU paste. This consists of Arsenic pent oxide, copper sulphate sodium dichromate. This Paste shall be mixed at the rate of 1 kg of paste per 10 liters of water to the extent of water used. Alternate this CCA paste as mentioned at Para 2.4.5 can also be used.

2.4.4 The chemical treatment shall be done at the premises of the contractor. A cement concrete tank of capacity to hold a minimum of 2000 liters of solution shall be constructed. The solution



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 4 OF 28

shall be prepared in the presence of BHEL- EDN's Representative by contractor. The wooden planks shall be soaked in the solution for a minimum of 12 hours. The solution shall be replenished after treating a maximum of 12 cubic meters of wood. A log book shall be maintained by the contractor to give the details of date of preparation of solution, quantity of solution prepared, quantity of chemicals used, Quantity of wood treated and the details of replenishment. Samples of solutions before mixing will be got tested at the laboratories designated by BHEL. The testing fees to be paid to the laboratories will have to be borne by the contractor. The paste shall be tested as and when required.

2.4.5 Specifications for water soluble type wood preservatives: Copper – Chromium – Arsenic [CCA]:

Copper – Chromium – Arsenic preservative formulation shall be as per IS : 10013 Part – II – 1981 shall consist of following active ingredients in nominal proportions by weight as shown below:

Arsenic Pent oxide	$AS_2O_5 \cdot 2H_2O$	12.5
Copper Sulphate	$CuSO_4 \cdot 5H_2O$	37.5
Sodium Dichromate	$Na_2Cr_2O_7 \cdot 5H_2O$	50.0
Or		
Potassium Dichromate	$K_2Cr_2O_7$	

2.5 OTHER MATERIALS:

2.5.1 NAILS: The dia. of the nails shall be 3.15 mm. The length of the nails shall be 65 mm wherever two planks of 25 mm thickness are joined and 75 mm wherever a 25 mm planks is joined to a 50 mm plank.

2.5.2 BLUE NAILS: These are used for nailing bituminized Kraft paper/hessian cloth to the planks. The length of the nails shall be 16 mm.

2.5.3 HOOP IRON STRIPS: These are used for strapping the boxes. The width of the strips shall be 19 ± 1 mm and thickness 0.6 ± 0.01 mm. The material shall be free from rust.

2.5.4 CLIPS: These shall be used for strapping the hoop iron strips on the boxes.

2.5.5 BRACKETS: These brackets are used for nailing to the corners of cubicle boxes. The brackets shall be of mild steel of thickness min 2 mm and width 25 ± 1 mm. The brackets shall be of "L" shape, the length of each side being 100 ± 2 mm. Two holes shall be provided towards the end of each side for screwing /nailing.



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 5 OF 28

2.5.6 FASTENERS: Bolts, double nuts, spring washers will have to be used for packing of some special items like transformers, reactors, breakers, etc., to hold the job to the bottom plank of the box. The bolts, nuts, washers will be provided by the vendor. Drilling of holes will have to be done using contractor's tools.

2.5.7 POLYETHYLENE SHEET: The polyethylene sheets are used to make covers to the jobs individually. The material shall have a thickness of 0.175 mm (175 microns). The polyethylene sheet shall be clear and transparent.

2.5.8 BITUMINISED WATER PROOF KRAFT PAPER: This is used for lining the inside of shoots of cubicles.

2.5.9 BITUMEN COATED HESSIAN POLYETHYLENE KRAFT PAPER: This is used for lining the inside of top planks of cubicles and for lining of all inner sides of boxes.

2.5.10 RUBBERISED COIR: The rubberized coir is used as cushioning material. For the packing of loose items, items are to be arrested by using rubberized coir. For the packing of cubicles rubberized coir of thickness 25mm and width 75mm shall be used.

2.5.11 FOAM RUBBER / 'U' FOAM: This is used for covering the delicate items. This material is provided by the vendor.

2.5.12 THERMOCOL (EXPANDED POLYSTYERENE) SHEETS): This is used for covering delicate items. This material shall be provided by the vendor.

2.5.13 MARKING PLATE: This shall be of anodized aluminum sheet. Details and specifications are given in Fig-5.

2.5.14 PACKING SLIP HOLDER: This shall be of galvanized iron /tinned

2.5.15 SILICA GEL: This shall be of indicating type.

2.5.16 COTTON BAGS: These are used for holding silica gel. The bags shall have the following matter indicated them:

BHEL-EDN, BANGALORE - 5 60 026

SILICA GEL INDICATING TYPE

BLUE : ACTIVE

ROSE : REDUCED ACTIVITY

WHITE : NO ACTIVITY. TO BE REPLACED WITH FRESH SILICA GEL

 A4 - 14	PLANT STANDARD	ED 049 00 99 REV NO 11 PAGE 6 OF 28
--	-----------------------	---

2.5.17 COTTON/ PLASTIC TAPE: This is used for tying small items .And also to prevent vibrations of moving parts within the cubicles.

2.5.18 MARKING INK: The ink used normally is black in color. In some special cases other color also will have to be used. The ink shall be non-fading/indelible and non-washable by water.

2.5.19 POLYETHYLENE BAGS: These are to be used for keeping the, Packing slips. The bag shall be of size 70 mm X 100 mm (minimum).

2.5.20 Hessian cloth, twine thread, paint will have to be used in packing certain items.

2.5.21 Mechanical Latching clamps: For CLW Railway panels and similar Panels self locking clamps can also be used on need basis in conjunction with or apart from regular bolt and nut fixing arrangement. [Refer Drawing Fig-7]. For reusable boxes, these clamps provide easy locking and unlocking arrangement. These clamps will be made available from BHEL in some cases.

2.5.22 STICKERS The following stickers to be put by the vendor on cubicles/Boxes after packing.
1.Case No sticker : 2 nos. Size 25 mm x 4.5 mm 2.BHEL Monogram sticker : 1 no . Size 17.5 mm x 23 mm 3. Address sticker : 2 nos. Size 38 mm x 30 mm 4. Direction sticker " Front " & " Back " - 4 nos .Size 20 mmx7.5 mm 5. Chain Mark Sticker : 4 Nos. Size - 30 mmx 7.5 mm 6. "Fragile " sticker : 2 Nos Size. 21mmx15 mm 7. "DO NOT STACK " sticker - 2 Nos. Size 30 mm x 22 mm

3. 0 PACKING SPECIFICATIONS: Different types of packing are used as follows:

- 1) Packing of cubicles with rubber wood.
- 2) Packing of cubicles with Silver Oak wood / Pine wood
- 3) Packing of empty cubicles with rubber wood.
- 4) Packing of loose items/spares with rubber wood.
- 5) Packing of loose items /spares with Silver Oak wood.
- 6) Packing of Photo-voltaic items with rubber wood.
- 7) Packing using bitumen coated hessian polyethylene Kraft papers.
- 8) Supply of rubber wood pallets for empty cubicles.
- 9) Packing of semiconductor panels.
- 10) Packing of material covered under category of RPP (Registered Postal Parcel)
- 11] Packing of materials using PVC [sunspace] / corrugated Kraft paper cartons.
- 12] Packing of materials using heavy duty cartons



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 7 OF 28

3.1 PACKING OF CUBICLES WITH RUBBER WOOD:

3.1.1 The packing is to be done as per clause 2.0 in all respects.

3.1.2 The cubicles are already fixed on wooden pallets. Hence the contractor need not arrange the bottom pallets normally.

3.1.3 The cubicles will be of different sizes both widthwise and lengthwise. The cubicles may be made up of single suite, 2 Suite, 3 Suite, 4 Suite, etc., The width of the cubicles generally varies from 400 mm to 1650mm. The length of the cubicle, generally varies from 1500 mm to 4800 mm. The height is normally 2430 mm. In some cases the height may be less/more.

3.1.4 BITUMINISED WATER PROOF KRAFT PAPER: The inner surface of 4 sides of shoo's shall be nailed with Bituminized water proof Kraft paper (as per 2.5.8) using blue nails (as per 2.5.2) wherever 2 pieces of Kraft paper are used, the joint shall have an overlap of minimum 20 mm.

3.1.5 BITUMEN COATED HESSIAN POLYETHYLENE KRAFT PAPER: The inner surface of top cover shall be nailed with Bitumen coated Hessian polyethylene Kraft paper (as in 2.5.9). This sheet shall project outside on 4 sides by at least 100 mm and shall be nailed properly on sides. Joining of sheets should have overlap of minimum 20 mm.

3.1.6 POLYETHYLENE SHEET COVERING: The cubicles shall be covered with a polyethylene petticoat (Polyethylene sheet as per 2.5.7). This shall be 'tailor made' to fit the cubicle. The sealing shall be such as not to allow any moisture to enter the cubicle.

3.1.7 SILICA GEL: Silica gel (as per 2.5.15) packed in cotton bags shall be kept at different places inside the cubicle as per EDN directions. Each suit of cubicle shall be provided with 1 kg of Silica gel (for a 4 suit cubicle 4 kgs of Silica Gel to be used. The bag containing silica gel to be as per 2.5.16).

3.1.8 LOOSE PARTS: Any loose parts in the cubicles shall be tied using cotton/ plastic tape. Wooden battens shall be provided wherever necessary.

3.1.9 WOODEN BATTENS: In case of cubicle which are not rectangular in shape like control desks, sufficient number of wooden rafters/battens of proper size shall be provided to give strength to the package.

3.1.10 RUBBERISED COIR: Gap between the cubicle and the case shall be filled with rubberized coir (as per 2.5.10) with distance between consecutive layers less than 500 mm.

3.1.11 CLAMPING: Packing shall be bound at edges by nailing M.S.clamps / Brackets (as per 2.5.5). Each vertical edge shall have minimum 3 clamps. Top horizontal edges will have one clamp for every meter length of package. However, minimum 4 clamps shall be nailed at the top for any cubicle.



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 8 OF 28

3.1.12 PACKING SLIP: Packing slip kept in the polyethylene bag (As per 2.5.19) shall be placed in the box at appropriate place. In addition, one more packing slip covered in polyethylene cover and packing slip holder (as per 2.5.14) shall be nailed to front / rear of case.

3.1.13 MARKING PLATE: One no. (As per 2.5.13) shall be nailed to the front side of the case.

3.1.14 CASE MOUNTING: After complete packing, stencil marking of various details and marking of symbols shall be done as per BHEL instructions using indelible / non washable marking ink.

3.2 PACKING OF CUBICLES WITH SILVER OAK / PINE WOOD: Packing of cubicles for export shall be done exactly in same manner as described at 3.1 except for the following changes: -

- Wood shall be Silver oak/ Pine wood instead of rubber wood.
- Double polyethylene petticoat instead of one.
- Fumigation may have to be done if required (BHEL Scope).

3.3 Different types of Cubicles with sizes for Packing

SL TYPE OF CUBICLE VARIANT DIMENSIONS [Internal sizes]

01 Single suite cubicle	- 900 x 950 x2500
02 Two suite cubicle	- 1650 x 950 x 2500
03. Three suite cubicle	- 2400 x 950 x2500
04. Four suite cubicle	- 3150 x 950 x 2500
05. Regulation cub	- 1300 x 1350 x 2500
06. Thy cub	- 2870 x 1350 x 2500
07. VFD Cub	- 3800 x 1550 x 2500

3.4 PACKING OF LOOSE ITEMS/SPARES USING RUBBER WOOD:

3.4.1 Shape of cases shall be square, rectangular with single gabled roof or with double gabled roof depending on the nature of the job to be packed. Construction shall be as per drawings enclosed. Only gable will be additional as required.

3.4.2 Wood shall be rubber wood with Tongue and Groove joint as per clause 2.2.12.

3.4.3 Chemical treatment as per clause 2.4 to be done.

3.4.4 Width of planks shall be at least 100 mm. Width of binding planks (battens) shall be at least 75mm.

3.4.5 External surface of planks on front and rear shall planed 100% (except bottom plank).

COPY RIGHT 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.



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 9 OF 28

3.4.6 Inner surfaces of all 6 sides shall be lined with bitumen coated hessian polyethylene Kraft paper (as per clause 2.5.9) using blue nails.

3.4.7 Rubberized coir of minimum 25mm thickness and 100 mm width shall be nailed to inner surfaces of bottom and 4 sides of box.

3.4.8 Internal packing: Items that go into the box shall be packed using polyethylene sheet/ U foam/ thermocol sheets/ air bubbled sheets/ paper cartoons and cotton tape. Any space left. Between the job and the sides and the top of the box shall be filled with rubberized coir to get proper cushioning effect.

3.4.9 Certain items like transformers, reactors, breakers, etc., shall be bolted to the bottom of the box using bolts, nuts and washers.

3.4.10 Silica gel as per clause 2.5.15 held in cotton bags as per clause 2.5.16 shall be kept at proper places in the box.

SL NO	BOX INNER DIMENSIONS (mm)	VOLUME (liters)	QUANTITY OF SILICA GEL (grams)
1	300X300X300	27	100
2	400X400X400	64	100
3	500X500X400	100	100
4	600X600X400	144	100
5	700X700X400	196	100
6	770X770X500	297	100

3.4.11. Packing slip kept in polyethylene bag (clause 2.5.19) shall be placed in the box.

3.4.12. Marking plate as per clause 2.5.13 shall be nailed to side of the box.

3.4.13. Two numbers of hoop iron strips as per clause 2.5.3 shall be strapped tightly on the case using clips.

3.4.14. Stencil marking of various details and marking of various symbols shall be done as per BHEL instructions using indelible/non-washable marking ink.

3.4.15 Loose items to be kept inside the cubicle

COPY RIGHT 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.



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 10 OF 28

- The components which are removed from cubicle for shipping purpose only, such as meters shall be kept inside the cubicle individually kept in wooden box and tied firmly in bottom of Cubicle.
- Other items which are given loose in addition to cubicle shall be packed in separate boxes (like cables).
- For transformer cubicles loose items shall be packed in separate boxes and these boxes may be tied firmly in bottom of cubicles.
- Items which are bigger in size such as impulse tubes may be kept in top of cubicles firmly bunched and tied.

3.5. **PACKING OF LOOSE ITEMS USING SILVER OAK / PINE WOOD:** Packing of loose items for export shall be done in same manner as at clause.3.4 . except for the following changes:

- Wood shall be Silver oak/ Pine wood instead of rubber wood.
- Fumigation may have to be done.
- 2 polyethylene covers to be provided.

3.6 **PACKING OF PHOTO VOLTAIC PANELS, ETC.USING RUBBER WOOD:**
Same as 3.4 above except for the following changes:

- Wood need not be treated with chemical solution.
- Tongue and groove jointing is not required. But planks shall be so joined as to not leave any gap at the joint. Bituminized Kraft paper and Bituminized Kraft sheet need not be used.
- Silica gel need not be used.

3.7 **PACKING USING BITUMEN COATED HESSIAN POLYETHYLENE KRAFT PAPER:**

3.7.1. This method is adopted for packing of poles, frames, Empty boxes, etc.

3.7.2. Job shall be covered and stitched tightly with bitumen coated hessian polyethylene Kraft paper.

3.7.3. Marking has to be done as mentioned in CL 3.4.14.

3.8 **SUPPLY OF RUBBER WOOD PALLETS FOR EMPTY CUBICLES:**

3.8.1. The wood shall be rubber wood.



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 11 OF 28

- 3.8.2. Thickness of planks shall be 25 \pm 2 mm. The size of the supporting battens at bottom shall be 75 \pm 2 mm (width) and 100 \pm 2 mm (height).
- 3.8.3. If the width of the pallet is 1000 mm or less, only 2 supporting battens at the edges may be provided. In case of pallets having width of more than 1000 mm, one extra supporting batten shall be provided in the middle.
- 3.8.4. Jointing of top planks is not permitted for pallets of width less than 1000mm. For pallets of width more than 1000 mm, jointing of top plank is permitted. However, joint shall be at the center of the supporting batten.
- 3.8.5 The consecutive top planks shall be so nailed as to leave no gap. Tongue and groove joint is not required.

3.9 PACKING OF SEMICONDUCTOR DEVICES

Semiconductor devices shall be received in prepackaged condition as per the device type and packed in plywood boxes as per the following procedure,

- Provide thermocole sheets/rubberized coir.
- Stack the replaced devices inside the case.
- Fill up gaps with thermocol sheets/rubberized coir.
- Close the top cover and nail.
- Provide suitable marking of the package details.

- 3.9.1 Packing of material for Registered Post Parcel (RPP) RPP packing boxes to be made in-house with 12mm (for sides) and 6mm thick (for top and bottom) commercial quality ply wood sheet. The size of the box should be decided on the material to be dispatched. Between material 10mm and 15mm thick thermocole sheets or rubberized coir/foam should be provided as cushion.
- 3.9.2. Packing of materials using sunpac cartons and corrugated Kraft paper cartons: Individual items can be packed using sunpac or polypropylene [PVC]/ corrugated Kraft paper cartons of suitable sizes and grammage depending upon the items to be packed. Heavy duty cartons can also be used for packing of loose items, manuals, repaired items and others.
- 3.9.3. Packing of materials using Heavy duty cartons: Panels can also be packed using Heavy duty carton with other required packing materials having 2000gsm corrugated board of 7 ply 15 thick. Loose items and spares can be packed using 5ply 2000gsm corrugated heavy board with other packing materials. Different sizes of cartons are required depending upon the sizes of the items being packed. Details are separately given.

	<h2>PLANT STANDARD</h2>	ED 049 00 99 REV NO 11 PAGE 12 OF 28
---	-------------------------	--

4.0 ADDITIONAL POINTS TO BE FOLLOWED FOR EXPORT ORDER SEAWORTHY PACKING:

- 4.1 Packing to be done as per Fig - 6.
Thickness of G.I.sheet 0.3 mm. plus or minus 0.05 [0.3-0.05]

Additional points to be taken care for :

Easy spares [Initial and O&M] Traceability and Identification at units and as well as at sites:

(Recommendations from Corporate Systems & IT)

Sl	Activity
1	All Initial and O&M spares preferably supplied in one lot to site and progressive inventory till all spares are accumulated could be kept at units.
2	Spares (Initial and O&M) should be supplied in separate Boxes / Containers and not mixed in main supply boxes.
3	i) Initial spares Box / Container to be labeled as "INITIAL SPARES " in RED. Ref fig: 14 (Page-26). ii) O & M spares Box /Container to be labeled as" O&M SPARES " in GREEN. Ref fig: 14 (Page-26).
4	iii) Initial Spares Box to have red Color strip as per diagram. Ref fig: 14 (Page-26). iv) Majority of spares (initial and O&M) are for indoor storage at site. v) O&M spares box to have green Color strip as per diagram. Ref fig: 14 (Page-26).
5	vi) Spares (Initial and O&M) Packing list kept inside the boxes and affixed securely outside the box to contain vii) Custom name viii) Project / Power station Name ix) Customer PO No and date x) Sl no of customer PO. xi) Quantity total & dispatched. xii) Unit work order number xiii) All above to be developed from Unit IT System
6	xiv) All spares (Initial and O&M) items to have tags (wono, item customer order no, customer item.description)
7	xv) Supply of spares by Vendor should also be instructed for following point 2,3,4,5,6 mentioned above.



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 13 OF 28

Action By : Sites on arrival of spares (Initial and O&M)Receipt .

	Activity
1	Material utilized if any from Initial and O&M spares , should have prior written approval of concerned MUs. Such MUs shall also confirm replacement dates which should be entered in the system for creation of repository.

5.0 DETAILS OF DRAWINGS/FIGURES ENCLOSED

FIG-1: Details Of Cubicle Packing Box

FIG-2: Binding Of Panel

FIG-3: Lifting Of Packed Case

NOTE: 1) Spreaders are to be used only for lifting the case.

2) Spreaders are wooden items & not nailed to the case.

3) Height between crane hook & spreaders to be kept Minimum to void rotation of case while lifting.

FIG-4: Lifting And Moving Un Packed Case

FIG-5: Marking Plate

FIG-6: Closed Packing Case With G.I. Sheet Showing Layers Of Packing Materials.

A4 - 14 Mechanical Latching Clamp

o 15 : Sample Packing drawing of single/ double / triple & four suit panel



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 14 OF 28

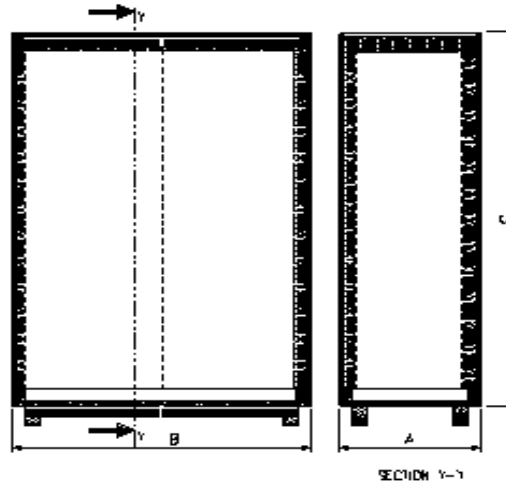


FIG-1 : DETAILS OF CUBICLE PACKING BOX.

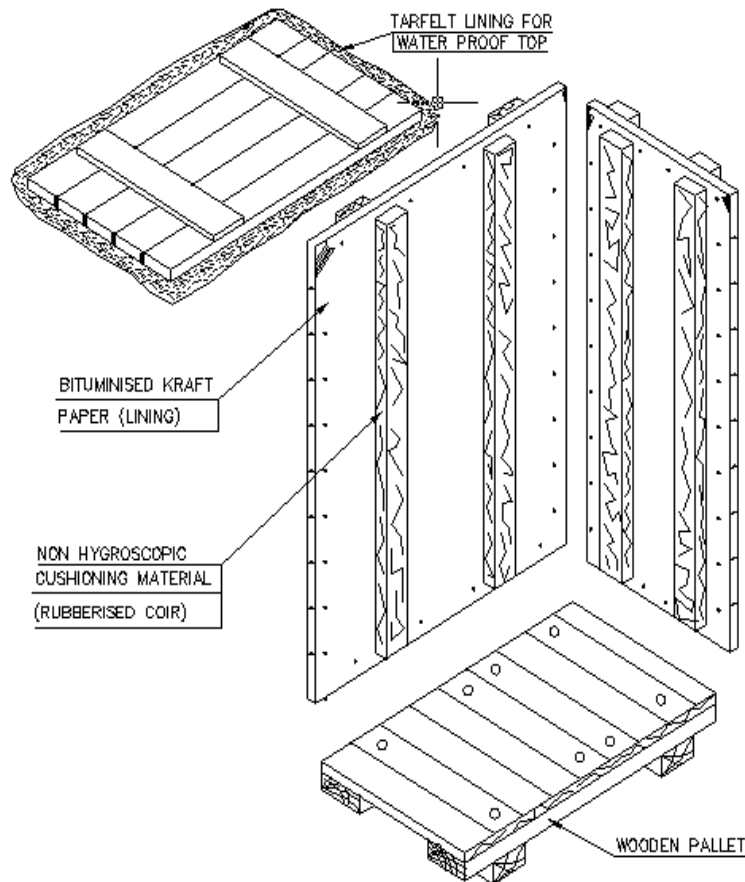


Fig. 2 : Binding of Panel

COPY RIGHT 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.



PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 15 OF 28

COPY RIGHT 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.

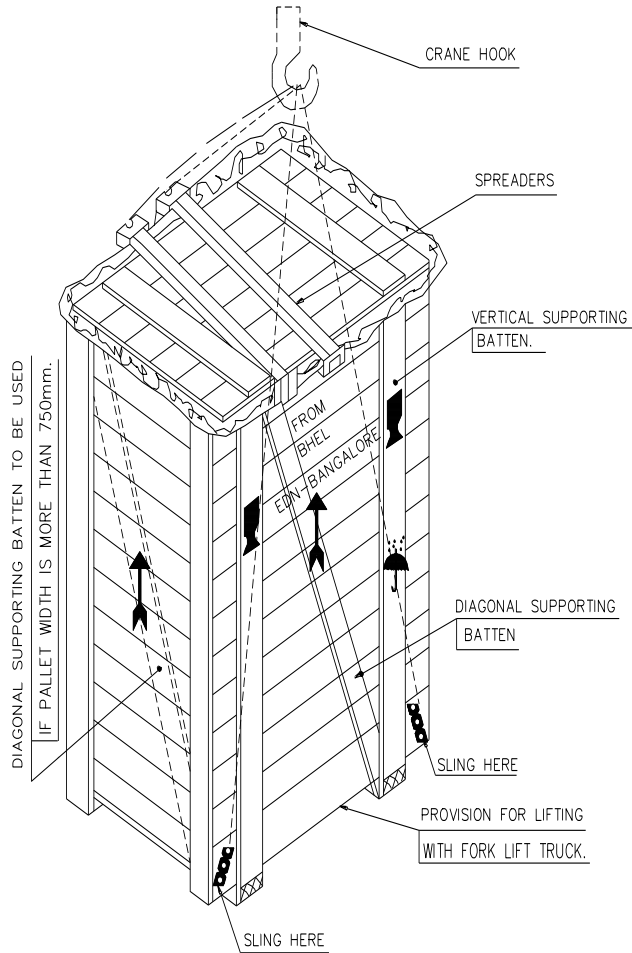


FIG-3 : LIFTING OF PACKED CASE.



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 16 OF 28

COPY RIGHT 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.

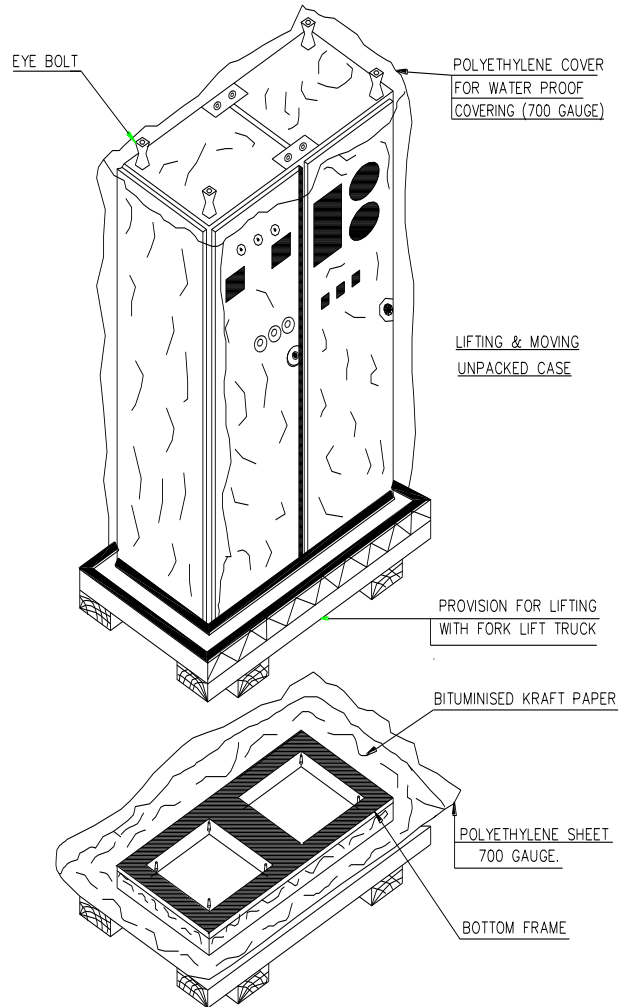


FIGURE-4

COPY RIGHT 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.

 A4 - 14	<h1>PLANT STANDARD</h1>	ED 049 00 99 REV NO 11 PAGE 17 OF 28
---	-------------------------	--

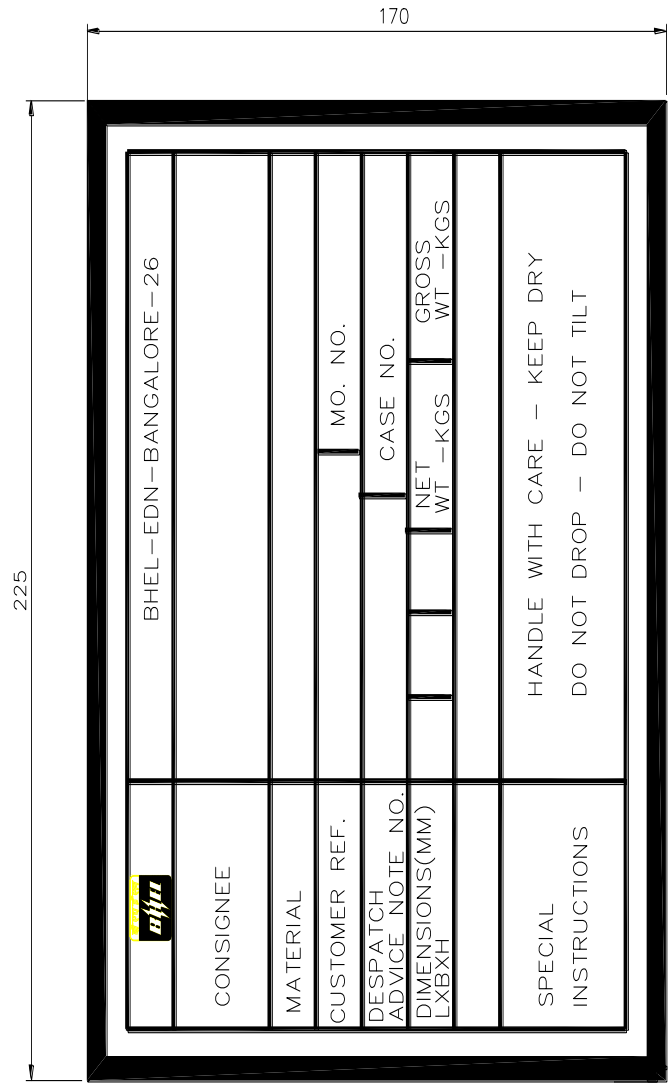


FIG-5 : MARKING PLATE.



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 18 OF 28

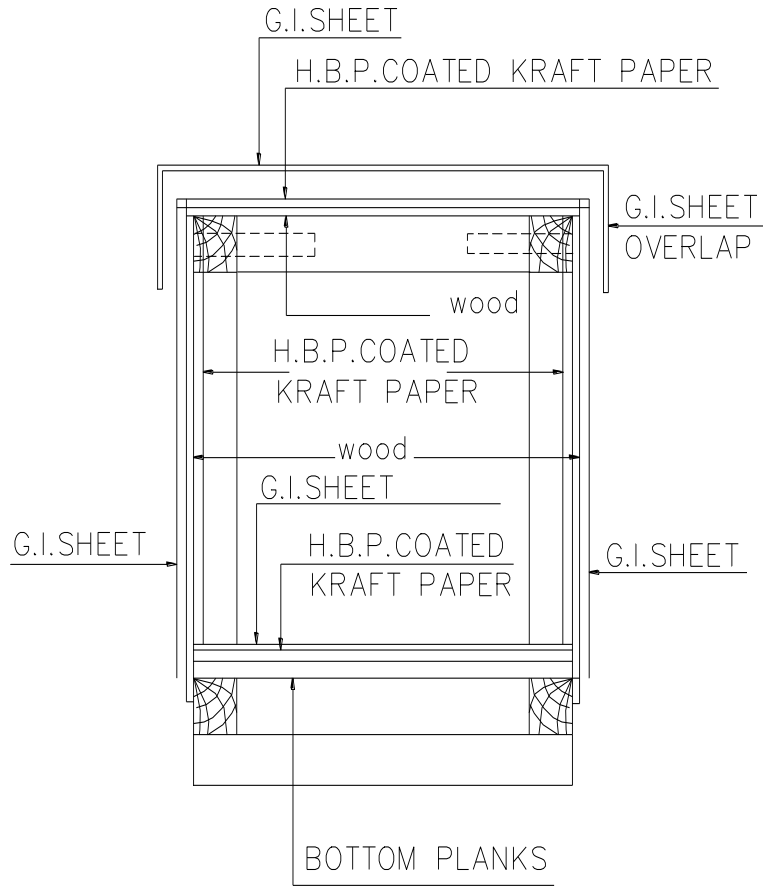


FIG-6 : CLOSED PACKING CASE WITH G.I.SHEET
SHOWING LAYERS OF PACKING MATERIALS.



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 20 OF 28

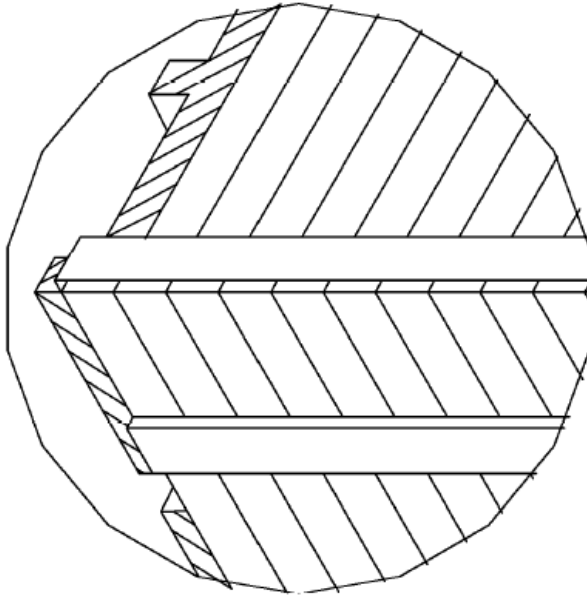
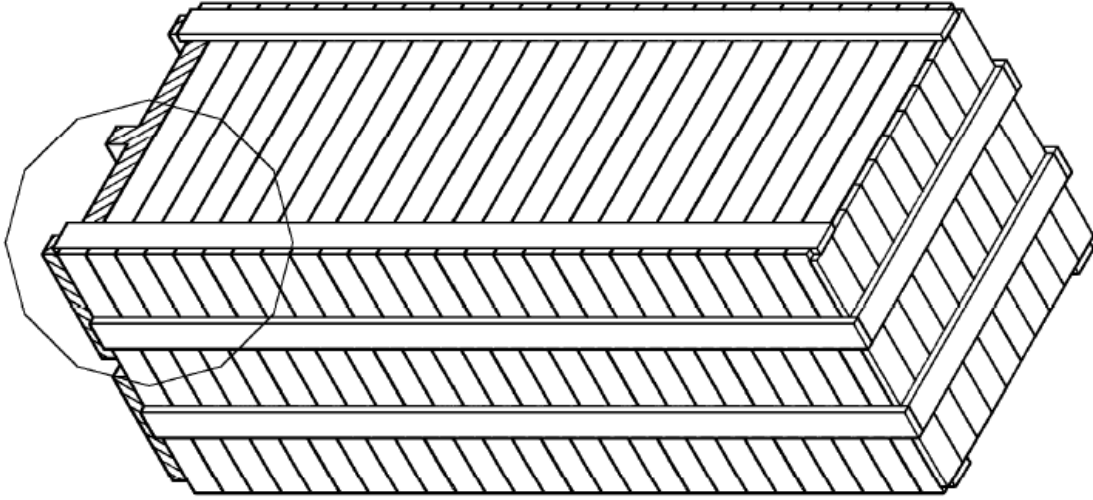


Fig – 8 : Single Suit Cubicle Packing View

COPY RIGHT 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.



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 21 OF 28

COPY RIGHT 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.

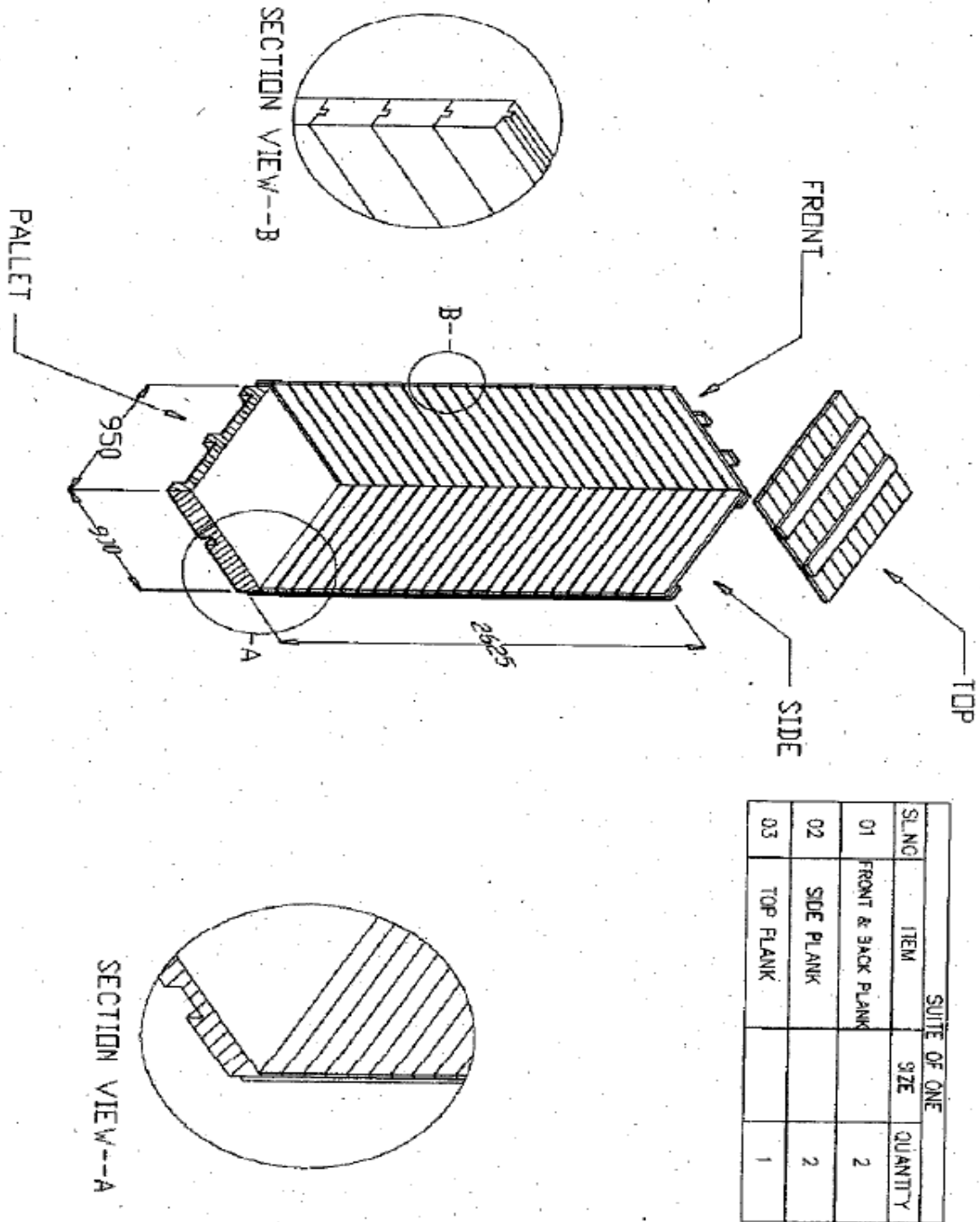


Fig - 9 : Single Suit Packing Assembly Drawing



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 22 OF 28

COPY RIGHT 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.

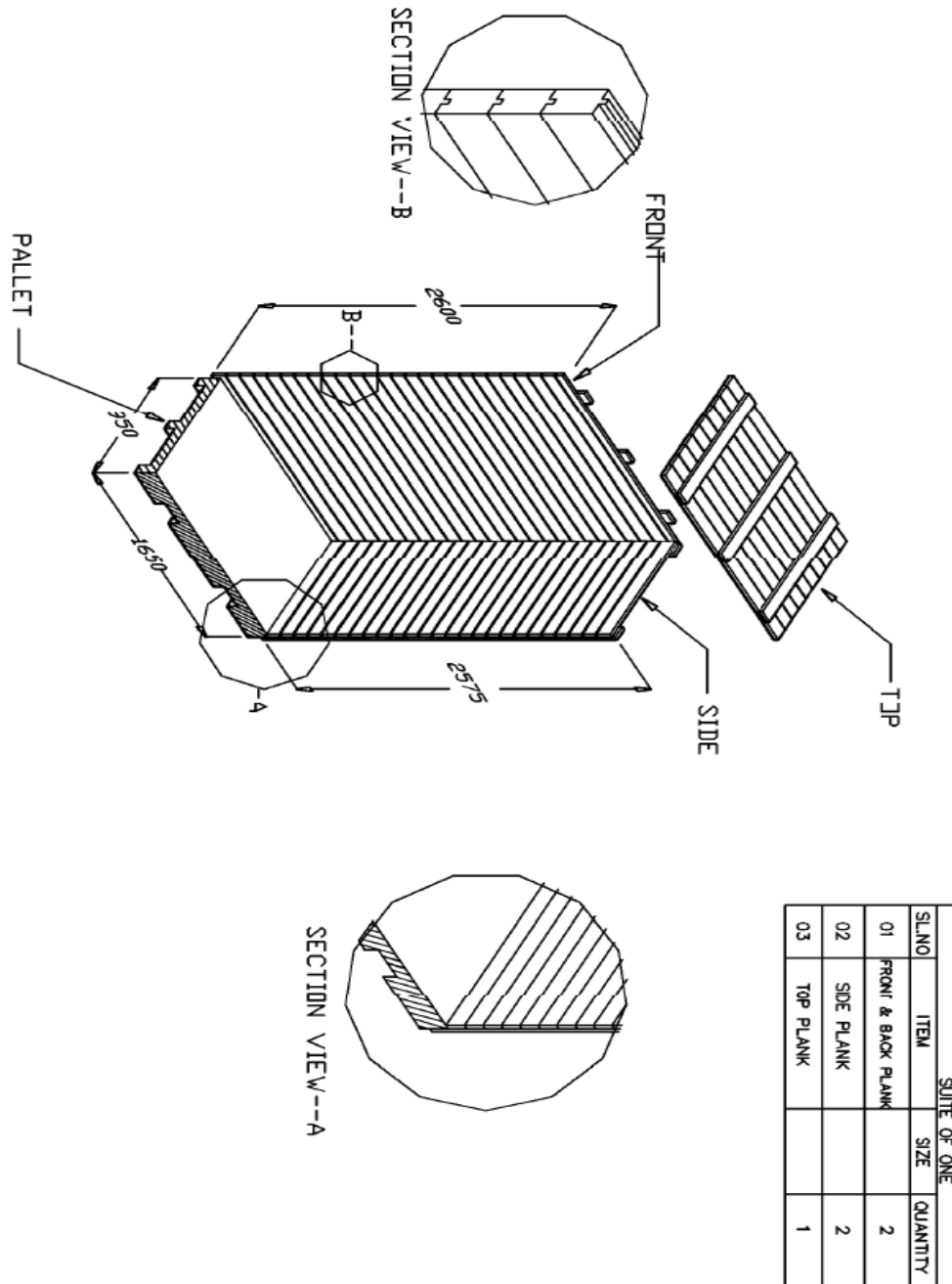


Fig – 10 : Two Suit Packing Assembly Details



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 23 OF 28

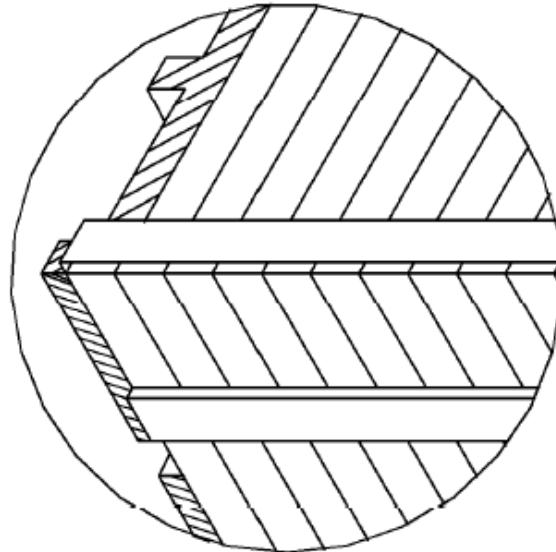
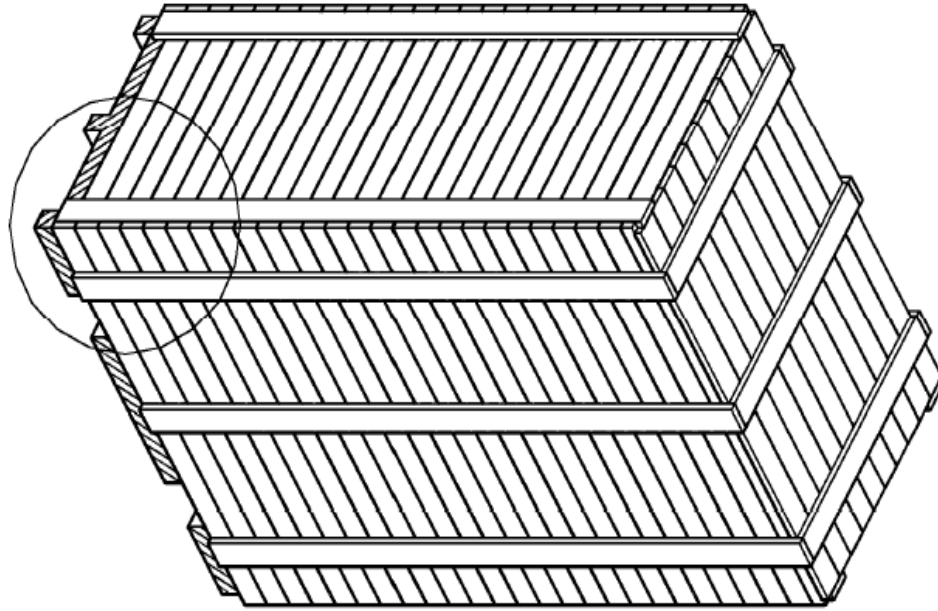


Fig – 11 : Two Suit Panel Packed view

COPY RIGHT 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.



