

Domain :	bhel.abcprocure.com		
Parent department:	BHEL Trichy		
Unit name	: BHEL Trichy		
Purchase group	: FB Consumable-PRDN	RFQ/NIT/Enquiry Officer	: RAJAPRAKASH K
Event ID	: 32288	RFQ/NIT/Enquiry no.	: 1901900151
Enquiry Date	: 01/08/2019 05:30:00		
Tender Description	: SUPPLY OF FASTENERS		
Terms & Conditions	: REFER ATTACHED ANNEXURE-A FOR TERMS AND CONDITIONS		
Product / service / work keywords	: Fastener,		
No. of Bid Parts	: Multiple	Envelope	: Techno-commercial bid , Price bid
Type of contract	: Goods	Project duration / delivery or completion period	: 60 days
Download document	: Before login	RFQ floated under the policy	: PP-PURCHASE POLICY
Estimated Category	: L	No. of items already attached	: 74
Delivery/Location At	: BHEL TRICHY STORES	Delivery Date	: 15/09/2019 05:30:00
Inspection by Agency	: ENGINEER IN CHARGE, BHEL TRICHY	Inspection Location	: BHEL TRICHY
Min. bid required	: 2		
Bid submission configuration			
Bid evaluation	: Item wise	Bidding access	: Open Tender
Base currency	: INR	Bidding type	: NCB/Indigenous
Key configuration			
Pre-bid meeting	: Don't allow		
Dates configuration			
Document downloading start date	: 03/08/2019 14:30:00	Document downloading end date	: 14/08/2019 14:00:00
Bid submission start date	: 03/08/2019 14:30:00	Bid submission end date	: 14/08/2019 14:00:00
Bid opening date	: 14/08/2019 14:30:00		
Document / EMD / Security fee detail			

Document fees	:	Not required	EMD	:	Not required
Bidding forms					
PRICE BID					
PRICEBID TEMPLATE					
<u>Note:</u>					
Unit rate quoted should be exclusive of GST					
MATERIAL CODE	ITEM NAME	QUANTITY	UNIT OF MEASUREMENT		
000000411011002500	STUD M10X25 GR A 6.6 IS:1862	800.00	NO		
000000411011003500	STUD-M10x35 -6.6-IS1862-A-TL45	1000.00	NO		
000000411172718000	FT STUD-M27x180 -B7	200.00	NO		
000000412010402000	CHS HD SCRU-M4x20 -4.8-IS1366	140000.00	NO		
000000412010406500	CHS HD SCRU M4X65-4.8 IS:1366	1500.00	NO		
000000412020603000	SOC HD SCRU-M 6x30 -8.8-IS2269	1100.00	NO		
000000412101205000	SLOT GRB SCRU C M12X50-22H IS:2388	24000.00	NO		
000000412152010000	HEX HD BOLT M20X100,P.CL6.8 IS:1364(P-1)	3000.00	NO		
000000412210804000	BOLT-M 8x40 -4.6-IS1363P1	24000.00	NO		
000000412211294000	HEX HD BOLT M12X40-4.6 IS1363(P-1) CAD	60000.00	NO		
000000412211605000	BOLT-M16x50 -4.6-IS1363P1	1300.00	NO		
000000412212006000	HEX HD BOLT M20X60-4.6 IS:1363(P-1)	9000.00	NO		
000000412212007000	BOLT-M20x70 -4.6-IS1363P1	15000.00	NO		
000000412212411000	HEX HD BOLT M24X110-4.6 IS:1363(P-1)	1500.00	NO		
000000412212420000	HEX HD BOLT M24 X 200-4.6 IS:1363(P-1)	500.00	NO		
000000412220605000	HEX HD SCRU M6X50-4.6 IS:1363(P-2)	5000.00	NO		
000000412221293000	HEX HD SCRU M12X30-4.6 IS:1363(P-2)CAD	5000.00	NO		
000000412221604500	HEX HD SCRU-M16x45 -4.6-IS1363P2	205000.00	NO		
000000412221605000	HEX HD SCRU-M16x50 -4.6-IS1363P2	10000.00	NO		
000000412221605500	HEX HD SCRU-M16x55 -4.6-IS1363P2	56000.00	NO		
000000412221694000	HEX HD SCRU M16X40-4.6 IS:1363(P-2) CAD	600.00	NO		
000000412222005500	HEX HD SCRU-M20x55 -4.6-IS1363P2	14000.00	NO		

000000412222006000	HEX HD SCRU-M20x60 -4.6-IS1363P2	2500.00	NO
000000412222006500	HEX HD SCRU-M20x65 -4.6-IS1363P2	90000.00	NO
000000412222010000	HEX HDSCREW M20X100 IS:1363(PART-2)1984	3500.00	NO
000000412222406500	HEX HD SCRU M24X65-4.6 IS:1363(P-2)	6000.00	NO
000000412241105000	SCREW PLUG-G-1/2" -CL5.6 IS1879	300.00	NO
000000412371205000	BOLT-M12x50 -8.8-IS1364P1	1600.00	NO
000000412381092500	HEX HD SCRU-M10x25 -8.8-IS1364P2-CAD	4500.00	NO
000000412381605000	HEX SCREW M16X50 GR A8.8 IS: 1364(P2)	10000.00	NO
000000412381606000	HEX HD SCRU-M16x60 -8.8-IS1364P2	2000.00	NO
000000412442097000	HEX HD BOLT M20X70-10.9 IS:1364(P-1)CAD	1200.00	NO
000000412452406500	HEX HD SCRU M24X65-10.9 IS:1364(P-2)	4000.00	NO
000000413010001200	HEX NUT M12--6 IS:1364(P-3)	6000.00	NO
000000413010001600	NUT -M16 -CL6-IS1364P3	10000.00	NO
000000413010002400	NUT -M24 -CL6-IS1364P3 BPS 41301	2000.00	NO
000000413020091200	THIN NUT-M12 -CL5-IS1364P4-CAD	1600.00	NO
000000413020091600	HEX THIN NUT M16-05 IS:1364(P-4) CAD	1500.00	NO
000000413040000800	NUT -M 8 -CL4-IS1363P3	50000.00	NO
000000413040001200	NUT -M12 -CL4-IS1363P3	130000.00	NO
000000413040001600	NUT -M16 -CL4-IS1363P3	230000.00	NO
000000413040002000	NUT -M20 -CL4-IS1363P3	210000.00	NO
000000413040090800	HEX NUT M8-4 IS:1363(P-3) CAD(10-12MIC)	1500.00	NO
000000413040091200	HEX NUT M12-4 IS:1363(P-3)CAD(10-12 MIC)	71000.00	NO
000000413040091600	HEX NUT M16-4 IS:1363(P-3) CAD(10-12MIC)	14000.00	NO
000000413043004800	HEX NUT M48X3-14H IS:3138	2500.00	NO
000000413190002000	NUT -M20 -2H	13000.00	NO
000000413200091200	NUT -M12 -CL8-IS1364P3-CAD	2000.00	NO
000000413240002400	NUT -M24 -GR7	7000.00	NO
000000413240002700	NUT -M27 -GR7	3000.00	NO
000000413240003000	NUT -M30 -GR7	3500.00	NO
000000413243003600	NUT -M36x3 -GR7	3500.00	NO

000000413243004800	Hex Nut M48X3 GR B BPS 41324/04	6500.00	NO
000000413244007200	HEXNUT M72X4 GR B BPS 41324/04	4500.00	NO
000000413244009500	Nut M95X4 GR B BPS 41324/04	500.00	NO
000000414050091600	SPRING WASHER B16 IS:3063 CAD(10-12MIC)	4500.00	NO
000000414060001200	MCN WASHER-M12 -IS2016	5500.00	NO
000000414060001600	MCN WASHER-M16 -IS2016	16000.00	NO
000000414060092000	MACHINED WASHER 21 IS2016CAD (10-15 MIC)	2500.00	NO
000000414080000600	PUNCHED WASHER A 6.6(ID) IS:2016/LATEST	7500.00	NO
000000414080001200	PUN WASHER-M12 -IS2016-A	133000.00	NO
000000414080002000	PUN WASHER-M20 -IS2016-A	220000.00	NO
000000414080002400	PUN WASHER-M24 -IS2016-A	33000.00	NO
000000414080002700	PUN WASHER-M27 -IS2016-A	3300.00	NO
000000414110001200	PLAIN WASHER A 13 STEEL IS:5370	2500.00	NO
000000414110002200	Plain Washer A23 IS 5370/latest	1000.00	NO
000000414110002201	Plain washer A23 drwg No 4-08-380-04043	3000.00	NO
000000414120001600	SPRING WASHER-M16 -IS6735-SQ	6300.00	NO
000000417040505600	SPLIT PIN 5X56 IS:549 1974	1000.00	NO
000000417044003600	SPLIT PIN-4x36 -ST-IS549	11000.00	NO
000000948222422600	STUD M 24 X 3 X 220 SA193 B16	500.00	NO
000000948222423700	STUD M 24 X 3 X 230 SA193B7	70.00	NO
000000948223026600	STUD M30 X 3.5 X 260 SA193B16	450.00	NO
000000965104050000	BL HEX NUT M42 X 4.5 P CL 4 GR B STEEL	200.00	NO

Information for Online Participation

Bidder who wish to participate in this tender needs to procure Digital Certificate as per Information Technology Act-2000 using that they can digitally sign their electronic bids. Bidders can procure the same from any or the CCA approved certifying agencies, or they may contact e-Procurement Technologies Ltd. at below mentioned address and they will assist them in procuring the same. Bidders who already have a valid digital Certificate need not to procure the same. In case bidders need any clarification regarding online participation, they can contact,

e-Procurement Technologies Ltd.

Corporate Office:

Address : A-201/208, Wall Street - 2, Opp. Orient Club,
Nr. Gujarat College, Ellis Bridge,
Ahmedabad - 380006, Gujarat(INDIA)

Digital Certificate Contacts

Contact Person : Mr. Himalay Vaishnav
Cell : +91-9099090830
Phone Nos. : +91-9099090830
Fax No :
e-Mail : info@abcProcure.com

Support Team Contacts

Contact Person : BHEL Support Team Ahmedabad
Cell : +91-9265562819
Phone Nos. : +91-79-68136809/871/861/823/872
Fax No :
e-Mail : Bhel.Support@abcProcure.com

Bidder who wish to participate in e-Tender need to fill data in predefined forms of Price bid available in respective tender only. After filling data in predefined forms bidders need to click on final submission link to submit their encrypted bid. Bidder need to submit Document Fees, EMD & Reference Documents in hard copy if such instruction are given by tendering authority. As Per the new Inter-operability guidelines released by Controller of Certifying Authorities(CCA), the Secured Socket Layer(SSL) certificate for a e-procurement application is generated on a new algorithm, SHA2.

Also, the Digital Certificates that will be applicable for these platforms have to be SHA2 algorithm complaint. For the same, the users have to ensure that they have Windows XP(SP3)/Windows Vista/Windows7 installed in their respective PC/Laptop. In case of Windows XP Service pack - 3, if you get any issue you can install the SSL patch, which is available at our download section of our e-Tender/e-Auction Portal and also at our corporate website www.abcprocure.com just below the label of "Knowledge section".

Fraud Prevention

Bidder along with its associate/collaborators/sub-contractors/sub-vendors/consultants/service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

Preference to Make in India

For this procurement, Public Procurement (Preference to Make in India), order 2017 dated 15.06.2017 & 28.05.2018 and subsequent orders issued by the respective Nodal ministry shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/WO against this NIT. In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and/ or local content in respect of this procurement, same shall be applicable. Default margin of purchase preference shall be 20% to local suppliers with default minimum local content of 50%.



Annexure A

QUOTATIONS:

1.

a. Interested bidders / Suppliers shall submit their offer through e-Procurement mode at <https://bhel.abcpocure.com>. Offers in any other mode will not be accepted. For Enterprise Procurement System (EPS) Bidders/Suppliers are requested to follow these steps.

REQUIREMENTS

1. Computer with good Internet Connection (Minimum 256 kbps).
2. Operating System should be Windows Vista / Windows 7 and above.
3. Web Browsers: IE 9.0 (32-bit Browser only) & above, Mozilla Firefox up to version 51 (32 bit / 64 bit), Google Chrome 20.0 to 41.0
4. System Access with Administrator Rights
5. Digital Certificate: To participate in an e-Tender, you need to have a Class-II/III Digital Signature Certificate (DSC) for Signing & Encryption (Required both digital signature certificate: Signing & Encryption) of bids issued by any of the valid Certifying Authorities (approved by Controller of Certifying Authorities) in India. Valid Digital Signature Certificate (DSC) must be installed in a computer system from where you want to access the website.

Steps for registration & bidding:

For registration & submitting bids, vendors shall follow the link "Bidder manual for BHEL Bidders" in <https://bhel.abcpocure.com>.