A4 - 14

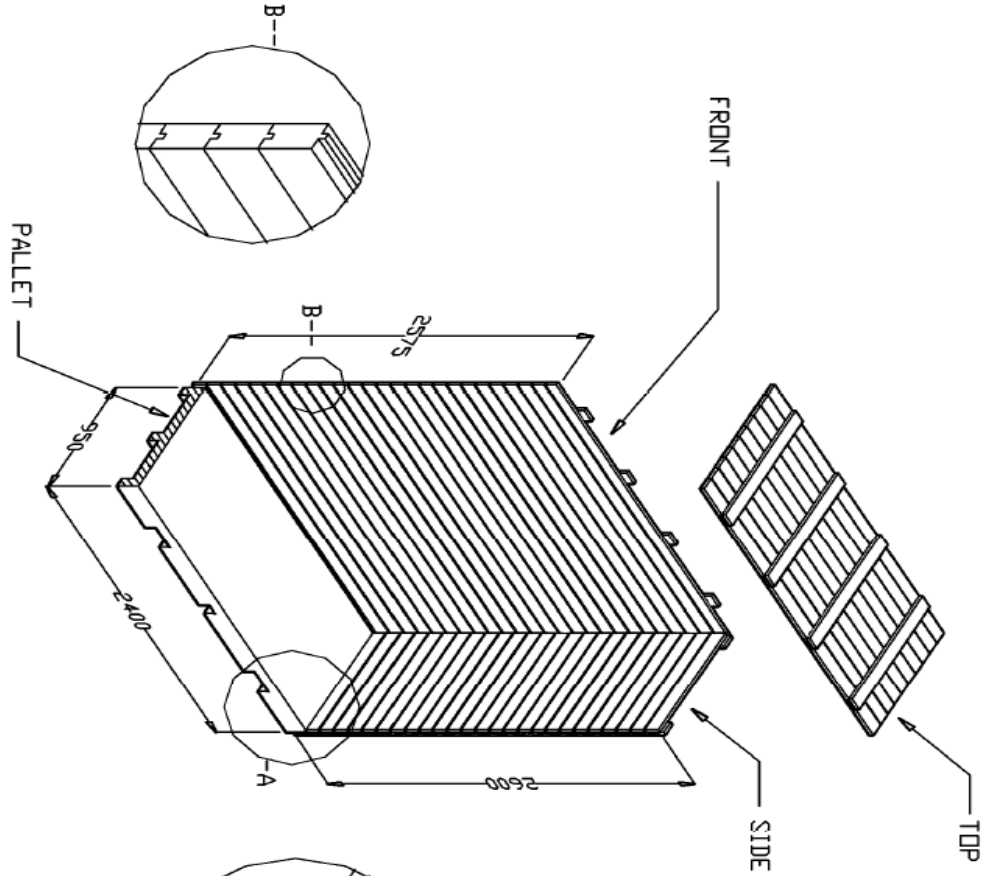
PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 24 OF 28

COPY RIGHT 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.



SL.NO	ITEM	SIZE	QUANTITY
01	FRONT & BACK PLANK		2
02	SIDE PLANK		2
03	TOP PLANK		1

Fig – 12 : Three Suit Panel Packing Assembly View



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 25 OF 28

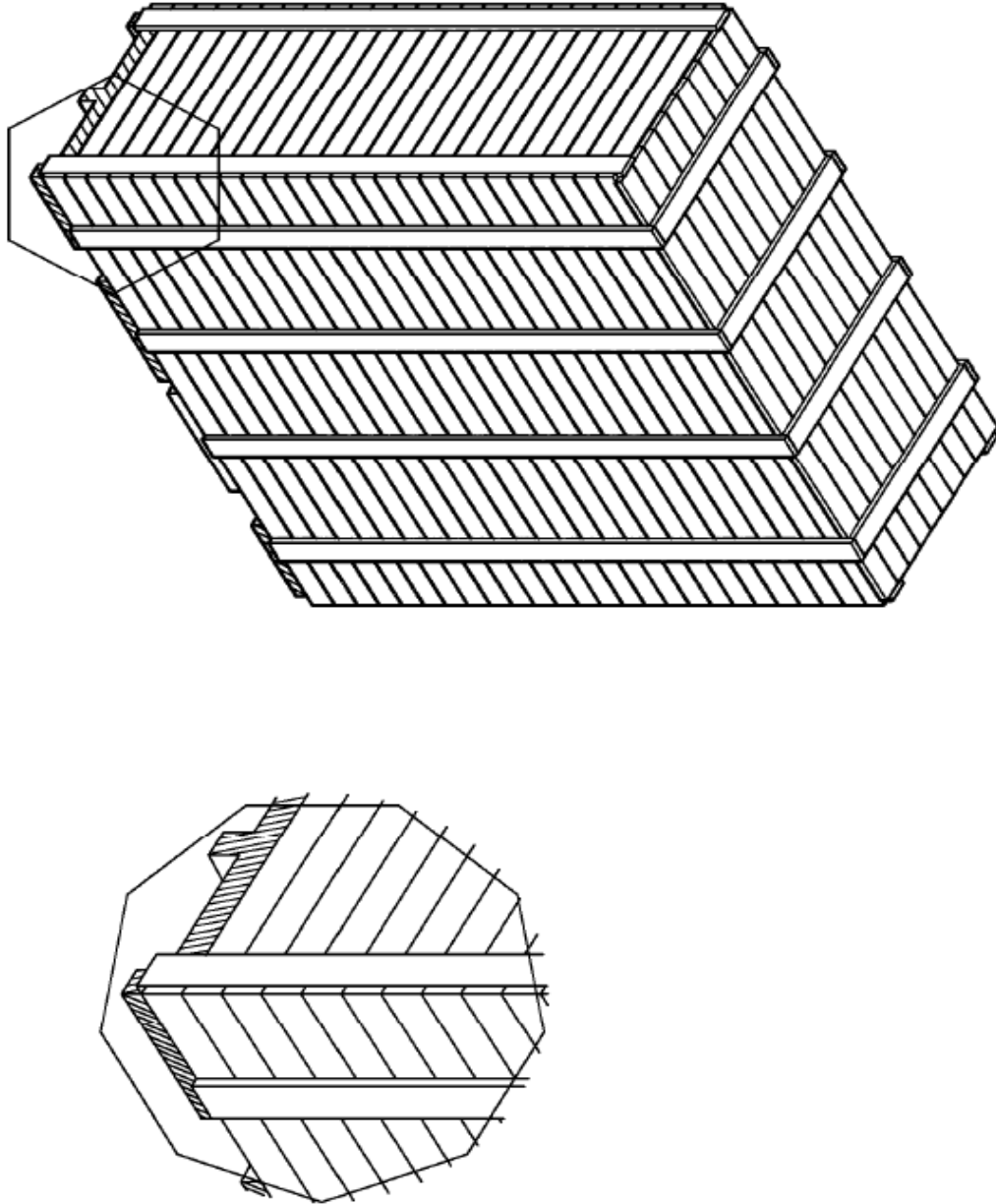


Fig -13 : Three Suit Panel Packed View

COPY RIGHT 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.



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 26 OF 28

COPY RIGHT 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.

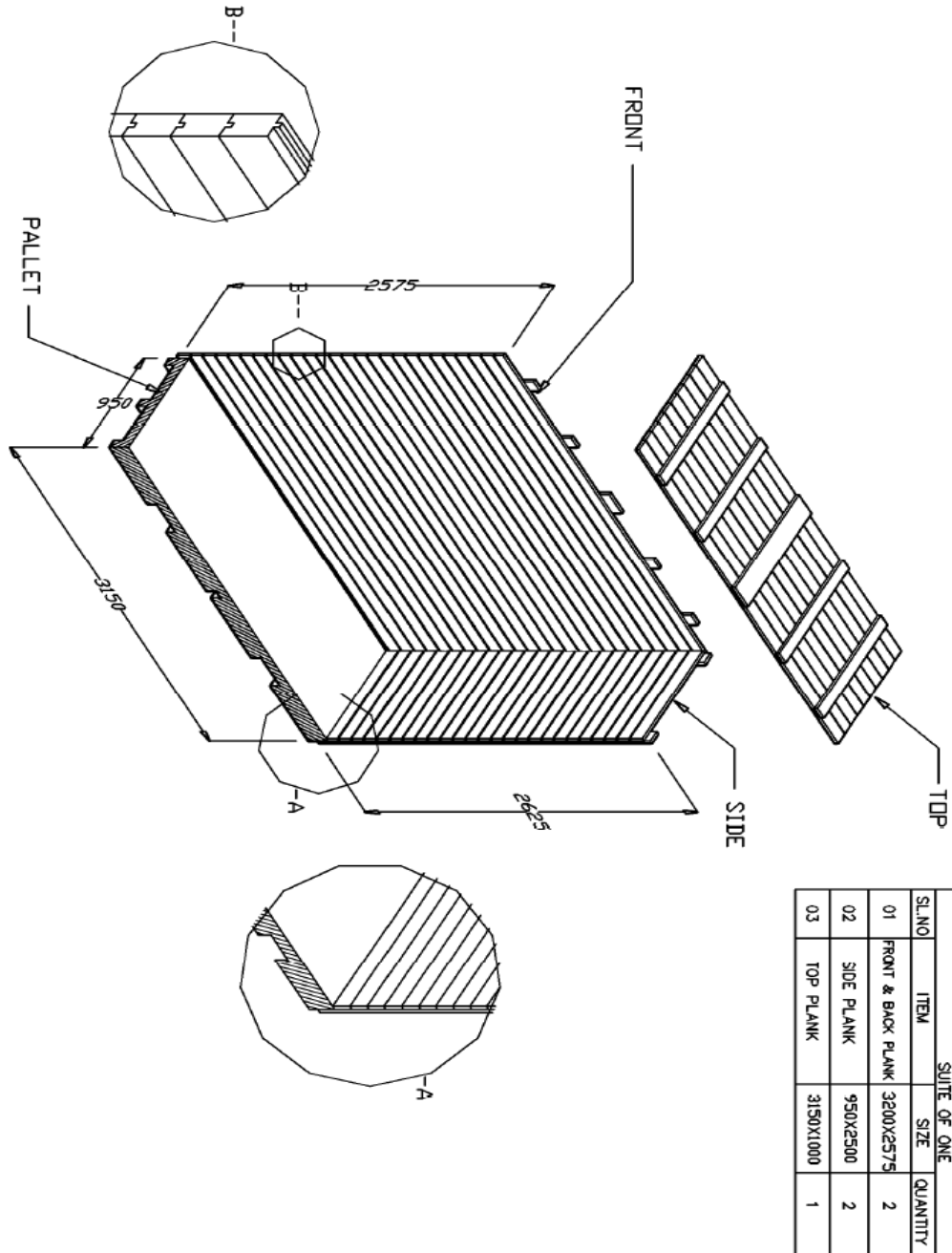


Fig - 14 : Four Suit Panel Packing assembly Detail



A4 - 14

PLANT STANDARD

ED 049 00 99

REV NO 11

PAGE 27 OF 28

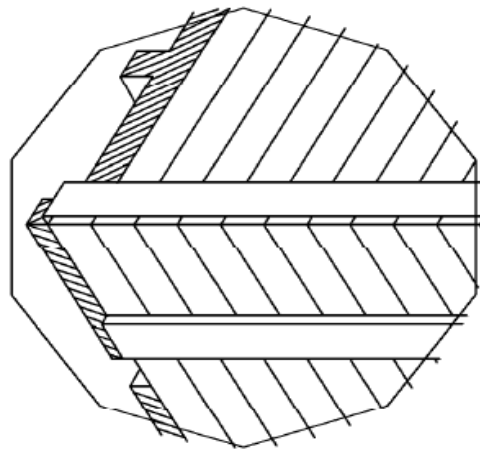
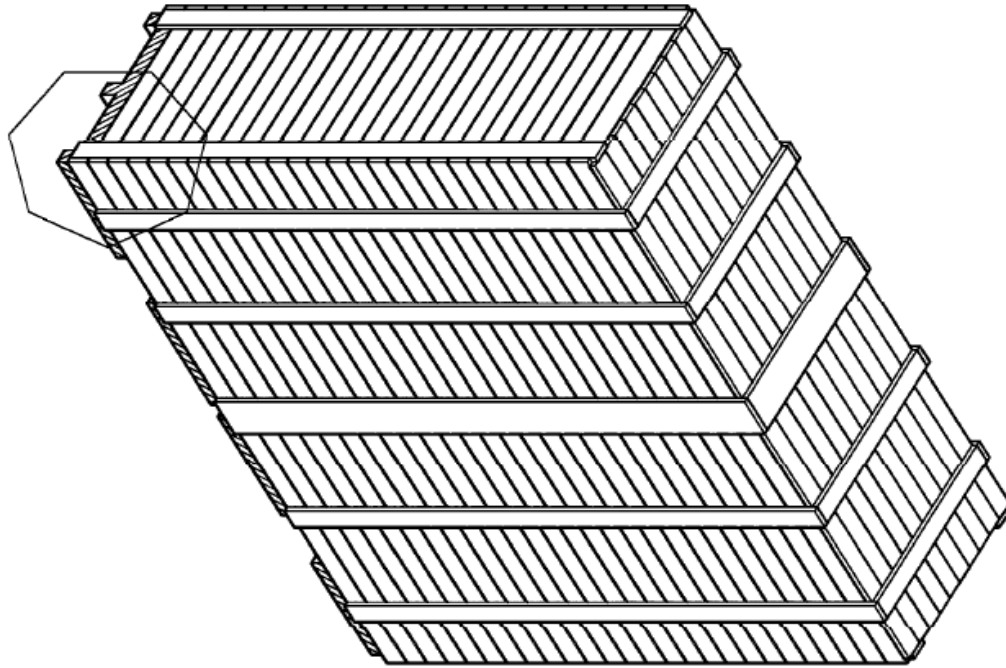
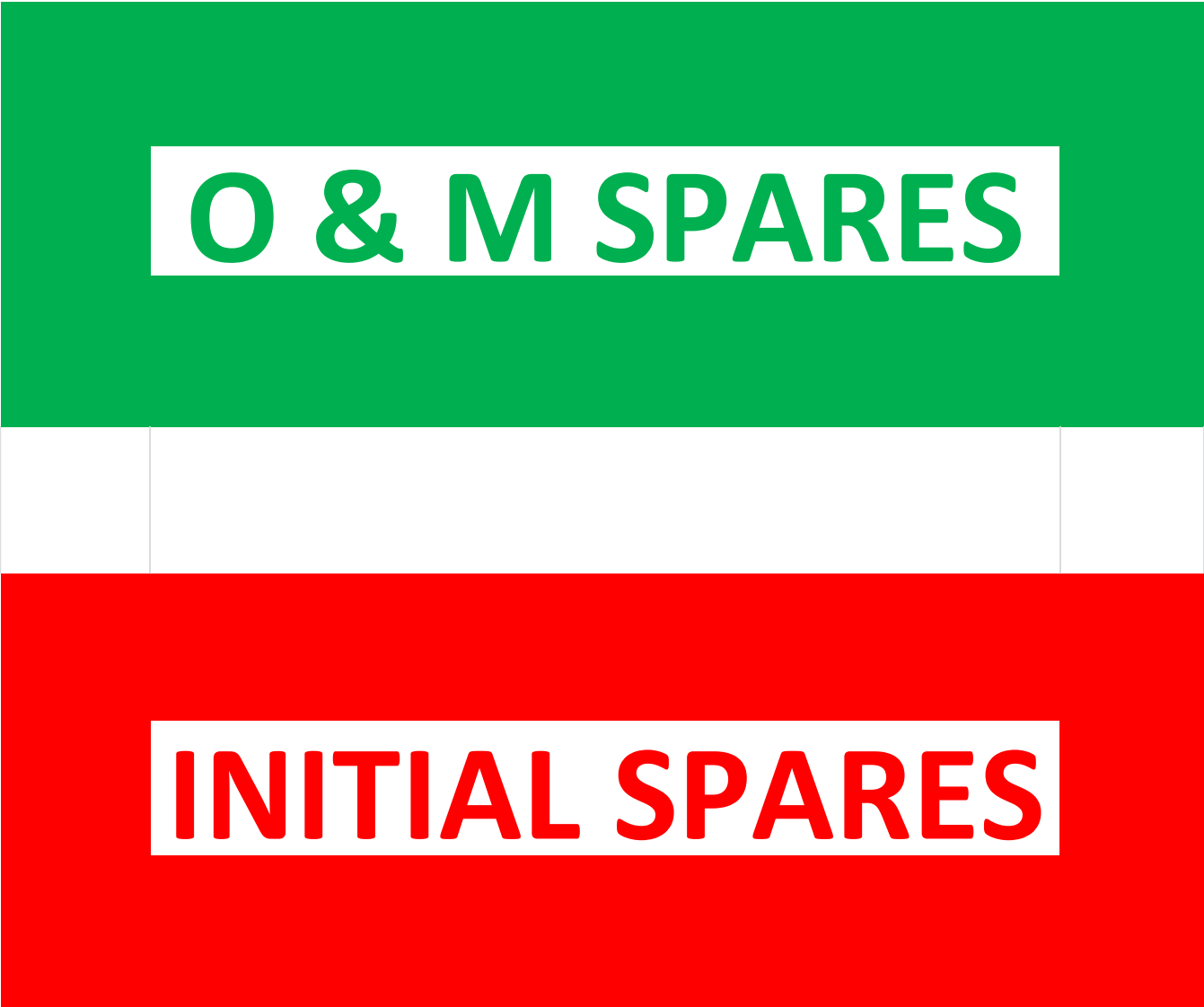


Fig -15 : Four Suit Panel Packing View

 A4 - 14	PLANT STANDARD	ED 049 00 99 REV NO 11 PAGE 28 OF 28
--	-----------------------	--

Easy spares [Initial and O&M] Traceability and Identification at units and as well as at sites:

Fig: 16



PART – II A [AS PER BHEL PLANT STANDARD NO. ED 049 00 99 REV 11]

UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]

SI No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED
1	Packing of Cubicles with Rubber Wood as described at 3.1 of Part - I 'A' of Tender Specification & Plant Standard Ref : ED 049 00 99 Rev 11	Cubic Metre of wood content	2400	Material Cost			
				Packing charge			
				SUB-TOTAL			
2	Packing of Cubicles with Silver Oak / Pine wood as described at 3.2 of Part-I 'A' of Tender Specification & Plant Standard Ref : ED 049 00 99 Rev 11	Cubic Metre of wood content	240	Material Cost			
				Packing charge			
				SUB-TOTAL			
3	Packing of Loose Items with Rubber Wood As described at 3.4 of Part-I 'A' of Tender Specification & Plant Standard Ref : ED 049 00 99 Rev 11	Cubic Metre of wood content	480	Material Cost			
				Packing charge			
				SUB-TOTAL			

PART – II A [AS PER BHEL PLANT STANDARD NO. ED 049 00 99 REV 11]

UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]

SI No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED
4	Packing of Loose Items with Silver Oak / Pine wood as described at 3.5 of Part-I 'A' of Tender Specification & Plant Standard Ref : ED 049 00 99 Rev 11	Cubic Metre of wood content	60	Material Cost			
				Packing charge			
				SUB-TOTAL			
5	Packing with Bitumen Coated Hessein Cloth etc., as described at 3.7 of Part-I 'A' of Tender Specification & Plant Standard Ref : ED 049 00 99 Rev 11	Square Metre	2400	Material Cost			
				Packing charge			
				SUB-TOTAL			

UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]

Sl No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED
1	Packing of Cubicles with Plywood along with plywood support batten and other details as described under Part-I 'B' using... [Ref plant std ED 0490092]						
	a) 12 mm thick Comml Plywood - MR Grade IS:303 [ref clause 6.1 of plant std ED 0490092]	Square Metre of Plywood	9000	Material Cost			
				Packing charge			
				SUB-TOTAL			
	b) 12 mm thick Comml Plywood - BWR Grade IS : 303 [ref clause 6.1 of plant std ED 0490092]	Square Metre of Plywood	1200	Material Cost			
				Packing charge			
				SUB-TOTAL			
	c) 12 mm thick Plywood - Marine Grade IS : 710 [clause 6.2 of plant std Ed 0490092]	Square Metre of Plywood	360	Material Cost			
				Packing charge			
				SUB-TOTAL			
2	Packing of Cubicles with Plywood and silver oak wooden support batten as described under 6.0 to 6.1.8 of Part-I 'B' [ref figures 4 and 5 of plant std ED 0490092]						
	a) 12 mm thick Comml Plywood - MR Grade IS:303	Square Metre of Plywood	3600	Material Cost			
				Packing charge			
				SUB-TOTAL			
	b) 12 mm thick Comml Plywood - BWR Grade IS : 303	Square Metre of Plywood	600	Material Cost			
Packing charge							
SUB-TOTAL							

UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]

Sl No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED
	c) 12 mm thick Plywood - Marine Grade IS : 710 [clause 6.2 of plant std Ed 0490092]	Square Metre of Plywood	360	Material Cost			
				Packing charge			
				SUB-TOTAL			
3	Packing of Cubicles like Railways and equivalent bigger / heavier size panels with Plywood along with plywood support batten , mechanical latching unit or suitable nut & bolt and other details are as described under 6.0 to 6.1.8 of Part-I 'B' [ref figures 8 and 7 of plant std ED 0490092]						
	a) 12 mm thick Comml Plywood - MR Grade IS:303	Square Metre of Plywood	4200	Material Cost			
				Packing charge			
				SUB-TOTAL			
	b) 12 mm thick Comml Plywood - BWR Grade IS : 303	Square Metre of Plywood	390	Material Cost			
				Packing charge			
				SUB-TOTAL			
	c) 12 mm thick Plywood - Marine Grade IS : 710	Square Metre of Plywood	156	Material Cost			
				Packing charge			
				SUB-TOTAL			

UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]

SI No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED
4	Packing of Cubicles like Railways and equivalent bigger / heavier size panels with Plywood along with Silveroak support batten and other details are as described under 6.0 to 6.1.8 of Part-I 'B' [ref figures 9 of plant std ED 0490092]						
a) 12 mm thick Comml Plywood - MR Grade IS:303		Square Metre of Plywood	3600	Material Cost			
				Packing charge			
				SUB-TOTAL			
b) 12 mm thick Comml Plywood - BWR Grade IS : 303		Square Metre of Plywood	390	Material Cost			
				Packing charge			
				SUB-TOTAL			
c) 12 mm thick Plywood - Marine Grade IS : 710		Square Metre of Plywood	156	Material Cost			
				Packing charge			
				SUB-TOTAL			

UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]

SI No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED
5	Packing of Loose items / spares and other items with Plywood along with plywood support batten and other details are as described under 6.0 to 6.1.8 of Part-I 'B' using [ref figures 13 of plant std ED 0490092]						
	a) 12 mm thick Comml Plywood - MR Grade IS:303	Unit Square Metre of Plywood	3600	Material Cost			
				Packing charge			
				SUB-TOTAL			
	b) 12 mm thick Comml Plywood - BWR Grade IS : 303	Unit Square Metre of Plywood	600	Material Cost			
				Packing charge			
				SUB-TOTAL			
	c) 12 mm thick Plywood - Marine Grade IS : 710	Unit Square Metre of Plywood	600	Material Cost			
				Packing charge			
				SUB-TOTAL			

UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]

SI No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED	
6	Packing of Loose items / spares and other items with Plywood along with silver oak wood support batten and other details are as described under 6.0 to 6.1.8 of Part-I 'B' using [ref figures 4 of plant std ED 0490092]							
	a) 12 mm thick Comml Plywood - MR Grade IS:303	Unit Square Metre of Plywood	2400	Material Cost				
				Packing charge				
				SUB-TOTAL				
	b) 12 mm thick Comml Plywood - BWR Grade IS : 303	Unit Square Metre of Plywood	600	Material Cost				
				Packing charge				
				SUB-TOTAL				
	c) 12 mm thick Plywood - Marine Grade IS : 710	Unit Square Metre of Plywood	600	Material Cost				
				Packing charge				
				SUB-TOTAL				
	7	Packing of items suitable for speedpost / courier service using 12 mm Thick Commercial Plywood [MR grade] for sides and 6 mm Thick Commercial Plywood for Top and Bottom with all other Packing Materials including Bitumen kraft Paper covering using Gum . Sketch enclosed ref: 805-RPP- BOX - 001	Per Square Metre	4800	Material Cost			
					Packing charge			
SUB-TOTAL								

UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]

Sl No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED
8	Packing of items suitable for Speedpost using all sides with 12 mm Thick Commercial Plywood [MR Grade] general purpose with other following pkg materials: Silicagel, Polythene Cover for items, PVC strappings and markings. [No rubber wood supporting battens] sketch enclosed ref: .805 - RPP - BOX - 001	Per Square Metre	6000	Material Cost			
				Packing charge			
				SUB-TOTAL			
9	LABOUR CHARGE for packing of materials in plywood using all other materials except plywood. [If Plywood supplied by BHEL.] PACKING CHARGE ONLY	Per Square Metre	1560				
				Packing charge			
				SUB-TOTAL			
10	Packing of HVDC Thyristor Modules using following Plywood box having internal size of 1256 x 874 x 398 mm with ply wood pallet and EPE [Expanded poly ethylene] foam fitments of high density ,special Dessicant of 10 bags of 250 grams each, 200 microns polythene cover and other items as per ABB drawing 1JNL 100107-593 . Total 12 types EP foam fitments of different sizes and qty are reqd. Out of 12 types, 9 types are as per ABB drg and other 3 are of following sizes: a] 1256 x 874 x 50 mm thick - 1 no , b] 600 x 275 x 65 mm - 1 no and [c] 600 x 275 x 80 mm - 1 no .[Ref Drawing : PLY WOOD BOX FOR PACKING (THYRISTOR MODULE)]	per box	100	Material Cost			
				Packing charge			
				SUB-TOTAL			
	a) 12 mm thick Comml Plywood - MR Grade IS:303 [ref clause 6.1 of plant std ED 0490092]						

UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]

Sl No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED
	b) 12 mm thick Comml Plywood - BWR Grade IS : 303 [ref clause 6.1 of plant std ED 0490092]	per box	40	Material Cost			
				Packing charge			
				SUB-TOTAL			
	c) 12 mm thick Plywood - Marine Grade IS : 710 [clause 6.2 of plant std Ed 0490092]	per box	40	Material Cost			
				Packing charge			
				SUB-TOTAL			
11	Packing of HVDC Thyristor Modules using pine wood box having internal size 1256 x 874 x 398 mm with ply wood / pine pallet and with out EPE / EPP foam fitments, special Dessicant of 10 bags of 250 grams each pkt, 200 microns polythene cover and other items as per ABB drawing 1JNL 100107-593	per box	30	Material Cost			
Packing charge							
SUB-TOTAL							

Part – II [C]							
PART II C PACKING OF PV MODULES AS PER BHEL DRAWINGS							
UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]							
Sl No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED
1	Packing of Pv Modules L24270P in 28 in 1	NO OF BOXES	5000	Material Cost			
				Packing charge			
				SUB-TOTAL			
2	Packing of Pv Modules L20220 in 28 in 1	NO OF BOXES	1400	Material Cost			
				Packing charge			
				SUB-TOTAL			

Part – II [E]						
Packing consumables to be supplied by the contractor						
UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]						
Sl No	Item Description	Unit	QTY FOR 2 YEARS (2016-18)	PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED
1	Silicagel	Kgs.	200			
2	Polythene Sheet (175 Micron)	Kgs.	200			
3	Polythene Sheet (200 Micron)	Kgs.	200			
4	Iron Clamps	Each	100			
5	Hoop Iron (0.6 mm Thick)	Kgs.	200			
6	Rubberised Coir	Kgs.	400			
7	Tarfelt	Square Mtrs.	500			
8	Nails (2" and 2 – ½")	Kgs.	250			
9	Packing Note Holder	Each	400			
10	Name Plate	Each	400			
11	Bituminised Water Proof Kraft Paper	Square Metres	300			
12	Plywood of 6 mm thk MR Grade	Sq mtrs	300			
13	Ply wood 12 mm thick of MR Grade	Sq mtrs	300			

Part – II [E]						
Packing consumables to be supplied by the contractor						
UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]						
Sl No	Item Description	Unit	QTY FOR 2 YEARS (2016-18)	PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED
14	Air Bubble Roll of 1.5 m wide x 100 mtrs long or equivalent qty having Dia of air bubble :9.5 mm or more and 450 Gauge.	Roll	50			
15	2 Ply corrugated paper roll [Non vergin] of 100 GSM size : 1 m x 100 m long	roll	50			
16	EP foam sheets of size : 1000 mm x 500 mm x 50 mm thick with normal density	no	800			
17	Expanded Polyethylene foam packing box for LEG Module Packing as per drawing 3-688-04-10022 ver 02	no	300			
18	Expanded Polyethylene foam Corner Block as per drawing having size : 250 x 250 x 200 mm with wall thickness of 50 mm	no	800			
19	Thermocole sheets size : 1m x 0.5 metre width x 15 mm thick of normal density	no	3000			

Part – II [E]						
Packing consumables to be supplied by the contractor						
UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]						
SI No	Item Description	Unit	QTY FOR 2 YEARS (2016-18)	PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED
20	Nails suitable for speedpost parcels size : 14 G x 1.25 inch long	Kgs.	500			
21	GUM - utility Brand suitable for speed post parcel packing , qty : 700 ml bottle	no	200			
22	BOPP Gum Tapes [self adhesive] Size: 2" x 65 metre long roll heavy Guage	roll	500			
23	BOPP Gum Tapes [self adhesive] Size: 3" x 65 metre long roll heavy Guage	roll	400			

Part – II [F]							
PART II F SCHEDULE OF RATES FOR PACKING OF PANELS WITH GALVANISED IRON SHEET							
UNPRICED "PRICE BID" FORMAT [PLEASE ENTER "YES " OR "NO " ONLY]							
SI No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		PLEASE ENTER " YES" if Quoted or " NO " if not Quoted	If " YES" , PLEASE ENTER the Type of TAXES/DUTIES QUOTED (ED/CST/VAT)	PLEASE ENTER % of TAXES/DUTIES QUOTED
1	Packing of panels with Galvanised Iron Sheet of Thickness 0.3 mm +/- 0.05 with suitable Nails & Wooden batten for covering packed cases	Square Metres of GI sheet	15000	Material Cost			
				Packing charge			
				SUB-TOTAL			

PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]

Sl No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		(A) - BASIC (Rs)	Taxes/Duties (ED/CST/VAT/SER.TAX) IN %	(B) - VALUE OF TAXES/DUTY (Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
1	Packing of Cubicles with Rubber Wood as described at 3.1 of Part - I 'A' of Tender Specification & Plant Standard Ref : ED 049 00 99 Rev 11	Cubic Metre of wood content	2400	Material Cost					
				Packing charge					
				SUB-TOTAL					
2	Packing of Cubicles with Silver Oak / Pine wood as described at 3.2 of Part-I 'A' of Tender Specification & Plant Standard Ref : ED 049 00 99 Rev 11	Cubic Metre of wood content	240	Material Cost					
				Packing charge					
				SUB-TOTAL					
3	Packing of Loose Items with Rubber Wood As described at 3.4 of Part-I 'A' of Tender Specification & Plant Standard Ref : ED 049 00 99 Rev 11	Cubic Metre of wood content	480	Material Cost					
				Packing charge					
				SUB-TOTAL					

PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]

Sl No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		(A) - BASIC (Rs)	Taxes/Duties (ED/CST/VAT/SER.TAX) IN %	(B) - VALUE OF TAXES/DUTY (Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
4	Packing of Loose Items with Silver Oak / Pine wood as described at 3.5 of Part-I 'A' of Tender Specification & Plant Standard Ref : ED 049 00 99 Rev 11	Cubic Metre of wood content	60	Material Cost					
				Packing charge					
				SUB-TOTAL					
5	Packing with Bitumen Coated Hessein Cloth etc., as described at 3.7 of Part-I 'A' of Tender Specification & Plant Standard Ref : ED 049 00 99 Rev 11	Square Metre	2400	Material Cost					
				Packing charge					
				SUB-TOTAL					
GRAND TOTAL IN FIG (Rs)									
GRAND TOTAL (IN WORDS)									

NAME :

SIGNATURE :

SEAL :

PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]

SI No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)	(A) - BASIC (Rs)	Taxes/Duti es (ED/CST/V AT/SER.TA X) IN %	(B) - VALUE OF TAXES/DUTY(Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
1	Packing of Cubicles with Plywood along with plywood support batten and other details as described under Part-I 'B' using... [Ref plant std ED 0490092]							
	a) 12 mm thick Comml Plywood - MR Grade IS:303 [ref clause 6.1 of plant std ED 0490092]	Square Metre of Plywood	9000	Material Cost				
				Packing charge				
				SUB-TOTAL				
	b) 12 mm thick Comml Plywood - BWR Grade IS : 303 [ref clause 6.1 of plant std ED 0490092]	Square Metre of Plywood	1200	Material Cost				
				Packing charge				
				SUB-TOTAL				
	c) 12 mm thick Plywood - Marine Grade IS : 710 [clause 6.2 of plant std Ed 0490092]	Square Metre of Plywood	360	Material Cost				
				Packing charge				
SUB-TOTAL								
2	Packing of Cubicles with Plywood and silver oak wooden support batten as described under 6.0 to 6.1.8 of Part-I 'B' [ref figures 4 and 5 of plant std ED 0490092]							
	a) 12 mm thick Comml Plywood - MR Grade IS:303	Square Metre of Plywood	3600	Material Cost				
				Packing charge				
				SUB-TOTAL				
	b) 12 mm thick Comml Plywood - BWR Grade IS : 303	Square Metre of Plywood	600	Material Cost				
Packing charge								
SUB-TOTAL								

PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]

SI No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		(A) - BASIC (Rs)	Taxes/Duties (ED/CST/VAT/SER.TAX) IN %	(B) - VALUE OF TAXES/DUTY (Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
	c) 12 mm thick Plywood - Marine Grade IS : 710 [clause 6.2 of plant std Ed 0490092]	Square Metre of Plywood	360	Material Cost					
				Packing charge					
				SUB-TOTAL					
3	Packing of Cubicles like Railways and equivalent bigger / heavier size panels with Plywood along with plywood support batten , mechanical latching unit or suitable nut&bolt and other details are as described under 6.0 to 6.1.8 of Part-I 'B' [ref figures 8 and 7 of plant std ED 0490092]								
	a) 12 mm thick Comml Plywood - MR Grade IS:303	Square Metre of Plywood	4200	Material Cost					
				Packing charge					
				SUB-TOTAL					
	b) 12 mm thick Comml Plywood - BWR Grade IS : 303	Square Metre of Plywood	390	Material Cost					
				Packing charge					
				SUB-TOTAL					
	c) 12 mm thick Plywood - Marine Grade IS : 710	Square Metre of Plywood	156	Material Cost					
				Packing charge					
				SUB-TOTAL					

PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]

SI No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)	(A) - BASIC (Rs)	Taxes/Duties (ED/CST/VAT/SER.TAX) IN %	(B) - VALUE OF TAXES/DUTY (Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
4	Packing of Cubicles like Railways and equivalent bigger / heavier size panels with Plywood along with Silveroak support batten and other details are as described under 6.0 to 6.1.8 of Part-I 'B' [ref figures 9 of plant std ED 0490092]							
	a) 12 mm thick Comml Plywood - MR Grade IS:303	Square Metre of Plywood	3600	Material Cost				
				Packing charge				
				SUB-TOTAL				
	b) 12 mm thick Comml Plywood - BWR Grade IS : 303	Square Metre of Plywood	390	Material Cost				
				Packing charge				
				SUB-TOTAL				
	c) 12 mm thick Plywood - Marine Grade IS : 710	Square Metre of Plywood	156	Material Cost				
				Packing charge				
				SUB-TOTAL				
5	Packing of Loose items / spares and other items with Plywood along with plywood support batten and other details are as described under 6.0 to 6.1.8 of Part-I 'B' using [ref figures 13 of plant std ED 0490092]							
	a) 12 mm thick Comml Plywood - MR Grade IS:303	Unit Square Metre of Plywood	3600	Material Cost				
				Packing charge				
				SUB-TOTAL				

PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]

SI No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		(A) - BASIC (Rs)	Taxes/Duties (ED/CST/VAT/SER.TAX) IN %	(B) - VALUE OF TAXES/DUTY (Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
	b) 12 mm thick Comml Plywood - BWR Grade IS : 303	Unit Square Metre of Plywood	600	Material Cost					
	Packing charge								
	SUB-TOTAL								
	c) 12 mm thick Plywood - Marine Grade IS : 710	Unit Square Metre of Plywood	600	Material Cost					
	Packing charge								
	SUB-TOTAL								
6	Packing of Loose items / spares and other items with Plywood along with silver oak wood support batten and other details are as described under 6.0 to 6.1.8 of Part-I 'B' using [ref figures 4 of plant std ED 0490092]								
	a) 12 mm thick Comml Plywood - MR Grade IS:303	Unit Square Metre of Plywood	2400	Material Cost					
	Packing charge								
	SUB-TOTAL								
	b) 12 mm thick Comml Plywood - BWR Grade IS : 303	Unit Square Metre of Plywood	600	Material Cost					
	Packing charge								
	SUB-TOTAL								
	c) 12 mm thick Plywood - Marine Grade IS : 710	Unit Square Metre of Plywood	600	Material Cost					
	Packing charge								
	SUB-TOTAL								

PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]

SI No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		(A) - BASIC (Rs)	Taxes/Duties (ED/CST/VAT/SER.TAX) IN %	(B) - VALUE OF TAXES/DUTY (Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
7	Packing of items suitable for speedpost / courier service using 12 mm Thick Commercial Plywood [MR grade] for sides and 6 mm Thick Commercial Plywood for Top and Bottom with all other Packing Materials including Bitumen kraft Paper covering using Gum . Sketch enclosed ref: 805-RPP- BOX - 001	Per Square Metre	4800	Material Cost					
				Packing charge					
				SUB-TOTAL					
8	Packing of items suitable for Speedpost using all sides with 12 mm Thick Commercial Plywood [MR Grade] general purpose with other following pkg materials: Silicagel, Polythene Cover for items, PVC strappings and markings. [No rubber wood supporting battens] sketch enclosed ref: .805 - RPP - BOX - 001	Per Square Metre	6000	Material Cost					
				Packing charge					
				SUB-TOTAL					
9	LABOUR CHARGE for packing of materials in plywood using all other materials except plywood. [If Plywood supplied by BHEL.] PACKING CHARGE ONLY	Per Square Metre	1560						
				Packing charge					
				SUB-TOTAL					

PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]

SI No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)	(A) - BASIC (Rs)	Taxes/Duties (ED/CST/VAT/SER.TAX) IN %	(B) - VALUE OF TAXES/DUTY (Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
10	Packing of HVDC Thyristor Modules using following Plywood box having internal size of 1256 x 874 x 398 mm with ply wood pallet and EPE [Expanded poly ethylene] foam fitments of high density ,special Dessicant of 10 bags of 250 grams each, 200 microns polythene cover and other items as per ABB drawing 1JNL 100107-593 . Total 12 types EP foam fitments of different sizes and qty are reqd. Out of 12 types, 9 types are as per ABB drg and other 3 are of following sizes: a) 1256 x 874 x 50 mm thick - 1 no , b) 600 x 275 x 65 mm - 1 no and [c] 600 x 275 x 80 mm - 1 no .[Ref Drawing : PLY WOOD BOX FOR PACKING (THYRISTOR MODULE)]							
	a) 12 mm thick Comml Plywood - MR Grade IS:303 [ref clause 6.1 of plant std ED 0490092]	per box	100	Material Cost				
				Packing charge				
				SUB-TOTAL				
	b) 12 mm thick Comml Plywood - BWR Grade IS : 303 [ref clause 6.1 of plant std ED 0490092]	per box	40	Material Cost				
				Packing charge				
				SUB-TOTAL				
	c) 12 mm thick Plywood - Marine Grade IS : 710 [clause 6.2 of plant std Ed 0490092]	per box	40	Material Cost				
				Packing charge				
SUB-TOTAL								

PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]

SI No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		(A) - BASIC (Rs)	Taxes/Duti es (ED/CST/V AT/SER.TA X) IN %	(B) - VALUE OF TAXES/DUTY(Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
11	Packing of HVDC Thyristor Modules using pine wood box having internal size 1256 x 874 x 398 mm with ply wood / pine pallet and with out EPE / EPP foam fitments, special Dessicant of 10 bags of 250 grams each pkt, 200 microns polythene cover and other items as per ABB drawing 1JNL 100107-593	per box	30	Material Cost					
				Packing charge					
				SUB-TOTAL					
						GRAND TOTAL IN FIG (Rs)			
						GRAND TOTAL (IN WORDS)			
						NAME :			
						SIGNATURE :			
						SEAL :			

Part – II [C]									
PART II C PACKING OF PV MODULES AS PER BHEL DRAWINGS									
PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]									
Sl No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		(A) - BASIC (Rs)	Taxes/Duties (ED/CST/VAT/SER .TAX) IN %	(B) - VALUE OF TAXES/DUTY(Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
1	Packing of Pv Modules L24270P in 28 in 1	NO OF BOXES	5000	Material Cost					
				Packing charge					
				SUB-TOTAL					
2	Packing of Pv Modules L20220 in 28 in 1	NO OF BOXES	1400	Material Cost					
				Packing charge					
				SUB-TOTAL					
GRAND TOTAL IN FIG (Rs)									
GRAND TOTAL (IN WORDS)									

NAME :
SIGNATURE :
SEAL :

Packing consumables to be supplied by the contractor

PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]

Sl No	Item Description	Unit	QTY FOR 2 YEARS (2016-18)	(A) - BASIC (Rs)	Taxes/Duties (ED/CST/VAT/SER.TAX) IN %	(B) - VALUE OF TAXES/DUTY(Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
1	Silicagel	Kgs.	200					
2	Polythene Sheet (175 Micron)	Kgs.	200					
3	Polythene Sheet (200 Micron)	Kgs.	200					
4	Iron Clamps	Each	100					
5	Hoop Iron (0.6 mm Thick)	Kgs.	200					
6	Rubberised Coir	Kgs.	400					
7	Tarfelt	Square Mtrs.	500					
8	Nails (2" and 2 – ½")	Kgs.	250					
9	Packing Note Holder	Each	400					
10	Name Plate	Each	400					
11	Bituminised Water Proof Kraft Paper	Square Metres	300					
12	Plywood of 6 mm thk MR Grade	Sq mtrs	300					
13	Ply wood 12 mm thick of MR Grade	Sq mtrs	300					

Part – II [E]								
Packing consumables to be supplied by the contractor								
PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]								
Sl No	Item Description	Unit	QTY FOR 2 YEARS (2016-18)	(A) - BASIC (Rs)	Taxes/Duties (ED/CST/VAT/SER.TAX) IN %	(B) - VALUE OF TAXES/DUTY(Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
14	Air Bubble Roll of 1.5 m wide x 100 mtrs long or equivalent qty having Dia of air bubble :9.5 mm or more and 450 Gauge.	Roll	50					
15	2 Ply corrugated paper roll [Non vergin] of 100 GSM size : 1 m x 100 m long	roll	50					
16	EP foam sheets of size : 1000 mm x 500 mm x 50 mm thick with normal density	no	800					
17	Expanded Polyethylene foam packing box for LEG Module Packing as per drawing 3-688-04-10022 ver 02	no	300					
18	Expanded Polyethylene foam Corner Block as per drawing having size : 250 x 250 x 200 mm with wall thickness of 50 mm	no	800					
19	Thermocole sheets size : 1m x 0.5 metre width x 15 mm thick of normal density	no	3000					

Part – II [E]								
Packing consumables to be supplied by the contractor								
PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]								
Sl No	Item Description	Unit	QTY FOR 2 YEARS (2016-18)	(A) - BASIC (Rs)	Taxes/Duties (ED/CST/VAT/SER.TAX) IN %	(B) - VALUE OF TAXES/DUTY(Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
20	Nails suitable for speedpost parcels size : 14 G x 1.25 inch long	Kgs.	500					
21	GUM - utility Brand suitable for speed post parcel packing , qty : 700 ml bottle	no	200					
22	BOPP Gum Tapes [self adhesive] Size: 2" x 65 metre long roll heavy Guage	roll	500					
23	BOPP Gum Tapes [self adhesive] Size: 3" x 65 metre long roll heavy Guage	roll	400					
GRAND TOTAL IN FIG (Rs)								
GRAND TOTAL (IN WORDS)								

NAME :

SIGNATURE :

SEAL :

Part – II [F]									
PART II F SCHEDULE OF RATES FOR PACKING OF PANELS WITH GALVANISED IRON SHEET									
PRICE BID FORMAT [PLEASE ENTER VALUES AND TAXES/DUTIES IN RESPECTIVE COLUMNS IN INDIAN RUPEES]									
Sl No	Type of Packing	Unit	QTY FOR 2 YEARS (2016-18)		(A) - BASIC (Rs)	Taxes/Duties (ED/CST/VAT /SER.TAX) IN %	(B) - VALUE OF TAXES/DUTY(Rs)	RATE in Rs. (A+B)	TOTAL (Rs) = QTY* RATE
1	Packing of panels with Galvanised Iron Sheet of Thickness 0.3 mm +/- 0.05 with suitable Nails & Wooden batten for covering packed cases	Square Metres of GI sheet	15000	Material Cost					
				Packing charge					
				SUB-TOTAL					
GRAND TOTAL IN FIG (Rs)									
GRAND TOTAL (IN WORDS)									

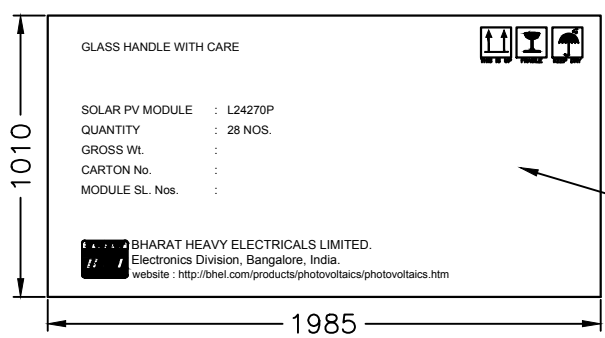
NAME :
SIGNATURE :
SEAL :

66200 70 679 3
DRAWING NO. 02 00399

COPYRIGHT AND CONFIDENTIAL

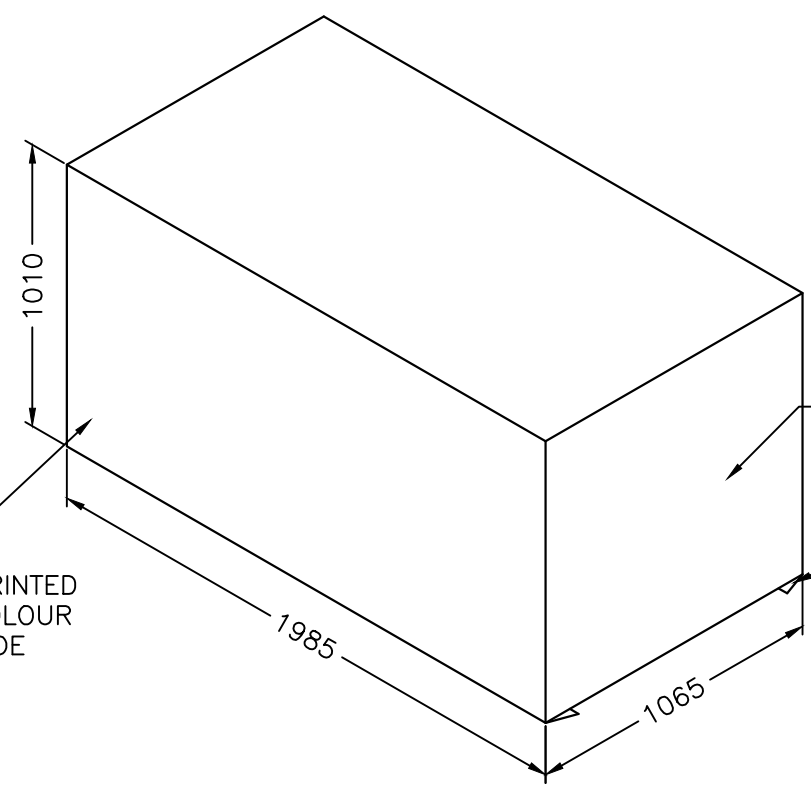
The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the Company

PART NO. (1) SLEEVE (CORRUGATED CARTON BOX) - 1 NO.