In case of any assistance, please call the following Nos for support:

Contact: +91-79-40270549/560/590

General Conditions:

- a. Bidders are requested to quote their offer price on F.O.R Destination (BHEL/Stores) basis only (The basic price of the material quoted in the bid should be inclusive of Packing, Forwarding, freight and transit insurance, etc.,). Ex-works offers will be summarily rejected without further clarification.
 - b. No charges shall be indicated as "Lumpsum" or "Approximate" in absolute value. All charges like taxes and duties should be clearly specified as "percentage" of the quoted rates.
 - c. Manufacturer's name, trademark or patent no. if any should be specified. Illustrative leaflets giving technical particulars are required along with quotation wherever necessary.
 - d. Products with I.S.I. certification marks will be preferred.
 - e. The Purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept in Part or full without assigning any reason whatsoever.
 - f. The bidder has to keep track of any changes by viewing the addendum / Corrigendum's issued by the Purchaser on time-to- time basis in the E-Procurement platform. The Company calling for tenders shall not be responsible for any claims/problems arising out of this.
 - g. The user should complete all the processes and steps required for bid submission. The successful bid submission can be ascertained once acknowledgement is given by the system through bid submission number after completing all the processes and steps. BHEL and M/s. e-Procurement Technologies limited. will not be responsible for incomplete bid submission by users. Users may also note that the incomplete bids will not be saved by the system and are not available for the Purchaser for processing.
 - h. Before uploading scanned documents if any, the bidders shall sign on all the statements, documents, certificates uploaded by him, owning responsibility for their correctness / authenticity.
2. Offers should have a validity of minimum 90 days from the date of Tender opening. The quoted/Finalized rates shall be Firm till completion of the supplies including amendment / deviation / extension if any in quantity / date.
3. On the due date of tender opening, only technical bids will be opened. The opened technical bids will be evaluated by us and clarifications required, if any, will be called for from the bidders on technical and commercial points. If no reply is received from the vendor for the clarification raised by BHEL with in the final cut-off date those vendors offer will be processed with the documents available / submitted against

this tender. Offers not meeting the required specification and technical condition will be summarily rejected. The price bids of technically suitable bidders will be opened on a later date with prior intimation to techno-commercially suitable bidders.

4. Ranking L-1, L-2 etc. shall be done for individual items for the techno-commercially acceptable offers on landed cost to BHEL, Trichy basis and BHEL reserves the right to place order for individual items with different vendors. In the event of more than one vendor becoming L1 for the item, the enquiry quantity will be shared equally among all the L1 vendors.

5. BHEL reserves the right to negotiate with L1 vendor or re-float the tender for items where, L1 price is not the lowest acceptable price; BHEL reserves the right to increase or decrease the tender quantity.

6. TERMS OF PAYMENT: (Indigenous)

Payment term is 100% direct payment after 60 days from the date of receipt and acceptance of materials.

Any deviation in the above payment term will not be accepted.

7. LD clause & Risk purchase clause are applicable.

(Any deviations in the LD shall attract loading to the extent of relaxation sought to which it is not agreed by the bidder at offered value).

Single delivery schedule:

If the Supplier fails to deliver the P.O quantity within the period specified in the contract, then the Purchaser shall deduct liquidated damages, 0.5% of the total order value per week of delay or part thereof subject to a maximum of 10% of the total order value.

Staggered delivery schedule:

In case of staggered delivery schedule, if the Supplier fails to deliver the quantity of any line item of the P.O within the period specified in that line item, Purchaser shall deduct Liquidated Damages, 0.5% of the undelivered portion per week delay or part thereof subject to maximum of 10% of the total order value.

Liquidated Damages (LD): (Any deviations shall attract loading to the extent of relaxation sought to which it is not agreed by the bidder at offered value).

RISK PURCHASE: Alternatively the purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitutes therefor. The supplier shall be liable for any loss, which the purchaser may sustain by reason of such risk purchases in addition to penalty at the rate mentioned in LD clause above.

8. For supplies after implementation of New GST Return System i.e. from 01/10/2019, the following conditions will apply and supplier shall fully comply to the below points.

Indigenous suppliers:

1. *Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GST registration No (GSTIN) which should be clearly mentioned in the offer. If the dealer is exempted from GST registration, a declaration with due supporting documents need to be furnished for considering the offer. Dealers under composition scheme should declare that he is a composition dealer supported by the screen shot taken from GST portal. The dealer has to submit necessary documents if there is any change in status under GST.*
2. *Supplier shall mention their GSTIN in all their invoices (incl. credit Notes, Debit Notes) and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no etc., then the Invoice No. which is linked/uploaded in GSTN network shall be clearly indicated), Billed to party (with GSTIN) & Shipped to party details, item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, Place of Supply etc.*
3. *All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code).*

4. **Invoices** will be processed only upon completion of statutory requirement and further subject to following:
 - a. Vendor declaring such invoice in Form GST ANX-1
 - b. Receipt of Goods or Services and Tax invoice by BHEL
5. As the continuous uploading of tax invoices in GSTN portal (in GST ANX-1) is available for all (i.e. both Small & Large) tax payers under proposed new GST Return System, all invoices raised on BHEL may be uploaded immediately in GST portal on despatch of material /rendering of services. The supplier shall ensure availability of Invoice in GST portal before submission of invoice to BHEL. Invoices will be admitted by BHEL only if the invoices are available in GSTN portal (in BHEL's GST ANX-2).
6. In case of discrepancy in the data uploaded by the supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note or debit note (details also to be uploaded in GSTN portal) for the shortages or rejections in the supplies or additional claims, within the calendar month informed by BHEL.
7. In cases where invoice details have been uploaded by the vendor but failed to remit the GST amount to GST Department (Form PMT-08 or Form GST RET-01 to be submitted) within stipulated time, then GST paid on the invoices pertaining to the month for which GST return not filed by the vendor will be recovered from the vendor along with the applicable interest (currently 24% p.a) and all subsequent bills of the vendor will not be processed till filing of the GST return by the vendor
8. In case GST credit is denied to BHEL due to non-receipt or delayed receipt of goods and/ or tax invoice or expiry of timeline prescribed in GST law for availing such ITC, or any other reasons not attributable to BHEL, GST amount claimed in the invoice shall be disallowed to the vendor.
9. Where any GST liability arising on BHEL under Reverse Charge (RCM), the vendor has to submit the invoices to BHEL well within the timeline prescribed in GST Law, to enable BHEL to discharge the GST liability. If there is a delay in submission of invoice by the vendor resulting in delayed payment of GST by BHEL along with Interest, then such Interest payable or paid shall be recovered from the vendor.
10. Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers/contracts. Hence applicable GST shall also be recoverable from suppliers/contractors on LD amount. For this Tax Invoice will be issued by BHEL indicating the respective supply invoice number.
11. GST TDS will be deducted as per Section 51 of CGST Act 2017 and in line with Notification 50/2018 – Central Tax dated 13.09.2018. GST TDS certificate which will be generated in GST portal subsequent to vendor accepting the TDS deduction in the GST portal, will be issued to the vendor.

9. PACKING AND MARKING: The supplier shall arrange for securely protecting and packing the stores to avoid loss or damages during transit. The weight of each bags shall not be more than 25 Kg for ease handling.

10. Special Provisions for Micro and Small Enterprises (MSE) bidders:

- MSE sharing clause benefits will be applicable to MSE Manufacturers only and not for the Traders/ Dealers of Service Category - as per Office Memorandum circular of Micro, Small & Medium Enterprises, Clause – i, dt: 09.02.17.
- Declaration of Udyog Aadhar Memorandum (UAM) number by MSE bidder is mandatory to avail intended benefit available to MSEs as contained in Public Procurement Policy for MSEs Order, 2012 issued by MSME.
- Payment for MSE Indigenous vendors will be as per MSMED Act, 2006
- Bidders fail to submit will be considered as non-MSE bidder.
- At least 25% of the tendered quantity is earmarked for MSE suppliers in this tender. If L1 offer is from a Micro / Small enterprise, this provision is not applicable.
- Out of the 25% tendered quantity reserved for MSE suppliers, 6.25% shall be earmarked for procurement from MSE owned by SC / ST entrepreneurs. In the event of failure of such Micro and Small enterprises to participate in the tender process or meet the tender requirements and the L1 price, the 6.25% sub-target for procurement ear-marked MSE owned by SC / ST entrepreneurs shall be met with other MSE enterprise/s.
- Minimum of 3% reservation for women owned MSEs within the above mentioned 25% reservation. In the event of failure of such Micro and Small enterprises to participate in the tender process or meet the tender requirements and the L1 price, the 3% sub-target for procurement ear-marked MSE owned by women entrepreneurs shall be met with other MSE enterprise/s. (The definition for MSEs owned by Women Entrepreneurs is clarified as:
 - i) In case of proprietary MSE, proprietor shall be woman.
 - ii) In case of partnership MSE, the women partners shall be holding at least 51% share in the unit.

- iii) In case of private limited companies, at least 51% share shall be held by the women promoters.
- In the event of more than one vendor becoming L1 for any of the item, the enquiry quantity for the items will be shared equally among all the L1 vendors.
- 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 in acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (Format enclosed as per Annexure I where deemed validity of EM II certificate of five years have 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 1 in case of two part bid). Non submission of such documents will lead to consideration of their bids at par with other bidders. No benefits shall be applicable for the enquiry if any deficiency in the above required documents is not submitted before the 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. This provision for MSE will apply subject to the condition that the participating MSE meets the tender requirements.
- In case of any change in the MSE status of the bidder, it shall be the responsibility of the bidder to notify the change as a part of the bid document. If at a later date it comes to the knowledge of BHEL, that the change in the status has not been intimated by the bidder and the order is obtained under the premise of an MSE then BHEL would cancel the pending order against this tender and take necessary steps for suspension of the business dealing with the bidder as per the procurement policy of BHEL.
- All supplier (new/old) will be eligible for registration/renewal with BHEL as MSE supplier and provided at least any one of the following documents are submitted along with tender documents
 - a) Valid NSIC Certificate (or)
 - b) Entrepreneurs Memorandum part II (EM II) certificate (valid based on deemed validity of 5 years) (or)
 - c) EM II certificate along with attest copy of CA certificate (as per prescribed format at Annexure-I) applicable for the relevant financial year (latest audited), where the deemed validity of EM II is over. However credential of all MSE suppliers will be verified before considering the intended benefits for MSE suppliers as per clause (i) at the time of tender evaluation.
 - d) Udyog Aadhar memorandum with Attested copy of latest audited CA certificate (relevant financial year as per prescribed format at Annexure-I).

11. Sharing of Quantity

11.1. For the Items mentioned in Annexure-S: (Where Split ratio of 60:40 is applicable)

- a. 40% of the tendered quantity is earmarked for MSE suppliers for these items. The earmarked 40% quantity will be counter offered to the MSE vendors whose rate is within L1+15% band & up to H1 of MSE. In case of non-acceptance of the counter offering of 40% reservation to MSE vendors, the total tender quantity will be ordered as mentioned in 11.1 (c). For the balance 60% of the tendered quantity, BHEL reserves the right to order on L1 vendor irrespective of the category (MSE or NON MSE). Counter offering of L1 rate will not be made with any H1 vendor of Non-MSE
- b. If L1 is from a Micro / Small enterprise, the 40% earmarking provision is not applicable and order will be split in the ratio of 60:40 (between L1, L2 / L3 at matched L1 F.O.R rate in the order of commercial ranking). Counter offering of L1 rate will not be made with any H1 vendor of Non-MSE.
- c. If there is no response from MSE vendors, the above split up of 11.1 (a) & 11.1 (b) will not be applicable and the total tender quantity will be split and ordered in the ratio of 60:40 (between L1 , L2 / L3 at matched L1 F.O.R rate in the order of commercial ranking).
- d. In case of counter offering rate has not been accepted by the L2 as well as L3 vendor, such counter offer quantity also will be ordered on L1 vendor.
- e. The quantities indicated in this tender are tentative annual requirement of BHEL. Order will be placed on actual requirement basis.

11.2. For the Items not covered in Annexure-S: (Where Split ratio of 60:40 is not applicable)

- a. In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the entire quantity of that item subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately.

b. In case of counter offering rate has not been accepted by MSE vendors, entire quantity will be ordered on L1 vendor.

12. Conditional offers are likely to be rejected.

13. The correspondences between the bidder and BHEL through email are considered as valid document legally though not signed. It is treated as valid confirmations made on behalf of the respective company and comes under the legal ambit of the business transaction and hence binding on both the parties.

14. Disclaimer Clause: Neither the Organization (Bharat Heavy Electricals Ltd.) nor the service provider (M/s. e-Procurement Technologies limited.) is responsible for any failure of submission of bids due to failure of internet or other connectivity problems or reasons thereof.

15. Bidders participating in the tender should declare in their technical bid whether they have been black-listed / kept on hold / given Business holiday for a specified period by any Public Sector Undertaking or Government Departments. The reasons for such action with details and the current status of such hold shall be clearly furnished to BHEL. If no such details are mentioned in the offer, it will be construed that the bidder is not under any such hold. However, at a later date if it comes to the notice of BHEL about any such hold under enforcement, BHEL reserves the right to reject the offer at any point of time and also under any stage of the finalization of the tender. Such bidders will not be permitted to participate in the further tender proceedings and will be communicated suitably.

16. BHEL reserves the right to negotiate or re-float the enquiry opened if L1 price is not the lowest acceptable price to them inter-alia other reasons.

17. In case of any quality rejection of materials, the supplier has to collect the materials at his own cost within the 10 days of rejection of advice. Otherwise the materials will be scrapped

18. Unloading at BHEL has to be done by the suppliers and BHEL will not be in a position to provide any handling / unloading facilities.