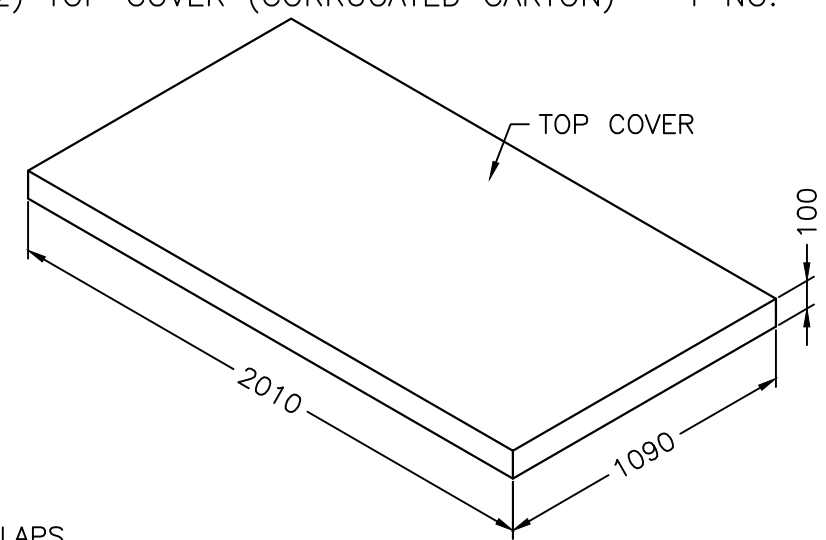
TEXT TO PRINTED IN BLUE COLOUR ON THIS SIDE

SLEEVE INNER DIMENSION



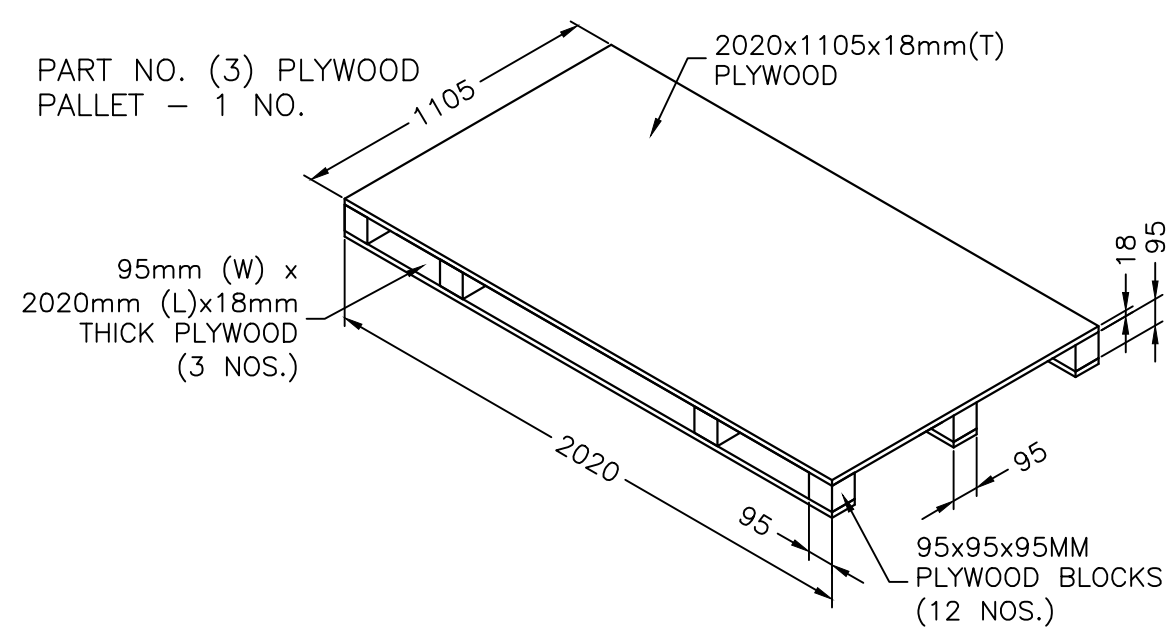
TOP COVER INNER DIMENSION

PART NO. (2) TOP COVER (CORRUGATED CARTON) - 1 NO.



THE DIMENSIONS OF SLEEVE AND TOP COVER ARE INNER DIMENSIONS

PART NO. (3) PLYWOOD PALLET - 1 NO.



SPECIFICATIONS

PAPER COMBINATION : 469/200/180/200/180/200/469 GSM
 PAPER COLOUR : BROWN
 FLUTE TYPE : AAA OR ACB
 NO OF PLY : 7 PLY

SLEEVE

TOP COVER

300/180/200/180/200 GSM
 BROWN
 AC
 5 PLY

NOTES :

1. ALL THE DIMENSIONS ARE IN MM.
2. FLUTE DIRECTION TO BE ALONG HEIGHT OF THE BOX.
3. SLEEVE & FLAP ARE TO BE FORMED FROM SAME CORRUGATED SHEET.
4. PLEASE SEE PAGE NO. 2 FOR INSTRUCTIONS FOR PACKING OF PV MODULES.

PART NO. (4) BOTTOM SHEET-1No OF 1975x1065mm, 5 PLY 250/180/180/180/250 GSM SHEET

PART NO. (5) MODULE CORNER CAP - 112 NOS. 150x150mm, THICKNESS 0.6 TO 1.0mm

PART NO. (6) RETAINER STRIP - 2 NOS. 1265x100mm, 3 PLY.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LIMITED. ELECTRONICS DIVISION, BANGALORE	DRN	SAN	Sd/-	290315	No. OF VAR
	CKD	SM	Sd/-	290315	
	APPD	SR	Sd/-	290315	

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHECKED			CHECKED			CHECKED
		APPROVED			APPROVED	00		APPROVED
						FIRST ISSUE		


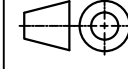
DEPT. SC&PV	FOR UNSPECIFIED-TOLERANCES REFER ED 0230499	SCALE NTS	WEIGHT(Kg)	REF. TO ASSY. DRG.	ITEM NO.	No. OF ITEM
CODE 439						
TITLE PACKING BOX FOR L24270P - 28 IN 1				DRAWING NO. 3 679 02 00399		REV. 00
SHEET NO. 01			NO. OF SHEETS 02			

DRAWING NO. 3 679 02 00399

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 anyway detrimental to the interest of the Company

INSTRUCTIONS FOR PACKING OF 28 NOS OF 300W MULTI PV MODULES (L24270P)

1. SCREW THE CARTON BOX ON TO THE WOODEN PALLET.
2. PLACE 5 PLY CARTON SHEET OF DIMENSION 1975x1065 MM AT THE BOTTOM OF THE BOX.
3. PLACE CORNER CAPS SUITABLE TO MATCH FRAME PROFILE AT THE FOUR CORNERS OF THE PV MODULE.
4. PLACE 28 NOS. OF PV MODULES WITH CORNER CAPS INSIDE THE BOX.
5. PUT 1 NO. RETAINER STRIP (1265x100 MM) AT EACH END OF THE BOX ON THE MODULES.
6. CLOSE THE CARTON WITH THE TOP COVER.
7. SELF ADHESIVE BHEL SPECIFIED COLOR STICKER OF SIZE 100x100 MM. TO BE AFFIXED ON THE PRINTING SIDE.
8. WRITE THE CARTON BOX NO. & PUT A PACKING SLIP ON PRINTING SIDE INDICATING SL. NO., MODULE SL. NO. & PMAX.
9. WRAP THE CARTON BOX TIGHTLY ALONG WITH WOODEN PALLET WITH BALE PATI AT TWO PLACES EACH ON WIDTH AND LENGTH SIDE.
10. WRAP THE CARTON BOX WITH A POLYETHYLENE STRETCH WRAP ALL ROUND FOR PROTECTING AGAINST RAIN.
11. STACK AND STORE THE PACKED BOXES IN A SAFE PLACE.

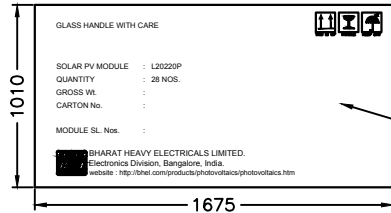
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT					
	BHARAT HEAVY ELECTRICALS LIMITED. ELECTRONICS DIVISION, BANGALORE			No. OF VAR	
	DRN	NAME	SIGN.		DATE
	CKD	SM	Sd/-		290315
APPD	SR	Sd/-	290315		
DEPT. SC&PV CODE 439	FOR UNSPECIFIED-TOLERANCES REFER ED 0230499		SCALE NTS	WEIGHT(Kg)	
TITLE PACKING BOX FOR L24270P - 28 IN 1			REF. TO ASSY. DRG.	ITEM NO.	
DRAWING NO. 3 679 02 00399			REV. 00		
SHEET NO. 02		NO. OF SHEETS 02			

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHECKED			CHECKED	00		CHECKED
		APPROVED			APPROVED			APPROVED
						FIRST ISSUE		

DRAWING NO. 3 679 02 00407

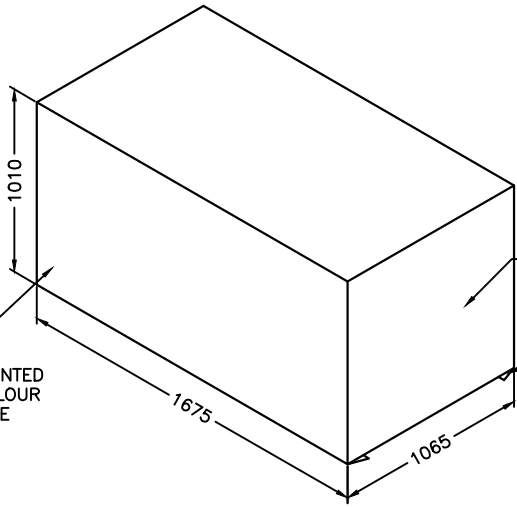
COPYRIGHT AND CONFIDENTIAL
The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in any way detrimental to the interest of the Company

PART NO. (1) SLEEVE (CORRUGATED CARTON BOX) - 1 NO.



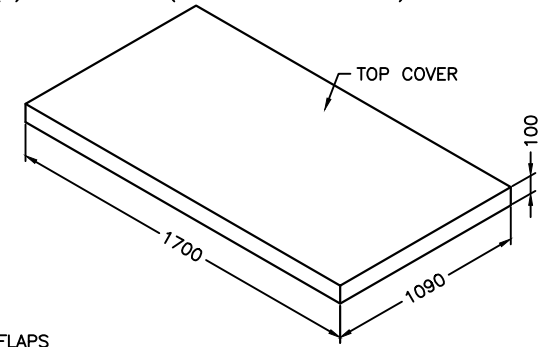
TEXT TO PRINTED IN BLUE COLOUR ON THIS SIDE

SLEEVE INNER DIMENSION



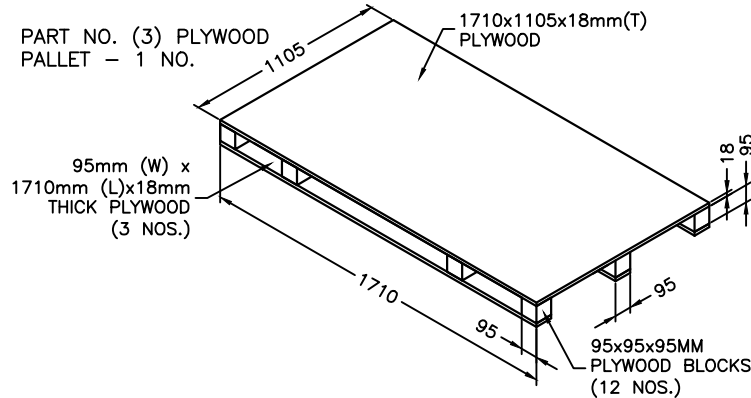
TOP COVER INNER DIMENSION

PART NO. (2) TOP COVER (CORRUGATED CARTON) - 1 NO.



THE DIMENSIONS OF SLEEVE AND TOP COVER ARE INNER DIMENSIONS

PART NO. (3) PLYWOOD PALLET - 1 NO.



SPECIFICATIONS

PAPER COMBINATION : 469/200/180/200/180/200/469 GSM
PAPER COLOUR : BROWN
FLUTE TYPE : AAA OR ACB
NO OF PLY : 7 PLY

SLEEVE

TOP COVER

300/180/200/180/200 GSM
BROWN
AC
5 PLY

NOTES :

1. ALL THE DIMENSIONS ARE IN MM.
2. FLUTE DIRECTION TO BE ALONG HEIGHT OF THE BOX.
3. SLEEVE & FLAP ARE TO BE FORMED FROM SAME CORRUGATED SHEET.
4. PLEASE SEE PAGE NO. 2 FOR INSTRUCTIONS FOR PACKING OF PV MODULES.

PART NO. (4) BOTTOM SHEET-1No OF 1665x1065mm, 5 PLY 250/180/180/180/250 GSM SHEET

PART NO. (5) MODULE CORNER CAP - 112 NOS. 150x150mm, THICKNESS 0.6 TO 1.0mm

PART NO. (6) RETAINER STRIP - 2 NOS. 1265x100mm, 3 PLY.

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

	BHARAT HEAVY ELECTRICALS LIMITED. ELECTRONICS DIVISION, BANGALORE			
	DRN	NAR	Sd/-	081215
	CKD	SM	Sd/-	081215
APPD	SR	Sd/-	081215	No. OF VAR

DEPT. SC&PV	FOR UNSPECIFIED-TOLERANCES REFER ED 0230499	SCALE NTS	WEIGHT(Kg)	REF. TO ASSY. DRG.	ITEM NO.	No. OF ITEM
-------------	---	-----------	------------	--------------------	----------	-------------

TITLE	DRAWING NO.	REV.
PACKING BOX FOR L20220P - 28 IN 1	3 679 02 00407	00
SHEET NO. 01	NO. OF SHEETS 02	

REV.	DATE	ALTERED CHECKED	REV.	DATE	ALTERED CHECKED	REV.	DATE	ALTERED CHECKED
		APPROVED			APPROVED			APPROVED
						FIRST ISSUE		

DRAWING NO. 3 679 02 00407



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 anyway detrimental to the interest of the Company

INSTRUCTIONS FOR PACKING OF 28 NOS OF 250W MULTI PV MODULES (L20220P)

1. SCREW THE CARTON BOX ON TO THE WOODEN PALLET.
2. PLACE 5 PLY CARTON SHEET OF DIMENSION 1665x1065 MM AT THE BOTTOM OF THE BOX.
3. PLACE CORNER CAPS SUITABLE TO MATCH FRAME PROFILE AT THE FOUR CORNERS OF THE PV MODULE.
4. PLACE 28 NOS. OF PV MODULES WITH CORNER CAPS INSIDE THE BOX.
5. PUT 1 NO. RETAINER STRIP (1265x100 MM) AT EACH END OF THE BOX ON THE MODULES.
6. CLOSE THE CARTON WITH THE TOP COVER.
7. SELF ADHESIVE BHEL SPECIFIED COLOR STICKER OF SIZE 100x100 MM. TO BE AFFIXED ON THE PRINTING SIDE.
8. WRITE THE CARTON BOX NO. & PUT A PACKING SLIP ON PRINTING SIDE INDICATING SL. NO., MODULE SL. NO. & PMAX.
9. WRAP THE CARTON BOX TIGHTLY ALONG WITH WOODEN PALLET WITH BALE PATI AT TWO PLACES EACH ON WIDTH AND LENGTH SIDE.
10. WRAP THE CARTON BOX WITH A POLYETHYLENE STRETCH WRAP ALL ROUND FOR PROTECTING AGAINST RAIN.
11. STACK AND STORE THE PACKED BOXES IN A SAFE PLACE.

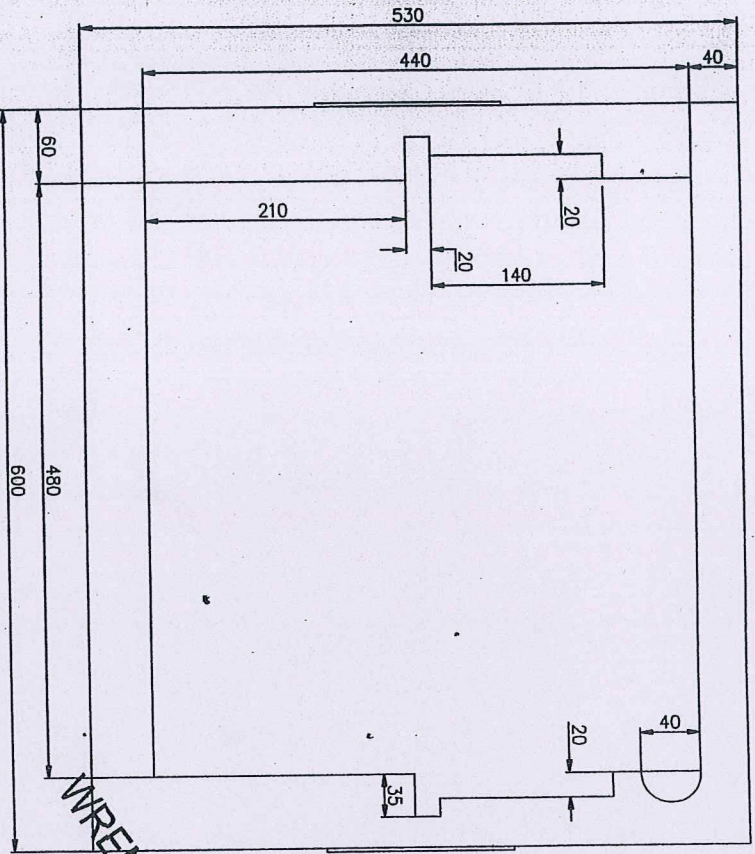
INVENTORY NO. SIGN & DATE REF. DRG.NO.

REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED
						00		
						FIRST ISSUE		

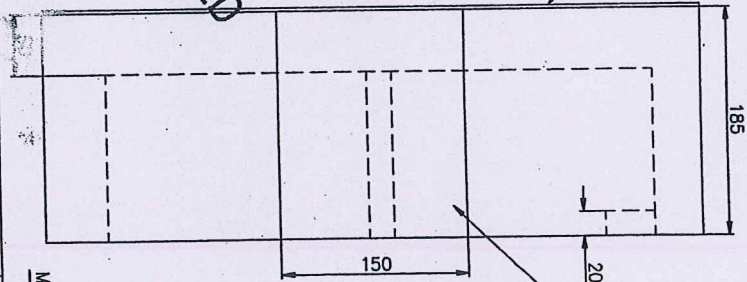
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT												
	BHARAT HEAVY ELECTRICALS LIMITED. ELECTRONICS DIVISION, BANGALORE							DRN	NAR	Sd/-	081215	No. OF VAR
	CKD	SM	Sd/-	081215								
	APPD	SR	Sd/-	081215								
DEPT. SC&PV CODE 439	FOR UNSPECIFIED-TOLERANCES REFER ED 0230499		SCALE NTS	WEIGHT(Kg)	REF. TO ASSY. DRG.	ITEM NO.	No. OF ITEM					
TITLE PACKING BOX FOR L20220P - 28 IN 1							DRAWING NO. 3 679 02 00407			REV. 00		
							SHEET NO. 02		NO. OF SHEETS 02			

The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the Company

FIRST ANGLE PROJECTION
DRAWING NO. 3 688 04 10022



WRENCH RELEASED



NOTE:-
 1. DIMENSIONAL TOLERANCE ±3mm
 2. THICKNESS TOLERANCE ±10%
 3. DENSITY-32 TO 38 Kg/Cu.Mtr.
 4. REFER SHEET-02 FOR BOTTOM BOX.
MATERIAL:-EXPANDED POLYETHYLENE.

ALL DIMENSIONS ARE IN mm

INVENTORY NO.	SIGN & DATE	REF. DRG.NO.
1	2	3
4	5	6
7	8	9

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		LEG MODULE-2.3 Kv	
DEPT. SAE FOR UNSPECIFIED-TOLERANCES REFER ED 0230499		SCALE 4:1	
BHARAT HEAVY ELECTRICALS LIMITED, ELECTRONICS DIVISION, BANGALORE		DRN G.MARUTHI 27.03.2001 OKD K.S.PRABHAKAR 27.03.2001 APPD SHS RAO 27.03.2001	
TITLE		DRAWING NO.	
PACKING BOX (TOP)		3 688 04 10022	
SHEET NO. 01		NO. OF SHEETS 02	
REV. DATE		REV. DATE	
1	2	3	4
5	6	7	8

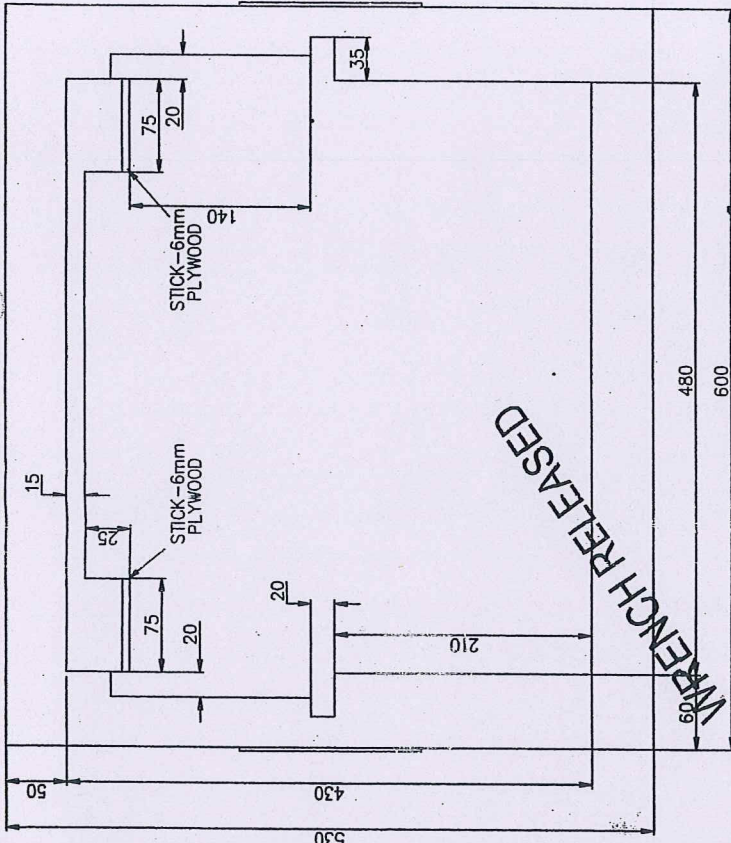
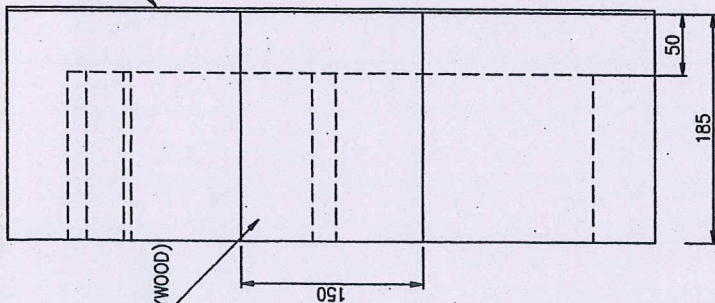
QTY.	ITEM No.	DESCRIPTION	DRAWING NO.	ITEM No.	MATERIAL	UTWL (kg)

FORM No. A3-01

A3 SIZE

66001 KU 009 2
DRAWING ON 50MM

STICK-3mm PLYWOOD AT 2-PLACES. (BALE STRIP SHALL BE STRAPPED ON THIS PLYWOOD)



A B C D

ITEM QTY. No.	DESCRIPTION	DRAWING NO.	CARD TYPE 1		CARD TYPE 2	
			ITEM No.	DESCRIPTION	ITEM No.	DESCRIPTION

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT
LEG MODULE-2.3 Kv

DEPT. SAE CODE 406	FOR UNSPECIFIED-TOLERANCES REFER ED 0230489	SCALE 4:1	WEIGHT(Kg)	REF. TO ASSY. DRG.	ITEM NO.	No. OF ITEM
REV. DATE 01 30.10.05	ALTERED CHECKED APPROVED					
	ALTERED CHECKED APPROVED					

REV. DATE 01 30.10.05	ALTERED CHECKED APPROVED					
	ALTERED CHECKED APPROVED					

REV. DATE 01 30.10.05	ALTERED CHECKED APPROVED					
	ALTERED CHECKED APPROVED					

REV. DATE 01 30.10.05	ALTERED CHECKED APPROVED					
	ALTERED CHECKED APPROVED					

REV. DATE 01 30.10.05	ALTERED CHECKED APPROVED					
	ALTERED CHECKED APPROVED					

REV. DATE 01 30.10.05	ALTERED CHECKED APPROVED					
	ALTERED CHECKED APPROVED					

REV. DATE 01 30.10.05	ALTERED CHECKED APPROVED					
	ALTERED CHECKED APPROVED					

REV. DATE 01 30.10.05	ALTERED CHECKED APPROVED					
	ALTERED CHECKED APPROVED					

REV. DATE 01 30.10.05	ALTERED CHECKED APPROVED					
	ALTERED CHECKED APPROVED					

It must not be used directly or indirectly in anyway detrimental to the interest of Bharat Heavy Electricals Limited. The information on this document is the property of Bharat Heavy Electricals Limited.

COPYRIGHT AND CONFIDENTIAL

REF. DRG. NO.

SIGN & DATE

FORM No. A3-01

NOTE:- 1.FOR DETAILS REFER SHET No.01.



BHARAT HEAVY ELECTRICALS LIMITED, ELECTRONICS DIVISION, BANGALORE

TITLE
PACKING BOX (BOTTOM)

DRAWING NO. 3 688 04 10022

SHEET NO. 02 NO. OF SHEETS 02

A3 SIZE

BHEL-EDN. MYS BANGALORE

HVDC

±800 kV, 6000 MW HVDC Multi Terminal NER/ER - NR/WR Interconnector - I	Document Number GI0866S016600107	No of Pages 6
	Ref ABB doc 1JNL100169-985	No of Attached Pages
Prepared Rajiv C G / N Subramanian 08-10-2012	Title Packing Procedures Thyristor Modules	Reg./Class no. NEA-
Approved Dipak Dutta 08-10-2012		

This document is issued by means of a computerized system. The digitally stored original is electronically approved. The approved document has a name and date entered in the approved-field. A manual signature is not required.

Summary

PACKING PROCEDURES FOR THYRISTOR MODULES

Rev ind	Revision text	Prepared	Approved

SAFETY INFORMATION

The packing procedures for thyristor modules present potentially unsafe conditions, including, but not limited to the following:

- Moving machinery
- Heavy components
- Slip, stumble or fall
- Hot equipment

Specialized procedures and instructions are required and must be adhered to when working on such apparatus. Failure to follow the instruction could result in severe personal injury, death and/or product or property damage.

Additionally, all applicable safety procedures such as regional or local safety rules and regulations, safe working practices, and good judgment must be used by the personnel when installing, operating of such equipment.

Safety, as defined in this instruction, involves two conditions:

Personal injury or death

Product or property damage

Safety notations are intended to alert personnel to possible personal injury, death or property damage. They have been inserted in the instructional text prior to the step in which the condition is cited.

The safety conditions are headed by one of the three hazard intensity levels, which are defined as follows:

DANGER

Immediate hazard, which will result in severe personal injury, death or property damage.

WARNING

Hazard or unsafe practice, which could result in severe personal injury, death or property damage.

CAUTION: Hazard or unsafe practice that could result in minor personal injury or property damage.



1 Packing material

1 pc	Box	Shown in Figure 1	
1 pc	Plastic cover	1JNL100033-741	
1 pc	Thyristor module		
1pc	Packing element	1JNL100109-276	Fig 2 Pos 3 above heat sinks
1pc	Packing element	1JNL100109-307	Fig 2 Pos 7 between capacitors
1pc	Packing element	1JNL100109-309	Fig 2 Pos 8 below capacitors
9(8)pcs	Packing elements	1JNL100109-275	Fig 2 Pos 2 below heat sinks
2pcs	Packing element	1JNL100109-267	Fig 2 Pos 4 frame corner
2pcs	Packing element	1JNL100109-273	Fig 2 Pos 5 frame corner
2pcs	Packing element	1JNL100033-735	Fig 2 Pos 6 bus bar
2pc	Packing element	Figure 3	Fig 2 Pos 9 between box and yoke
1pc	Packing element	Figure 4	Fig 2 Pos 10 below Thyristor module
6pcs	Desiccant bags	2969138-4	2.5kg Distributed in the box
1pc	Humidity Indicator	2969137-1	Placed readable inside bag

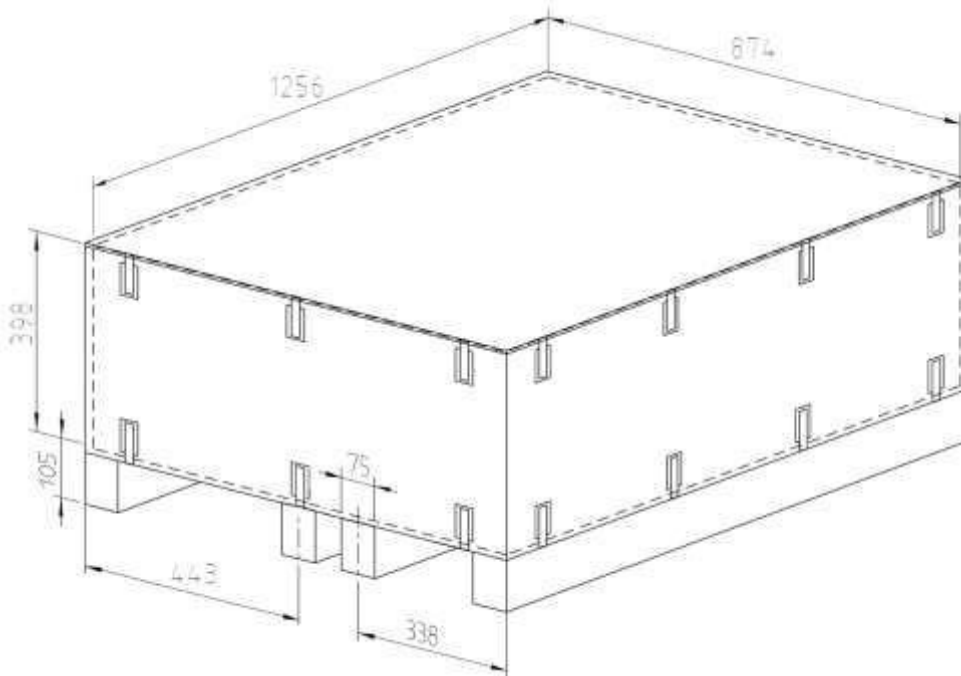


Figure 1 : Plywood Box for packing Thyristor Modules

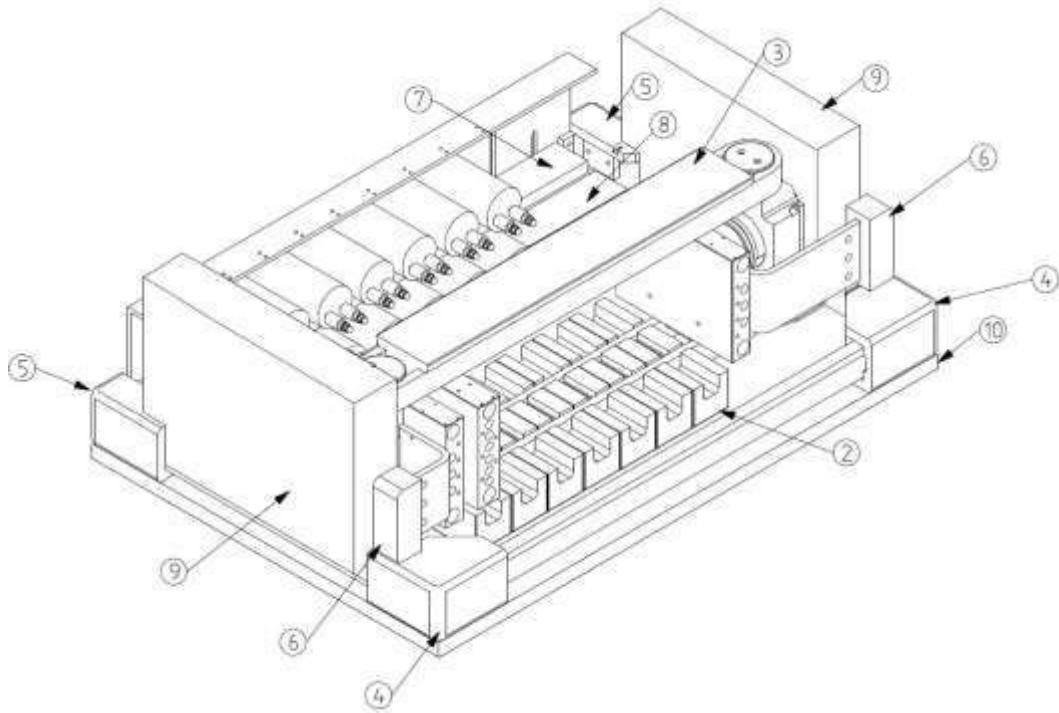


Figure 2 : Packaging of the Thyristor Module

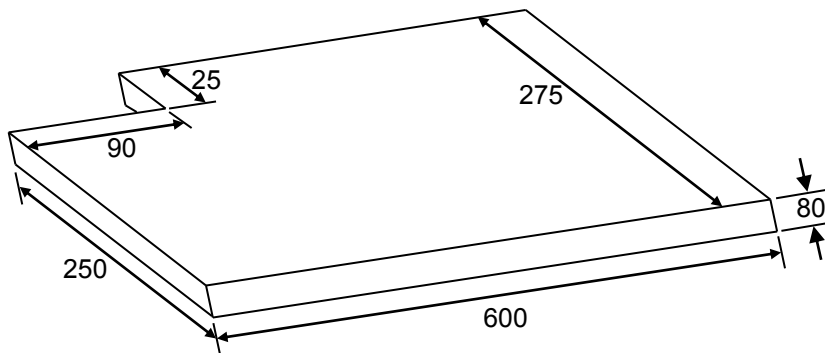


Figure 3 : Packing Element between Box and Yoke in Thyristor Module Packing

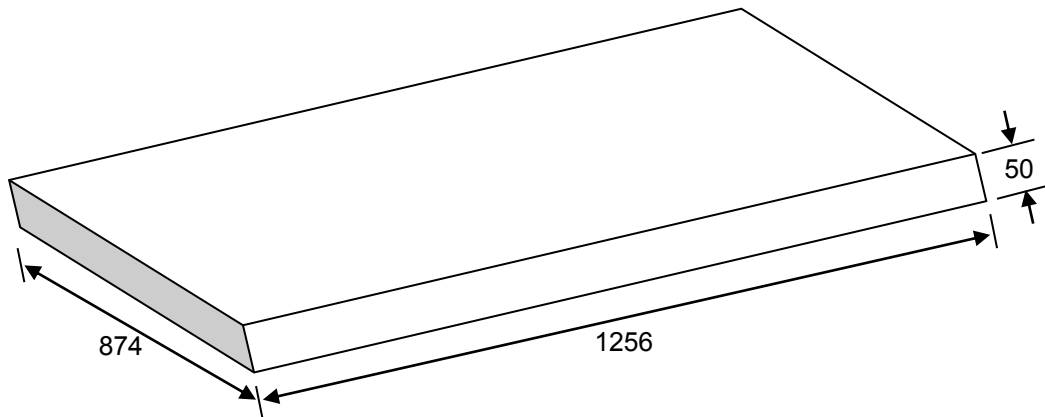


Figure 4 : Cushion below the Thyristor Module

Assembly packing

1. Assemble the box
2. Install the plastic bag in the box
3. Place the bottom cushion (Figure 4) in the plastic bag

WARNING

4. Collect the thyristor module from the storage rack

WARNING

5. Lift the thyristor module with the four slings with hooks after inserting the hooks from the outside.
6. Mount all packing parts except pos 9 (Figure 3) and pos 10 (Figure 4) and pos 6 1JNL100033-735.

2 Packing of thyristor module

WARNING

7. Lower the thyristor module into the bag in the box. Pull up the sides of the bag before lowering the thyristor module all the way to the bottom.
8. Install pos 9 (Figure 3) and pos 6 1JNL100033-735 two pieces.
9. Place the desiccant bags, 2.5kg distributed in the box over the thyristor module
10. Place the humidity indicator readable inside the plastic bag

CAUTION

11. Seal the opening of the bag but leave a small opening for the vacuum cleaner
12. Vacuum the bag and check that it is not leaking.

CAUTION

13. Seal the last opening
14. Fold the bag and put on the lid and fasten it
15. Mark the box with project name, station and thyristor module number.

3 Packing of packed thyristor module

Packing of packed thyristor modules have to be made into a stable wooden case see 1JNL100169-960. Four packed thyristor modules will be packed in each wooden case.

4 MARKING OF CASES

Mark on the two adjacent sides of each package. The marking shall be weather resistant and shall be inalterable and indelible (ex.: UV rays, water, moisture, heat, cold, friction, etc.).

The size of marking label shall be at least 29 x 21 cm.

Mark the box according to 11SL0062 Packing, Marking and Storage instructions North East Agra Project in India.

Colour Marking

In addition to the above marking all cases shall have colour marking of two adjacent upper corners, see also 11SL0062 4.0.

Agra site = Red

Alipurduar site = Yellow

Biswanath Chariali = Green

Placing of marking

Each case shall have marking on two adjacent sides and one marking inside the box.

Marking of case

In addition to the above marking, the case itself shall be indelibly marked with the same case number as stated on the template on all four sides. Figures **must** be at least 50 mm high.

According to the characteristics of the Contract Equipment, packages shall be marked legibly by the Supplier with words "Handle with Care", "Right side Up", "Keep Dry",

STORAGE REQUIREMENTS

The storage level of the packages is **indoor**

Packed thyristor modules have to be **stored indoor** both at the factory and at site.

Packed thyristor modules packed in wooden cases have to be **stored indoor** both at the factory and at site.

DRAWING NO. 367226 00805

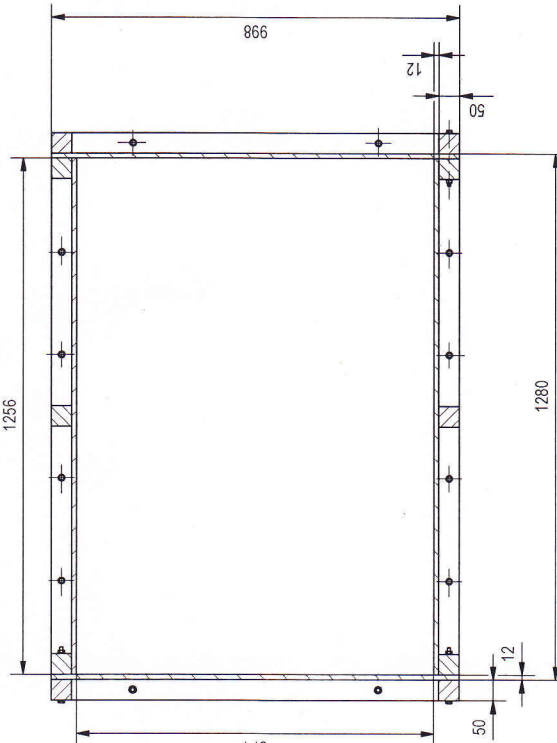
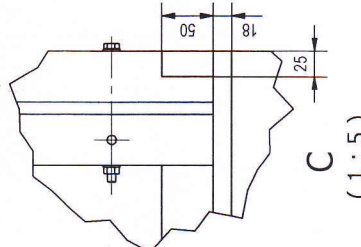
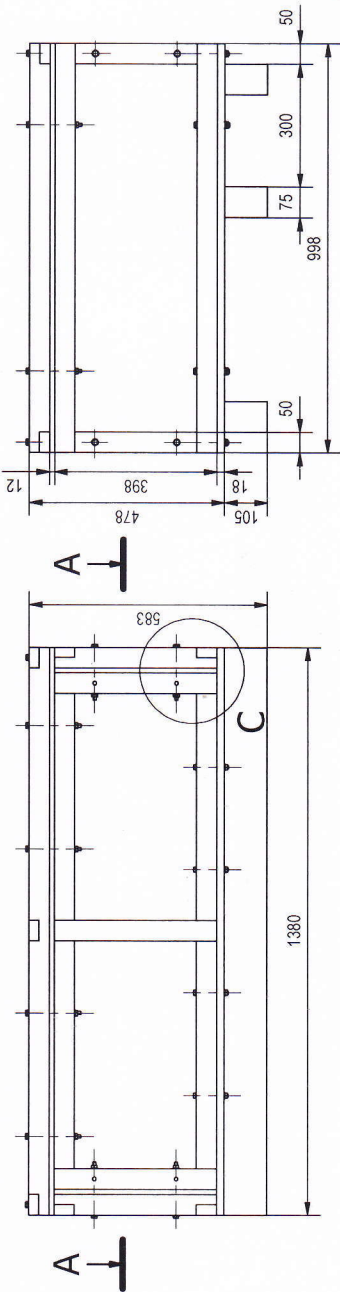
8 7 6 5 4 3 2 1

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

REF. DRG NO. 36722600805

SIGN & DATE

INVENTORY NO.