19. Bidders not confirming to the enquiry specifications will be disqualified.

20. If Guarantee / Warranty period is applicable as per tender specification, No deviation permitted and deviated offers are liable for rejection.

21. IMPORTANT NOTE: BHEL WILL CONSIDER THE RANKING AFTER THE LOADING IS APPLIED AS REFERRED ABOVE WHEREVER DEVIATIONS ARE OBSERVED.

22. No revision of prices will be entertained at any circumstances after tenders are opened.

23. The Tender Due date falling on public holiday due to any circumstances, the tender will be opened on next working day.

25. Delivery goods/ items should be securely and suitably packed to avoid transit damages.

26. The vendor should attach scanned copies of the following annexures duly filled in, sealed and signed by the vendor (Part-I).

- Annexure I (CA certificate).

- Annexure A (Terms and conditions).

- Annexure B (Commercial confirmation format).

27. The commercial confirmation format (as per annexure B) should be submitted along with the technical bid, without fail. Terms and conditions to be confirmed /accepted/mentioned in your technical bid and the format (which we have mentioned in our enquiry as per annexure B) should be the same, without any variation/deviation. In case of variation/deviation between the technical bid and format, the details furnished in the format (as per annexure B) only are considered for evaluation.

28. Quantity tolerance of +0 & -1% is applicable for all items of this enquiry.

29. Any communication / clarification regarding the tender shall be sent to the following

E-mail: pgavictor@bhel.in

Phone no. 0431-2577645

Annexure E (Delivery Schedule 50% of the Quantity within 6 weeks from the date of PO & Balance 50% within 8 weeks from the date of PO)

Sl. No	Material	Short Text	Quantity
40	412010402000	CHS HD SCRU-M4x20 -4.8-IS1366	1,40,000.000
70	412101205000	SLOT GRB SCRU C M12X50-22H IS:2388	24,000.000
90	412210804000	BOLT-M 8x40 -4.6-IS1363P1	24,000.000
100	412211294000	HEX HD BOLT M12X40-4.6 IS1363(P-1) CAD	60,000.000
120	412212006000	HEX HD BOLT M20X60-4.6 IS:1363(P-1)	9,000.000
130	412212007000	BOLT-M20x70 -4.6-IS1363P1	15,000.000
180	412221604500	HEX HD SCRU-M16x45 -4.6-IS1363P2	2,05,000.000
190	412221605000	HEX HD SCRU-M16x50 -4.6-IS1363P2	10,000.000
200	412221605500	HEX HD SCRU-M16x55 -4.6-IS1363P2	56,000.000
220	412222005500	HEX HD SCRU-M20x55 -4.6-IS1363P2	14,000.000
240	412222006500	HEX HD SCRU-M20x65 -4.6-IS1363P2	90,000.000
260	412222406500	HEX HD SCRU M24X65-4.6 IS:1363(P-2)	6,000.000
300	412381605000	HEX SCREW M16X50 GR A8.8 IS: 1364(P2)	10,000.000
340	413010001200	HEX NUT M12--6 IS:1364(P-3)	6,000.000
350	413010001600	NUT -M16 -CL6-IS1364P3	10,000.000
390	413040000800	NUT -M 8 -CL4-IS1363P3	50,000.000
400	413040001200	NUT -M12 -CL4-IS1363P3	1,30,000.000
410	413040001600	NUT -M16 -CL4-IS1363P3	2,30,000.000
420	413040002000	NUT -M20 -CL4-IS1363P3	2,10,000.000
440	413040091200	HEX NUT M12-4 IS:1363(P-3)CAD(10-12 MIC)	71,000.000
450	413040091600	HEX NUT M16-4 IS:1363(P-3) CAD(10-12MIC)	14,000.000
470	413190002000	NUT -M20 -2H	13,000.000
490	413240002400	NUT -M24 -GR7	7,000.000
530	413243004800	Hex Nut M48X3 GR B BPS 41324/04	6,500.000
570	414060001200	MCN WASHER-M12 -IS2016	5,500.000
580	414060001600	MCN WASHER-M16 -IS2016	16,000.000
600	414080000600	PUNCHED WASHER A 6.6(ID) IS:2016/LATEST	7,500.000
610	414080001200	PUN WASHER-M12 -IS2016-A	1,33,000.000
620	414080002000	PUN WASHER-M20 -IS2016-A	2,20,000.000
630	414080002400	PUN WASHER-M24 -IS2016-A	33,000.000
680	414120001600	SPRING WASHER-M16 -IS6735-SQ	6,300.000
700	417044003600	SPLIT PIN-4x36 -ST-IS549	11,000.000

Annexure S (Items where 60:40 Split is applicable)			
S. No	Material	Short Text	Quantity
70	412101205000	SLOT GRB SCRU C M12X50-22H IS:2388	24,000.000
90	412210804000	BOLT-M 8x40 -4.6-IS1363P1	24,000.000
100	412211294000	HEX HD BOLT M12X40-4.6 IS1363(P-1) CAD	60,000.000
120	412212006000	HEX HD BOLT M20X60-4.6 IS:1363(P-1)	9,000.000
130	412212007000	BOLT-M20x70 -4.6-IS1363P1	15,000.000
180	412221604500	HEX HD SCRU-M16x45 -4.6-IS1363P2	2,05,000.000
200	412221605500	HEX HD SCRU-M16x55 -4.6-IS1363P2	56,000.000
220	412222005500	HEX HD SCRU-M20x55 -4.6-IS1363P2	14,000.000
240	412222006500	HEX HD SCRU-M20x65 -4.6-IS1363P2	90,000.000
260	412222406500	HEX HD SCRU M24X65-4.6 IS:1363(P-2)	6,000.000
300	412381605000	HEX SCREW M16X50 GR A8.8 IS: 1364(P2)	10,000.000
330	412452406500	HEX HD SCRU M24X65-10.9 IS:1364(P-2)	4,000.000
400	413040001200	NUT -M12 -CL4-IS1363P3	1,30,000.000
410	413040001600	NUT -M16 -CL4-IS1363P3	2,30,000.000
420	413040002000	NUT -M20 -CL4-IS1363P3	2,10,000.000
440	413040091200	HEX NUT M12-4 IS:1363(P-3)CAD(10-12 MIC)	71,000.000
460	413043004800	HEX NUT M48X3-14H IS:3138	2,500.000
470	413190002000	NUT -M20 -2H	13,000.000
490	413240002400	NUT -M24 -GR7	7,000.000
510	413240003000	NUT -M30 -GR7	3,500.000
520	413243003600	NUT -M36x3 -GR7	3,500.000
530	413243004800	Hex Nut M48X3 GR B BPS 41324/04	6,500.000
540	413244007200	HEXNUT M72X4 GR B BPS 41324/04	4,500.000
550	413244009500	Nut M95X4 GR B BPS 41324/04	500.000
620	414080002000	PUN WASHER-M20 -IS2016-A	2,20,000.000



PLANT STANDARD

HPBP TIRUCHIRAPPALLI

BPS 41117

Rev. No. 02

PAGE 1 OF 2

STUD BOLTS FOR TEMPERATURE USE

(For medium of Temperature upto 425°C)

1.0 SCOPE

Covers the requirements for Stud Bolts for use in medium of temperature 425°C in the size range M12 to M39x3.

2.0 SPECIFICATION AND REFERENCE STANDARDS

Dimensions and preferred sizes	Fig 1 & Table 1 of this standard	
Preferred length size combination	Table 1 of this standard	
Tolerance	Product grade	A
	Indian Standard	IS: 1367 (Part 2)
Thread	Pitch	Table 1 of this standard
	Tolerance	6g
	Indian Standard	IS 4218 (Part 3, 5 & 6)
Material	Steel according to ASTM A193 - B7 Certified in quenched and tempered condition	
Manufacture	Thread rolling up to M24	
Mechanical Properties	As specified in ASTM A193-B7	
Marking	All studs shall be stamped B7 on any one side	
General requirements	Studs shall comply with TDC:5:164 in respect of requirements not covered in this standard except for cadmium plating.	

2.1 Referred standards (Only current versions are applicable)

IS 1367 Part 2	Technical supply conditions for threaded steel fasteners
IS 1368	Dimensions for ends of parts with external ISO metric threads
IS 4218 Part 3, 5 & 6	ISO metric screw threads
ASTM A193	Specification for alloy steel and stainless steel bolting material for high temperature service
TDC:5:164	TDC for alloy steel studs to specification ASTM SA193 Gr B7 / B7m / B16 oil field equipment

3.0 DESIGNATION

A Grade 'A' Stud to this standard of thread size M16 and nominal length 90mm shall be designated as:

3.1 On Drawings

i) Material Specification column	A193 - B7
ii) Description Column	STUD BOLT GR A T425 M16x90
iii) Drawing Number Column	BPS 41117
iv) Material Code column:	4111716090

Revisions Brought upto date			Approved STANDARDS SECTION CONTRACT ENGINEERING AND CO-ORDINATION HPBP, TIRUCHIRAPPALLI		
Rev. No. 02	Amd. No.	Reaffirmed	Prepared	Issued	Dt of 1st Issue
Dt. JUN. 1997	Dt.	Year	STANDARDS	STANDARDS	DEC 1986

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PLANT STANDARD

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3.2 Ordering Description

For placing indents, issuing enquiries and on purchase order, Ordering Description given below shall be followed.

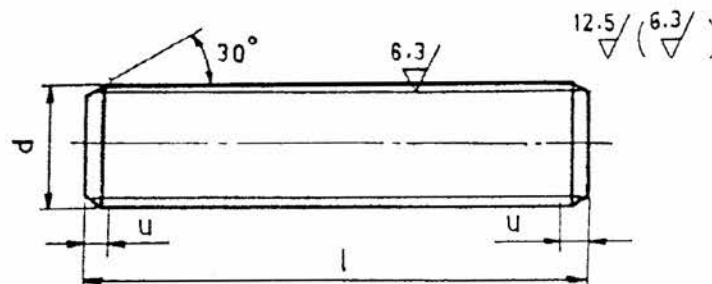
Stud M16x90 - BPS: 41117 A - ASTM A193-B7

4.0 ADDITIONAL INFORMATION

4.1 Copies of this standard and TDC:5:164 shall be enclosed along with the purchase order

FIG. 1. DIMENSIONS FOR STUD BOLTS

(All dimensions are in millimetres)



'u' according to IS:1368

TABLE 1 PREFERRED LENGTH - SIZE COMBINATION FOR STUD BOLTS

(All dimensions are in millimetres)

Thread Size d	Nominal Length (l)																	
	60	70	80	90	100	110	120	130	140	150	160	170	180	200	225	240	250	280
	Weights																	
M12		62	70.9															
M16				135.9	151.7		183.3										357.1	
M20				221.9			280.9		303									
M24							390.4			496.9			603.4					
(M27)									591.4				770.8					
M30									722.9		832.4							
(M33)													1208.6					
(M39x3)														1875.7				

Note:

1. Preferred lengths are in between the stepped bold lines
2. Weights are given in Kg per 1000 numbers only
3. Sizes in brackets are non-preferred



PLANT STANDARD

HPBP TIRUCHIRAPPALLI

BPS 41221

Rev. No. 02

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HEXAGON HEAD BOLTS, PRODUCT GRADE 'C'

(Property Class 4.6)

1.0 SCOPE

Covers the requirements of Hexagon Head Bolts in the size range M36x3 and above.

2.0 SPECIFICATION AND REFERENCE STANDARDS

Dimensions and preferred sizes	Table 1 of this standard	
preferred length size combination	Table 2 of this standard	
Tolerance	Product Grade C	
	Indian Standard	IS 1367 (Part 2)
Thread	Pitch	Table 1 of this standard
	Tolerance	8g
	Indian Standard	IS 4218 (Part 3, 5 & 6)
Material	Steel	
Mechanical properties	Property class	4.6
	Indian Standard	IS 1367 (Part 3)
Sampling & Acceptability	Indian Standard	IS 1367 (Part 17)
General requirements	Hexagon Head bolts shall comply with IS 1363 (Part 1) in respect of requirements not covered in this standard.	

2.1 Referred Standards (Only the relevant parts of current versions are applicable)

IS 1363(Part 1)	Specification for hexagon head bolts, screws and nuts of product grade C. Part 1 Hexagon Head bolts.
IS 1367 (Parts 2,3)	Technical supply conditions for threaded steel fasteners.
IS 1367 Part 17	Industrial fasteners - Threaded steel fasteners-Technical supply conditions:Part 17 - Inspection, sampling and acceptance procedure.
IS 4218	ISO Metric screw threads

3.0 DESIGNATION

A Grade C, Hexagon Head Bolt to this standard of thread size M36x3 and nominal length 180 mm shall be designated as:

Revisions 02 Brought upto date

Approved

STANDARDS SECTION
PRODUCT ENGINEERING / FOSSILE BOILER
HPBP, TIRUCHIRAPPALLI

Rev. No. 02	Amd. No.	Reaffirmed	Prepared	Issued	Dt of 1st Issue
Dt. 31-07-2000	Dt.	Year	STANDARDS	STANDARDS	DEC 1986

3.1 On Drawings:

- i) Description column : **BOLT HEX Gr C 4.6- M36x3 x 180**
- ii) Drawing Number column : **BPS 41221**
- iii) Material Code column : **4122136180**