A-A (1:12.5)

- NOTE:
1. 12MM PLYWOOD IS USED FOR SIDES AND TOP COVER
 2. 18MM PLYWOOD IS USED FOR BOTTOM
 3. 50MMx50MM WOODEN RIPPERS ARE USED ON THE EDGES & MIDDLE
 4. M8 MS BOLTS ARE USED FOR FASTENING
 5. ALL JOINTS SHALL BE LAP JOINT.
 6. WATER-PROOF TAR SHEET TO BE USED UNDER TOP COVER

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT


BHARAT HEAVY ELECTRICALS LIMITED.
ELECTRONICS DIVISION, BANGALORE



REV. DATE	ALTERED CHECKED APPROVED	DATE	ALTERED CHECKED APPROVED	DATE	ALTERED CHECKED APPROVED	REV. DATE	ALTERED CHECKED APPROVED	DATE	ALTERED CHECKED APPROVED	REV. DATE	ALTERED CHECKED APPROVED	DATE	ALTERED CHECKED APPROVED	REV. DATE	ALTERED CHECKED APPROVED						
02		13.12.13		08.10.13		01		01		01		01		01							
												DEPT. HVDC 442		SCALE 1:12.5		WEIGHT(S) REF. TO ASSY. DRG.		ITEM NO. 27.02.13		No. OF 27.02.13	
												FOR UNSPECIFIED-TOLERANCES REFER ED 0230499		SIGN. DATE		NAME SIGN. DATE		DRN DATE		No. OF VAR	
												MGMalagi		MGMalagi		MGMalagi		27.02.13		27.02.13	
												D D		D D		D D		27.02.13		27.02.13	
												APPD D D		APPD D D		APPD D D		27.02.13		27.02.13	
												REV. 02		REV. 01		REV. 01		REV. 01		REV. 02	
												APPROVED		APPROVED		APPROVED		APPROVED		APPROVED	
												AS PER SHIPPING FEEDBACK		AS PER SHIPPING FEEDBACK		AS PER SHIPPING FEEDBACK		AS PER SHIPPING FEEDBACK		AS PER SHIPPING FEEDBACK	
												DETAIL 'C' SHOWN AND BOLTS ON TOP INCREASED		DETAIL 'C' SHOWN AND BOLTS ON TOP INCREASED		DETAIL 'C' SHOWN AND BOLTS ON TOP INCREASED		DETAIL 'C' SHOWN AND BOLTS ON TOP INCREASED		DETAIL 'C' SHOWN AND BOLTS ON TOP INCREASED	
												13/12/13		13/12/13		13/12/13		13/12/13		13/12/13	
												Advance Copy		Advance Copy		Advance Copy		Advance Copy		Advance Copy	
												Dwg will be updated in March.		Dwg will be updated in March.		Dwg will be updated in March.		Dwg will be updated in March.		Dwg will be updated in March.	
												367226 00805		367226 00805		367226 00805		367226 00805		367226 00805	
												SHEET NO. 01		SHEET NO. 01		SHEET NO. 01		SHEET NO. 01		SHEET NO. 01	
												NO. OF SHEETS 01		NO. OF SHEETS 01		NO. OF SHEETS 01		NO. OF SHEETS 01		NO. OF SHEETS 01	
												DRAWING NO. 367226 00805		DRAWING NO. 367226 00805		DRAWING NO. 367226 00805		DRAWING NO. 367226 00805		DRAWING NO. 367226 00805	

Supplementary doc, kind	Identity

Item	Qty	Art.no	Type	Data	Name	Rem
1	1 pc	1JNL 100109-475	Low Curren		Plywood Case Thyristor Module	
2	8 pc	1JNL 100109-275			Packing Element	
3	1 pc	1JNL 100109-276			Packing Element	
4	2 pc	1JNL 100109-267			Packing Element	
5	2 pc	1JNL 100109-273			Packing Element	
6	2 pc	1JNL 100033-735			Packing Element	
7	1 pc	1JNL 100109-307			Packing Element	
8	1 pc	1JNL 100109-309			Packing Element	
9	1 pc	1JNL 100109-476			Packing Element	
10	1 pc	1JNL 100109-477			Packing Element	
11	1 pc	1JNL 100033-741			Plasthuv	
12	10 pc	2969 138-4		250gr	Bag with Dessican	
13	1 pc	2969 137-1			Humidity Indicator	

00						Approved
Rev	Revision					Approved
Based on		Title		Group Specification		
Prepared	Stellan Dahlgren 2005-10-12		Emballage Thyristor Module, Low Current		Language en	
Approved	Patrik Karlsson 2006-02-09		Resp dept TVM		Language en	
Project name		 ABB Power Technologies		Document number		
Thyristor Valve (HVDC)				1JNL100107-593		
-				Sheet/of		1/1

Dessicant Details for HVDC Thy Packing

ABSORGEL®

No liquid water

ABSORGEL® -Pouch- is a simple and safe product in the form of a gel pad. It is based on the proven ability of Calcium Chloride to aggressively remove moisture from the air. The ABSORGEL will start to activate once removed from its sealed package.

Active agent: Calcium Chloride (CaCl₂) Cas-Nr. 10043-52-4. Adhesive agent: modified starch. The Calcium Chloride is nontoxic, non flammable and environmentally friendly.

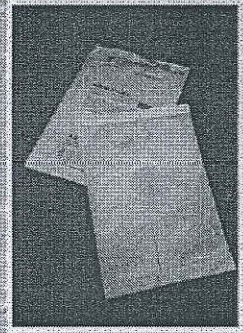
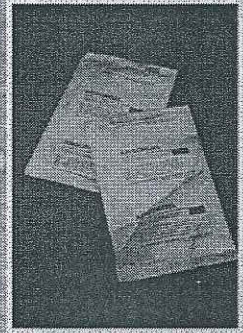
Loads with minimal available free space

suitable for:

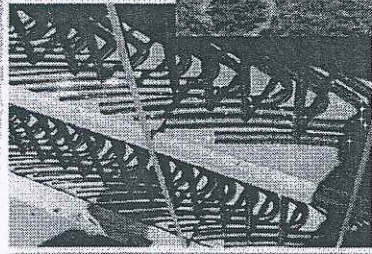
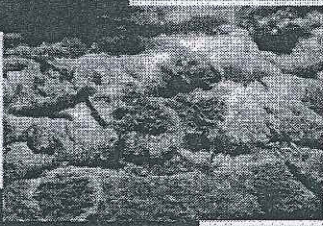
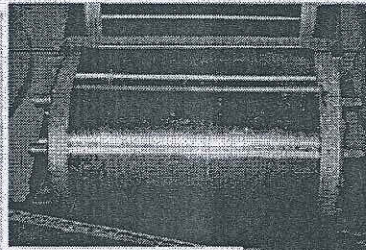
- Fresh and canned food products, cased or boxed, trays
- Steel, machinery
- Furniture, paper, leather, timber products etc

Specification:

Size	: L = 22 cm W = 15 cm D = 1 cm
Net weight	: 125 Grams
Temperature	: - 20°C to + 30°C
Absorbing medium	: Calcium Chloride (CaCl ₂)
Adhesive agent	: Modified starch



...for Containers




ABSORTECH



Esorb

The Esorb range of desiccant bags come in a variety of sizes and are available in a choice of different absorbents and packaging material, designed to meet your specific need.

Montmorillonite Clay – Dry magnesium aluminum silicate, a natural material= MT

Active Mineral – Clay and 10 % Calcium Chloride = MD

The major difference between the two absorbents is that Active Mineral has higher absorption characteristics due to the presence of Calcium Chloride. On the other hand Montmorillonite desiccant bags meet MIL-D-3464 requirements due to the lack of causticity material.

Advantages with Esorb Desiccant Bags

- Cost effective
- Conforms to German DIN 55473 and MIL-D-3464 standards (Montmorillonite bags)
- Available in a large variety of sizes and several packaging materials

Typical Applications Include

- Electronics
- Machine parts
- Mechanical equipment
- Photo equipment
- Food
- Pharmaceuticals

Desiccant bags:

Available in following sizes and different packing material:

- MT 1/6 unit A + B
- MT 1/3 unit A + B
- MT 1/2 unit A + B
- MT 1 unit A + B
- MT 2 unit A + B
- MT 4 unit A + B
- MT 8 unit A + B
- MT 16 unit A
- MT 32 unit A
- MT 80 unit A

Packing material for bags: Type A = non woven = dustless Type B = Tyvek = dustfree

INDIA

Absortech India Pvt Ltd.
 Flat no B-2, Zachs Enclave,
 No.3 'A' Block, 2nd Avenue Road,
 Annanagar East, Chennai -102
 Tamilnadu
 Contact
 Phone: +91-44-26265700/+ 91-9094945369
 Fax: +91-44-26265800
 E-Mail: salesindia@absortech.com
 Contact person: Srinivas Chowdary

S.S Enterprises
 Sangvhi House
 105/2 Shivajinagar
 Pune- 411 005
 Phone: + 91 20 25534969/25534989
 Fax: +91 20 2553 4896
 E-Mail: snjaysee@pn2.vsnl.net.in

[Back](#)

FAQ and Help

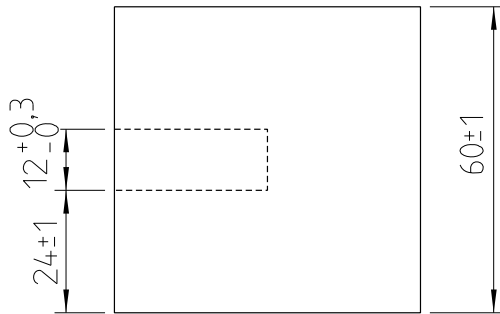
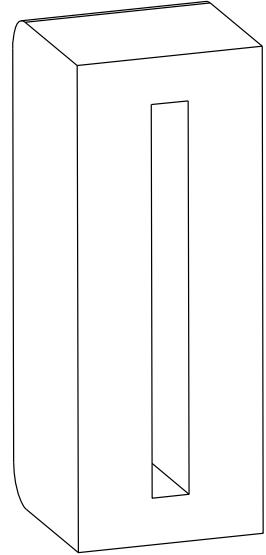
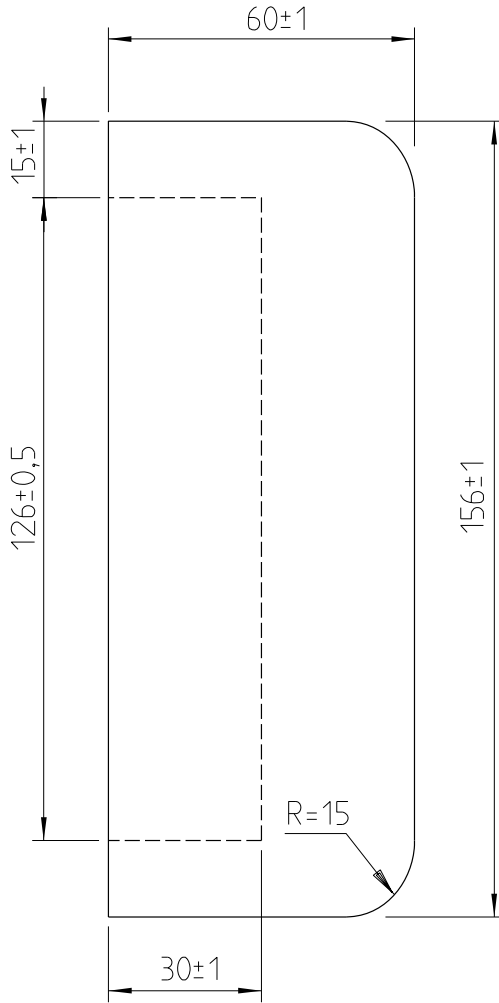
Need to learn more about desiccants?
Check out the [FAQ](#).
Get in touch.

We reserve all rights in this document and in the information contained therein. Reproduction, use or disclosure to third parties without express authority is strictly forbidden. ©ABB Power Systems (SE)

This document is issued by means of a computerized system. The digitally stored original is electronically approved. A manual signature is not required.

Inspection as shown in
Kontroll enligt

2098 069-3



Clearance 0,5°
Släppning 0,5°

Material: Expanded polypropylene
Density: 60 kg/m³
Color: Black

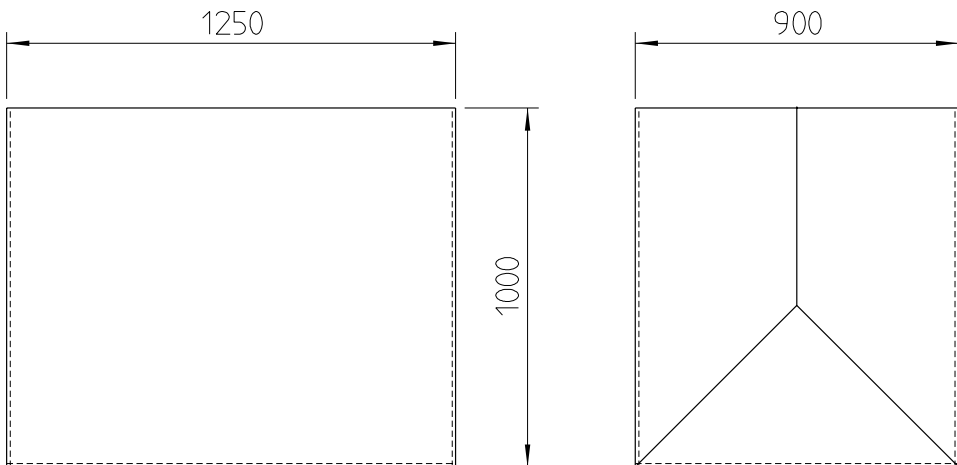
Material: Expanderad polypropylen
Densitet: 60 kg/m³
Färg: Svart

1 Redrawn		00.20	
Rev Ind	Revision	Appd	Year Week
Qual. control Dan Elofsson		Project name	
Prepared 2000-03-02 S Dahlgren		3G	
Approved Björn Sandin		Item designation	
Component Drawing		Item designation	
Packing Element		Resp dept POW/PTK	Rev ind 1
Document number		Language en	
ABB ABB Power Systems		1JNL 100 033-735	
		Sheet/af 1/1	

Material: Polyethene film

Material: Polyetenfolie

BORSTAR 6592 T=0,20





We reserve all rights in this document and in the information contained therein. Reproduction, use or disclosure to third parties without express authority is strictly forbidden. © ABB Power Systems (SE)

This document is issued by means of a computerized system. The digitally signed original is electronically approved. A manual signature is not required.

Inspection as shown in
Kontroll enligt

2098 069-3

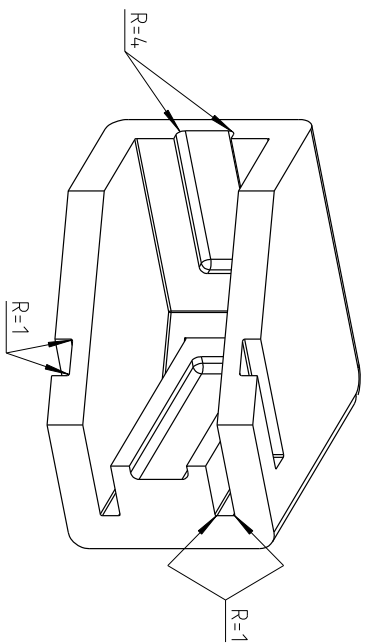
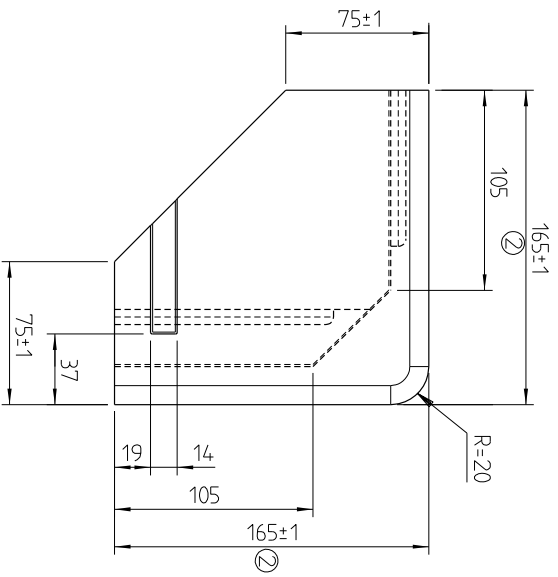
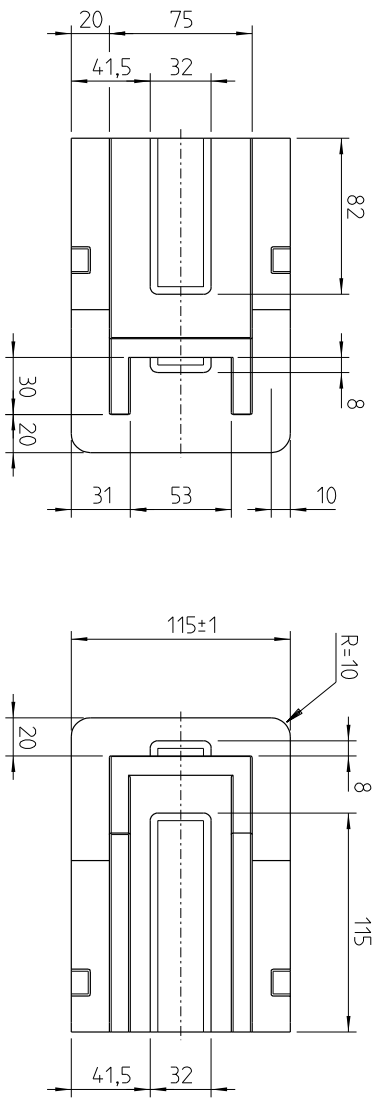
2 Material ch. T was 0,25 00.35

Rev Ind	Revision	Appd	Year	Week						
Qual. control	K-O Eriksson				Project name					
Prepared	2000-03-02 S Dahlgren				3G					
Approved	Björn Sandin									
Component Drawing					Item designation					
Plastic Cover					Resp dept	POW/PTK	Rev ind	2	Language	en
 ABB Power Systems					Document number					
					1JNL 100 033-741					
					Sheet/ of		1/1			

Inspection as shown in 2098 069-3
 Kontroll enligt

Tolerance $\pm 0,5$ where no other are stated.
 Tolerans $\pm 0,5$ där ej annat anges.

Clearance $0,5^\circ$
 Släppning $0,5^\circ$



Material: Expanded polypropylene
 Density: 60 kg/m³
 Color: Black
 Material: Expanderad polypropylen
 Densitet: 60 kg/m³
 Färg: Svart

Qual. control	K-O Eriksson		Project name	HVDC Classic	
Prepared	2006-01-26	S Dahlgren	Item designation	1JNL 100 109-267	
Approved	Patrik Karlsson		Revision	2	
Component Drawing			Revision	2	
Packing Element			Revision	2	
Thyristor Module			Revision	2	
Document number	1JNL 100 109-267	Revision	2		
Scale	1/1		Language	EN	

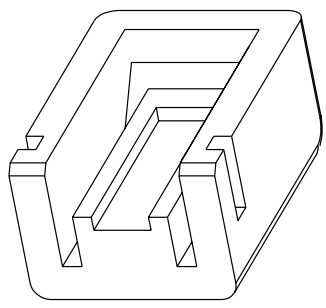
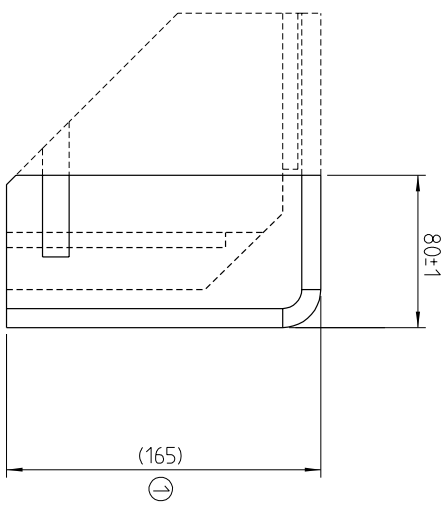
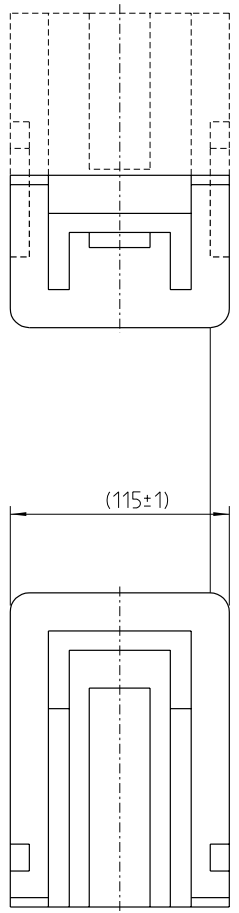
Dim. WDS	175	Appl.	06.25	Rev. no.	2
Revision		Year		Week	

This document is issued by means of a computerized system.
 The digitally stored original is electronically approved.
 A manual signature is not required.

We reserve all rights in this document and in the information contained therein. Reproduction, use or disclosure to third parties without express authority is strictly forbidden. ©ABB Power Technologies AB (SE)

Inspection as shown in 2098 069-3
 Kontroll enligt

Tolerance $\pm 0,5$ where no other are stated.
 Tolernans $\pm 0,5$ där ej annat anges.
 Clearance $0,5^\circ$
 Släppning $0,5^\circ$



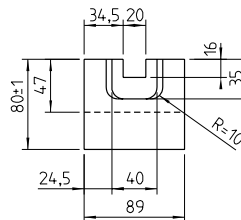
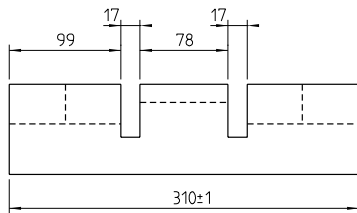
Material: Expanded polypropylene
 Density: 60 kg/m^3
 Color: Black
 Material: Expanderad polypropylen
 Densitet: 60 kg/m^3
 Färg: Svart

Item No.	-	Article No.	1JNL 100 109-267	Material, type etc.		Dimensions		Name of item	Packing Element	Note	
Qty	-										
Qual. control	K-O Eriksson										
Prepared	2006-01-26 S Dahlgren										
Approved	Patrik Karlsson										
Component Drawing				Project name							
Packing Element				HVDC Classic							
Tlynstör Module				Item designation							
Document number			Resp. Dept.		TVM		Rev. no.		1		
1JNL 100 109-273											
									Language		EN
									Sheet of		1/1

1 Dim WDS (175).
 Rev. no. Revision
 April Year Week
 06.25

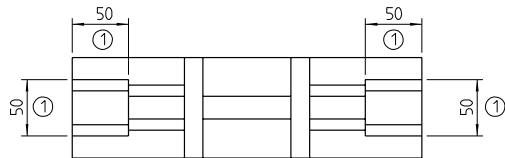
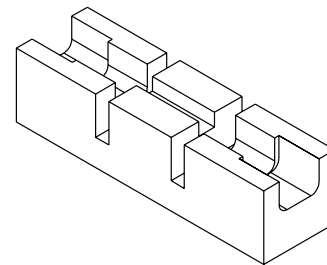
This document is issued by means of a computerized system.
 The digitally stored original is electronically approved.
 A manual signature is not required.

We reserve all rights in this document and in the information contained therein. Reproduction, use or disclosure to third parties without express authority is strictly forbidden. ©ABB Power Technologies AB (SE)



Tolerance ±0,5 where no other are stated
Tolerans ±0,5 där ej annat anges

Clearance 0,5°
Släppning 0,5°



Material: Expanded polypropylene
Density: 60 kg/m³
Color: Black

Material: Expanderad polypropylen
Densitet: 60 kg/m³
Färg: Svart

Draft control: K-O Eriksson Prepared: 2006-01-26 S Dahlgren Approved: Patrik Karlsson		Project name: HVDC Classic Item description:	
Component Drawing Packing Element Thyristor Module		Revs desc: TVM Document number: 1JNL 100 109-275	Rev ind: 1 Language: en
1 Grove 50 add. 06.25		ABB Power Technologies	
Rev ind / Revision		Year / Week Sheet of 1/1	

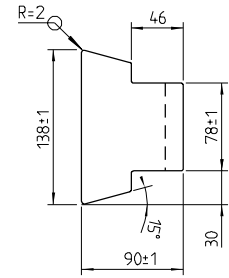
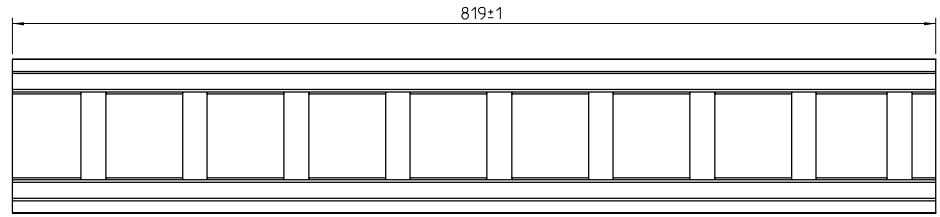
This drawing is issued by means of a computerized system.
 Information on origin, revision, status and the
 date of issue is available in the system.