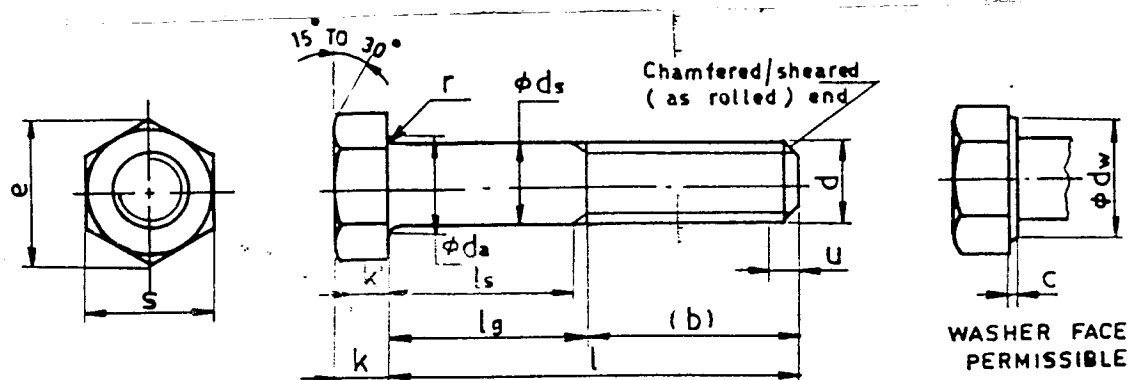
3.2 Ordering Description

For placing indents, issuing enquiries and on purchase order, ordering description given below shall be followed (typical examples).

Hexagon head bolt M36X3 x 180 - BPS: 41221-4.6

4.0 ADDITIONAL INFORMATION

- 4.1 Copies of this standard shall be enclosed along with the purchase order for thread sizes M36x3 and above.



k' = Effective gauging height.

Table - 1
DIMENSIONS FOR HEXAGON BOLT
(All dimensions are in millimetres)

Thread size d	Pitch P	b * ** ***	c Max	da Max	ds Max Min	dw Min	e Min	k Min Max	k' Min	r Min	s Max Min
M 36x3	3	78 84 97	0.8	42.4	37 35	51.1	60.79	21.45 23.55	15.0	1.0	55 53.8
(M39x3)	3	84 90 103		45.4	40 38		66.44	23.95 26.05		1.0	60 58.8

NOTE :

- "u" according to "CE" of IS :1368- Dimensions of ends of bolts and screws.
- * For nominal lengths 'l' ≤ 125 mm
- ** For nominal lengths 'l' > 125 and ≤ 200 mm
- *** For nominal lengths 'l' > 200 mm
- lg Max (grip length) = l Nom - b
- ls Min (shank length) = lg Max - 5 x Pitch



PLANT STANDARD

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BPS 41221

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TABLE 2
PREFERRED LENGTH- SIZE COMBINATION
FOR HEXAGON HEAD BOLTS
(All dimensions are in mm)

Thread size d M36x3 (M39x3)

Nom. Length 'l'

Nom	Min	Max
110	108.25	111.75
120	118.25	121.75
130	128	132
140	138	142
150	148	152
160	156	164
(170)	166	174
180	176	184
(190)	186	194
200	195.4	204.6
220	215.4	224.6
240	235.4	244.6
260	254.8	265.2
280	274.8	285.2
300	294.8	305.2

Note:

1. Size in brackets are non-preferred.
2. Preferred lengths are in between the stepped bolt lines.
3. Weights are given in Kg per 1000 numbers only.



PLANT STANDARD

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BPS 41304

Rev. No. 02

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HEXAGON NUTS, PRODUCTS GRADES 'B' & 'C'

(Property Class 4 & 14H)

1.0 SCOPE

Covers the requirements of hexagon nuts in the size range M27, M33 and above

2.0 SPECIFICATION AND REFERENCE STANDARDS

Dimensions and preferred sizes	Fig 1 & Table 1 of this standard	
Tolerance	Product grade	C for nuts with d ≤ M64 B for nuts with d > M64
	Indian Standard	IS 1367 (Part 2) for nuts with d ≤ M39x3 IS: 3138 for nuts with d ≥ m42x3
Thread	Pitch	Table 1 of this standard
	Tolerance	7H for nuts with d ≤ M39x3 6H for nuts with d ≥ M42x3
	Indian Standard	IS 4218 (Part 3, 5 & 6)
Material	Steel	
Mechanical properties	Property class	4 for nuts with d ≤ M39x3 14H for nuts with d ≥ M42x3
	Indian standard	IS: 1367 (Part 6&7)
Sampling and Acceptability	Indian Standard	IS: 1367 (Part 17)
General requirements	Nuts shall comply with IS: 1363 part 3 and IS: 3138 in respect of requirements not covered in this standard	

2.1 Referred standards (only current versions are applicable)

IS: 1367 (Part 2, 6, 7 & 17)

IS: 3138

IS: 4218 (Part 3, 5 & 6)

Technical supply conditions for threaded steel fasteners

Specification for hexagon bolts and nuts

ISO Metric screw threads

3.0 DESIGNATION

A Grade 'C' hexagon nut to this standard of thread size M36x3 shall be designated as :

3.1 On Drawings

i) Material Specification column

ii) Description Column

iii) Drawing Number Column

iv) Material Code column:

HEX NUT GR C M36x3-4

BPS 41304

4130400036

Revisions

Brought upto date

Approved

STANDARDS SECTION
CONTRACT ENGINEERING AND CO-ORDINATION
HPBP, TIRUCHIRAPPALLI

Rev. No. 02

Amd. No.

Reaffirmed

Prepared

Issued

Dt of 1st Issue

Dt. JUN 1997

Dt.

Year

STANDARDS

STANDARDS

DEC 1986

3.2 Ordering Description

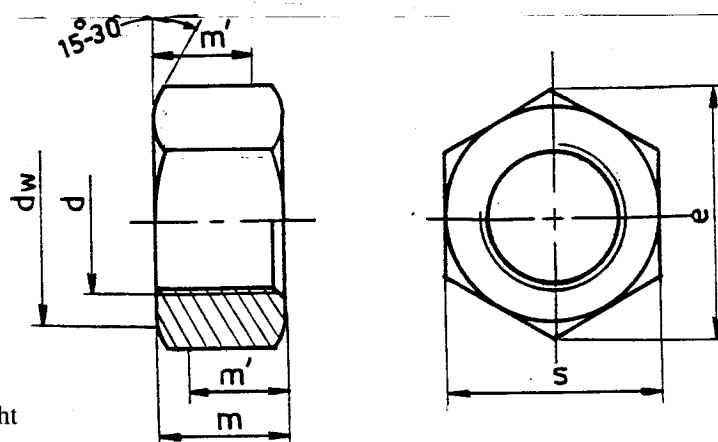
For placing indents, issuing enquires and on purchase order, ordering description given below shall be followed. (Typical examples)

- i) HEXAGON NUT M33 TO BPS:41304 for nuts with $d=M27$ & M33
- II) HEXAGON NUT M36x3 TO BPS:41304 for nuts with $d \geq M36X3$

4.0 ADDITIONAL INFORMATION

Copies of this standard shall be enclosed alongwith the purchase order for thread sizes M27,M33 and above.