This drawing is issued by means of a computerized system.
 Information on origin, revision, status and the
 date of issue is available in the system.

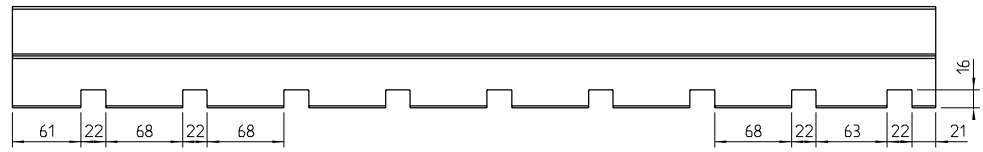
1 2 3 4 5 6

Inspection as shown in
Kontroll enligt 2098 069-3

A



B



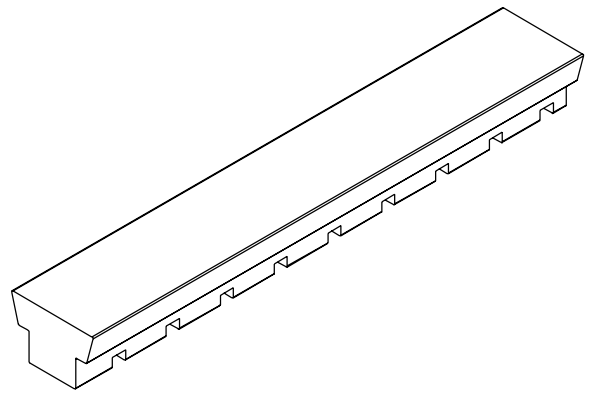
Clearance 0,5°
Släppning 0,5°

Tolerance ±0,5 where no other are stated
Tolerans ±0,5 där ej annat anges

Material: Expanded polypropylene
Density: 35 kg/m³
Color: Black

Material: Expanderad polypropylen
Densitet: 35 kg/m³
Färg: Svart

C



We reserve all rights in the documents and in the information contained therein. All rights reserved. ABB reserves all rights in the design and in the information contained therein.

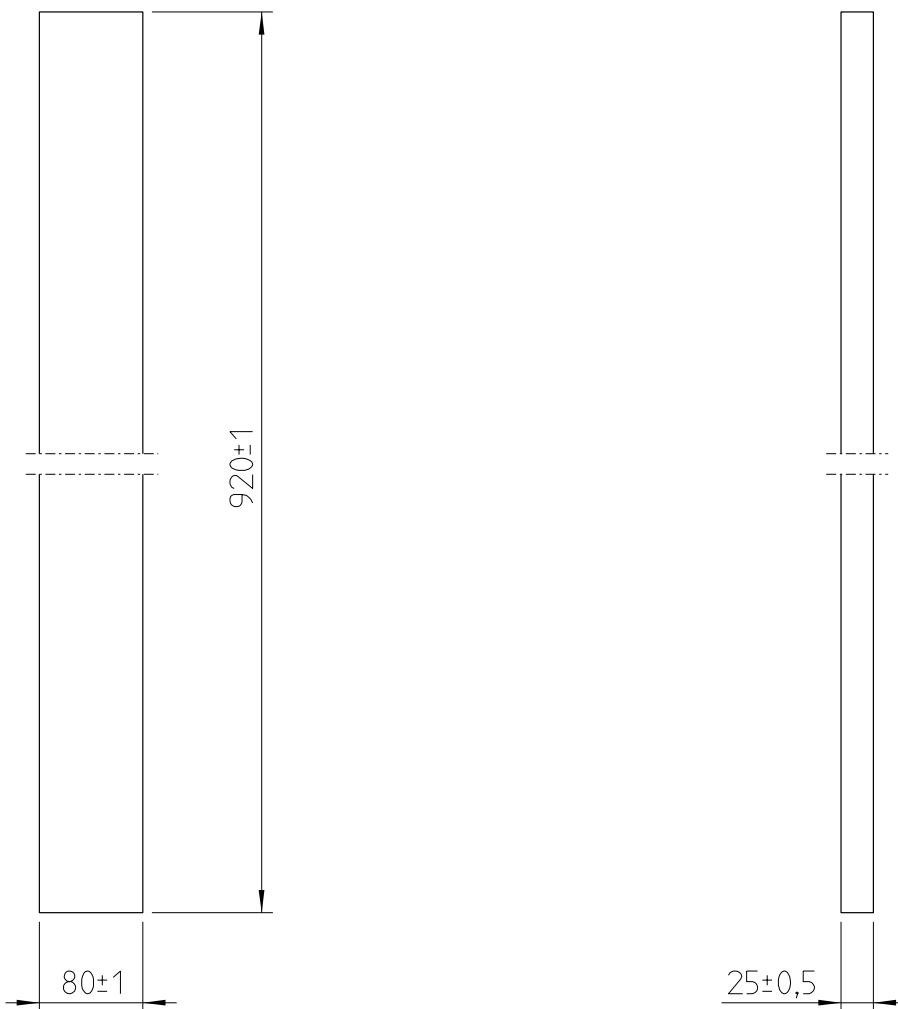
This document is issued by means of a computerized system. It contains information of a confidential nature. It is not to be distributed outside the company.

Desig. owner: K-O Eriksson Prepared: 2006-01-26 S Dahlgrén Approved: Patrik Karlsson		Project name: HVDC Classic	
Component Drawing Packing Element Thyristor Module		Rev. no: 0 Language: en	Item designation:
Rev. no: 0 Appr: [Signature] Year: 2006		Desig. no: TVM Document number: 1JNL 100 109-276	Sheet no: 1/1



Inspection as shown in
Kontroll enligt

2098 069-3





Material: Expanded polypropylene
Density: 35 kg/m³
Color: Black

Material: Expanderad polypropylen
Densitet: 35 kg/m³
Färg: Svart

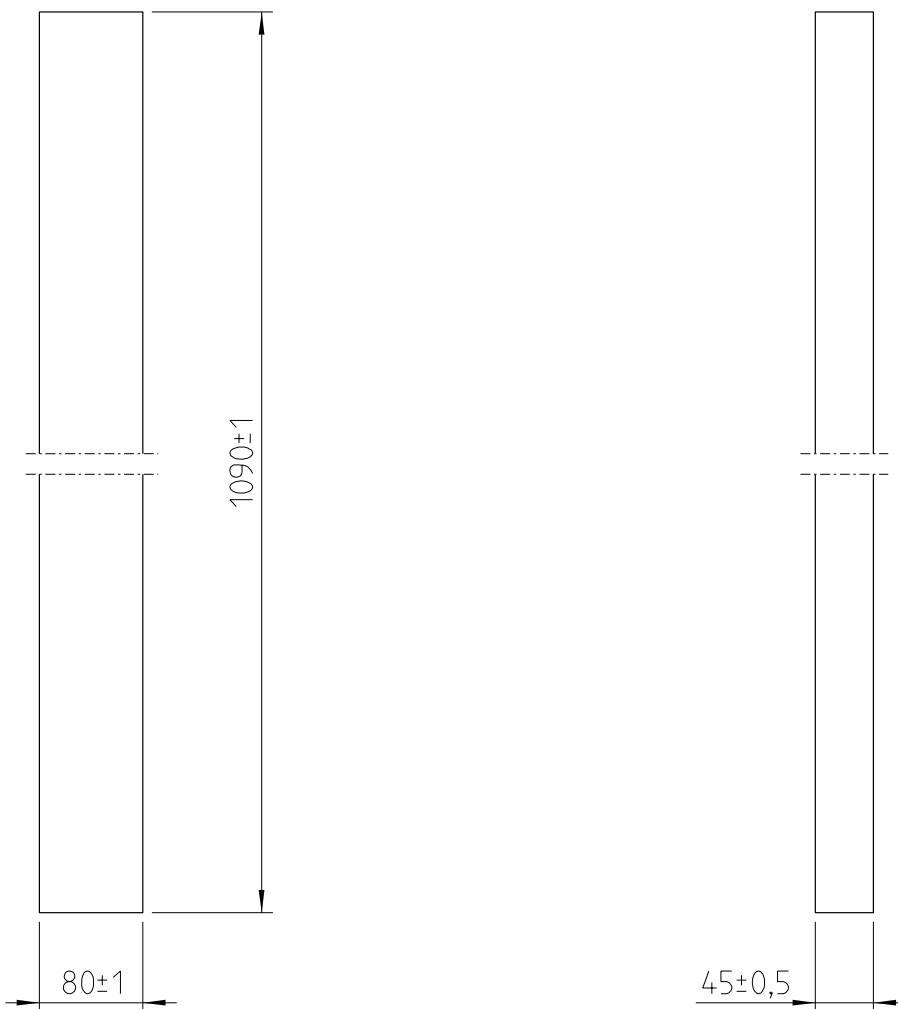
We reserve all rights in this document and in the information contained therein. Reproduction, use or disclosure to third parties without express authority is strictly forbidden. © ABB Power Technologies AB (SE)

This document is issued by means of a computerized system. The digitally stored original is electronically approved. A manual signature is not required.

Rev Ind	Revision	Appd	Year	Week				
Qual. control		K-O Eriksson			Project name			
Prepared		2006-01-26 S Dahlgren			HVDC Classic			
Approved		Patrik Karlsson			Item designation			
Component Drawing								
Packing Element								
Thyristor Module					Resp dept TVM			
					Rev ind 0	Language en		
Document number								
 ABB Power Technologies					1JNL 100 109-307			
								Sheet/ of

Inspection as shown in
Kontroll enligt

2098 069-3




Material: Expanded polypropylene
Density: 35 kg/m³
Color: Black

Material: Expanderad polypropylen
Densitet: 35 kg/m³
Färg: Svart

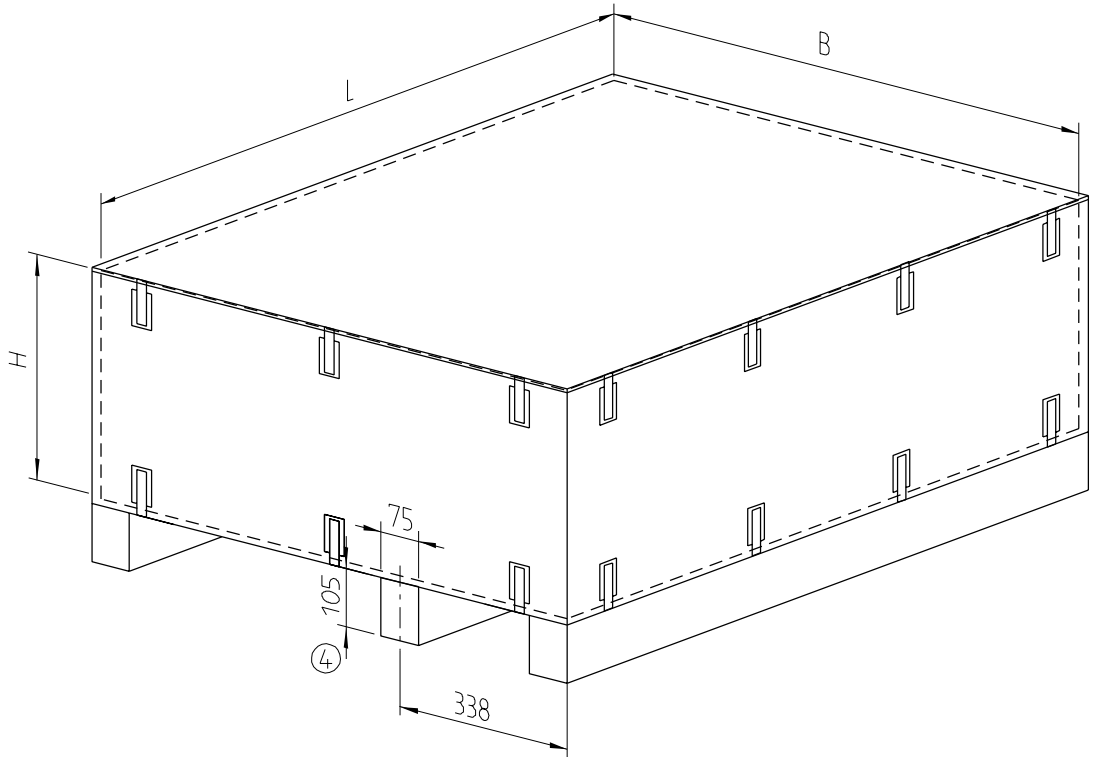
We reserve all rights in this document and in the information contained therein. Reproduction, use or disclosure to third parties without express authority is strictly forbidden. © ABB Power Technologies AB (SE)

This document is issued by means of a computerized system. The digitally stored original is electronically approved. A manual signature is not required.

Rev Ind	Revision	Appd	Year	Week		
Qual. control		K-O Eriksson			Project name	
Prepared		2006-01-26 S Dahlgren			HVDC Classic	
Approved		Patrik Karlsson			Item designation	
Component Drawing						
Packing Element						
Thyristor Module					Resp dept TVM	
					Rev ind 0	Language en
Document number						
1JNL 100 109-309						
					Sheet/ of 1/1	

Inspection as shown in
Kontroll enligt

2098 069-3



Leverantör: Nefab Emballage AB
822 00 ALFTA

NEFAB nr.	
Invändig LxBxH	1256x874x348
Plywood tjocklek	6 mm
Lock och sidor	
Botten	10 mm
Bottennarar	Tryckimpregnerade
Fästbeslag	Fjäderflikar

Rev ind	Revision	Appd	Year	Week
---------	----------	------	------	------

Qual. control K-O Eriksson

Prepared 2006-02-08 S Dahlgren

Approved Patrik Karlsson

Project name

HVDC Classic

Item designation

Component Drawing
Plywood Case
Thyristor Module

Resp dept TVM

Rev ind 0

Language en

Document number

1JNL 100 109-475



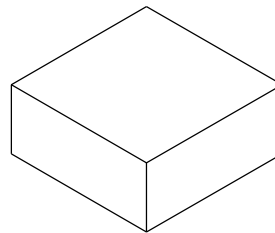
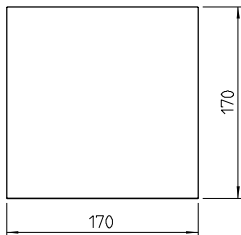
Sheet of 1/1

We reserve all rights in this document and in the information contained herein. Reproduction, use or disclosure to third parties without express authority is strictly forbidden. © ABB Power Technologies AB (SE)

This document is issued by means of a computerized system. The digitally stored original is electronically approved. A manual signature is not required.

Tolerance $\pm 0,5$ where no other are stated
Tolerans $\pm 0,5$ där ej annat anges

Clearance $0,5^\circ$
Släppning $0,5^\circ$



Material: Expanded polypropylene
Density: 60 kg/m^3
Color: Black

Material: Expanderad polypropylen
Densitet: 60 kg/m^3
Färg: Svart

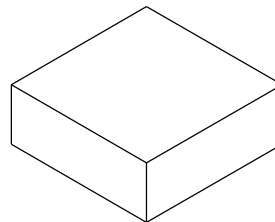
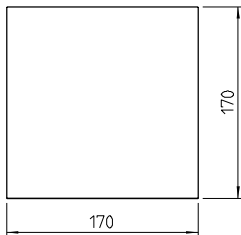
We reserve all rights in the documents and all the
 information contained therein for ABB Power
 Technologies AB. All rights reserved.

This document is issued by means of a computerized system.
 It contains information of a confidential nature.
 It is not to be distributed outside the company.

Desig. owner: K-O Eriksson		Project name:	
Prepared: 2006-02-08 S Dahlgrén		HVDC Classic	
Approved: Patrik Karlsson		Item designation:	
Component Drawing Packing Element Thyristor Module		Rev. desc: TVM	Rev. no: 0
Appr. Year:		Language: en	
ABB Power Technologies		Document number:	Sheet of: 1/1
1JNL 100 109-476			

Tolerance $\pm 0,5$ where no other are stated
Tolerans $\pm 0,5$ där ej annat anges

Clearance $0,5^\circ$
Släppning $0,5^\circ$



Material: Expanded polypropylene
Density: 60 kg/m^3
Color: Black

Material: Expanderad polypropylen
Densitet: 60 kg/m^3
Färg: Svart

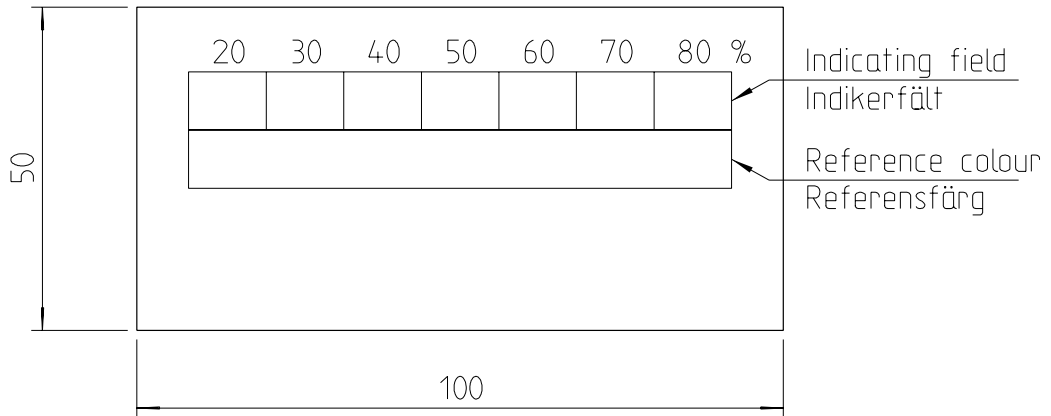
We reserve all rights in this document and all the
 information contained herein, including patents,
 trademarks, trade names, and other intellectual
 property rights, for ABB.

This document is issued by means of a computerized system.
 It contains information of a confidential nature.
 It is not to be distributed outside the company.

Draft person: K-O Eriksson Prepared: 2006-02-08 S Dahlgrén Approved: Patrik Karlsson		Project name: HVDC Classic Item designation:	
Component Drawing Packing Element Thyristor Module		Rev. desc: TVM Document number: 1JNL 100 109-477	Rev. no: 0 Language: en
ABB Power Technologies		Sheet of 1/1	

Inspection as shown in
Kontroll enligt


2098 069-3



Material: Paper adhesive
Material: Papper självhäftande

We reserve all rights in this document and in the information contained therein. Reproduction, use or disclosure to third parties without express authority is strictly forbidden. © ABB Power Technologies AB (SE)

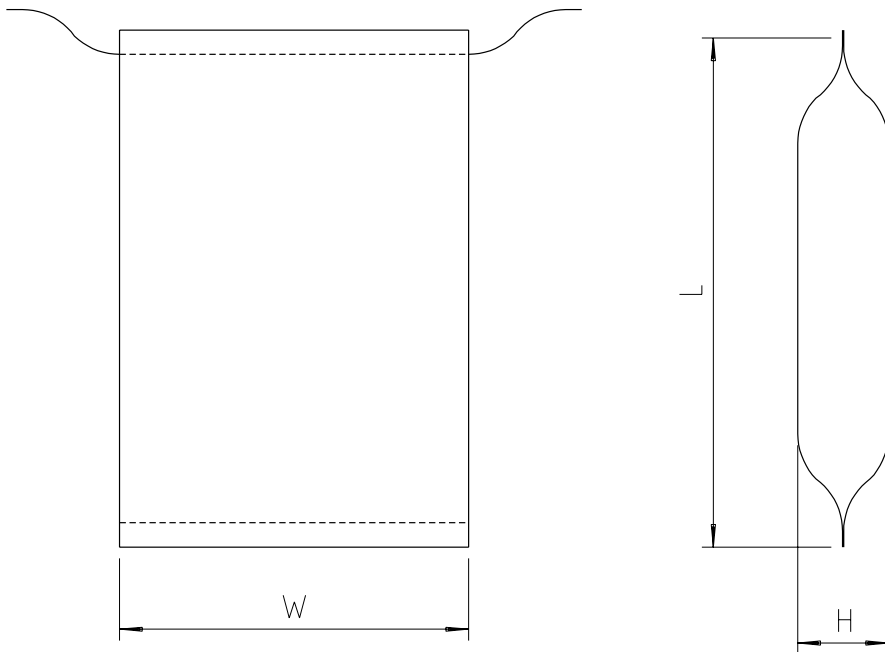
This document is issued by means of a computerized system. The digitally stored original is electronically approved. A manual signature is not required.

1 Updated		04.46	
Rev Ind	Revision	Appd	Year Week
Qual. control K-O Eriksson		Project name	
Prepared 1975-04-05 S Dahlgren			
Approved B Jacobson			
Component Drawing		Item designation	
Humidity Indicator			
Fuktighetsindikator			
Resp dept PTPS/DC/TVM		Rev ind 1	Language en
Document number			
ABB Power Technologies		2969 137-1	
			
Sheet/ of		1/1	

We reserve all rights in this document and in the information contained therein. Reproduction, use or disclosure to third parties without express authority is strictly forbidden. © ABB Power Technologies AB (SE)

This document is issued by means of a computerized system. The digitally stored original is electronically approved. A manual signature is not required.

Sub No.	Dimensions			Content Gram	Technical requirements according to DIN
	L	W	H		
-1	110	85	7	30	1- DIN 55 473-B
-2	130	100	10	63	2- DIN 55 473-B
-3	180	110	20	125	4- DIN 55 473-B
-4	200	130	30	250	8- DIN 55 473-B
-5	220	170	40	500	16- DIN 55 473-B
-6	250	200	50	1000	32- DIN 55 473-B
-7	80	60	5	10	1/3- DIN 55 473-B



6 Updated

04.46

Inspection as shown in
Kontroll enligt

2098 069-3

Rev ind	Revision	Appd	Year	Week	Project name		
Qual. control	K-O Eriksson						
Prepared	1975-04-05	S Dahlgren					
Approved	B Jacobson						
Component Drawing					Item designation		
Bag with Desiccants					Resp dept PTPS/DC/TVM Rev ind 6 Language en		
Påse med torkmedel							
Document number							
2969 138							
					Sheet/of 1/1		