FIG. 1 DIMENSIONS FOR HEXAGON NUTS
(All dimensions are in millimetres)



'm' = Effective gauging height

TABLE 1
(All dimensions are in millimetres)

Thread Size d	d_w Min	m		m' Min	s		e		Weight
		Max	Min		Max	Min	Min	Max	
(M27)		22.65	21.35		41	40.0	45.20		166
(M33)		26.65	25.35		50	49.0	55.37		299
M36x3	51.1	31.5	29.4	23.5	55	53.8	60.79		364
(M39x3)		31.8	30.2		60	58.8	66.44		485
(M45x3)		36.0	35.0		70	68.8		80.8	750
M48x3		38.0	37.0		75	73.8		86.5	935
M56x4		45.0	44.0		85	83.6		98	1355
(M60x4)		48.0	47.0		90	88.6		104	1625
M72x4		58.0	56.8		105	103.6		121	2430
M80x4		64.0	62.8		115	113.6		133	3190

NOTE :

1. Sizes in brackets are non-preferred.
2. Weights are given in Kg per 1000 numbers only.



PLANT STANDARD

HPBP TIRUCHIRAPPALLI

BPS 41324

Rev. No. 04

PAGE 1 OF 2

NUTS FOR HIGH TEMPERATURE USE

(For medium of temperature from 525°C to 565°C)

1.0 SCOPE

Covers the requirements of hexagon nuts for use in medium of temperature from 525°C to 565°C and in the size M10 to M95x4.

2.0 SPECIFICATION AND REFERENCE STANDARDS

Dimensions and preferred sizes	Fig 1 & Table 1 of this standard	
Tolerance	Product grade	A for nuts with $d \leq M16$ B for nuts with $d > M16$
	Indian Standard	IS: 1367 :Part 2
Thread	Pitch	Table 1 of this standard
	Tolerance	6H
	Indian Standard	IS 4218: Part 3
Material	Steel to ASTM A194 Gr 7 certified in quenched and tempered condition	
General requirements	Nuts shall comply with TDS:5:166 in respect of requirements not covered in this standard except for cadmium plating.	

2.1 Referred standards (Only current versions are applicable)

IS 1367: Part 2 Technical supply conditions for threaded steel fasteners

IS 4218: Part 3 ISO metric screw threads

ASTM A194 Specification for carbon and alloy steel nuts for bolts for high pressure and high temperature service

TDS:5:166 Carbon & Alloy Steel Nuts to Specification SA 194 Gr2H/2HM/Gr4/Gr7 for Valves, Oil Field Equipment & other applications.

3.0 DESIGNATION

A Grade 'A' hexagon nut to this standard of thread size M10 shall be designated as:

3.1 On Drawings

- i) Material Specification column ASTM A 194 Gr 7
- ii) Description Column HEX NUT GR A T525 - 565 M10
- iii) Drawing Number Column BPS 41324
- iv) Material Code column: 4132400010

Revision 04 Size M64x6 Added			Approved STANDARDS SECTION I.T. SOLUTIONS & SERVICES HPBP, TIRUCHIRAPPALLI		
Rev. No. : 04	Amd. No.	Reaffirmed	Prepared STANDARDS	Issued STANDARDS	Dt of 1st Issue FEB 1990
Dt. 07-08- 2015	Dt.	Year			



PLANT STANDARD

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BPS 41324

Rev. No. 04

PAGE 2 OF 2

3.2 Ordering Description

For placing indents, issuing enquiries and on purchase order, Ordering Description given below shall be followed. (Typical examples)

Hex Nut M10 to BPS : 41324-A-ASTM A 194 Gr 7 for sizes upto M16

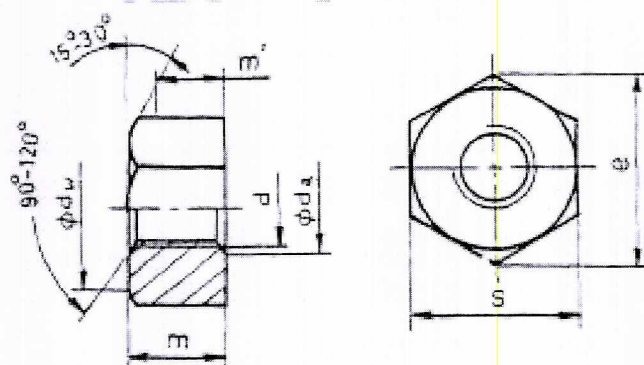
Hex Nut M30 to BPS : 41324-B-ASTM A 194 Gr 7 for sizes M20 to M30

Hex Nut M36x3 to BPS : 41324-C- ASTM A 194 Gr 7 for sizes M36x3 and above

4.0 ADDITIONAL INFORMATION

4.1 Copies of this standard and TDC: 5:166 shall be enclosed along with the purchase order.

FIG 1 DIMENSIONS FOR HEXAGON NUTS (All dimensions are in millimeters)



'm' = Effective gauging height

TABLE 1 (All dimensions are in millimeters)

Thread size d	d _a		d _w Min	e		m		M' Min	s		Weight
	Min	Max		Max	Min	Max	Min		Max	Min	
M10	10	10.8	14.6		17.77	10	9.64	7.7	16	15.73	10.8
M12	12	13.0	16.6		20.03	12	11.57	9.3	18	17.73	16.5
M16	16	17.3	22.5		26.75	17.1	16.40	13.1	24	23.67	33.0
M20	20	21.6	27.7		32.95	20.7	19.40	15.5	30	29.16	64.5
M24	24	25.9	33.2		39.55	24.2	22.90	18.3	36	35.0	110.0
(M27)					45.20	27.6	26.30	21.0	41	40.0	166.0
M30	30	32.4	42.7		50.85	30.7	29.10	23.3	46	45.0	231.0
M36x3	36	38.9	51.1		60.79	36.6	35.00	28.6	55	53.8	364.0
(M48x3)				86.5		48	46.40	37.1	75	73.8	935.0
M60x4	60	64.8		104		48	47		90	88.6	1625
M72x4	72	77.8		121		72	71		105	103.6	3020
M95x4	95	102.6		190		95	94		164.5	163	12200
M36x4	36	38.9	51.3	60.8	61.02	36	34.40	27.5	55	54	430
M42x4.5	42	45.4	60.8	75.1	72.32	42	40.40	32.3	65	64	810
M48x5	48	51.8	70.3	86.5	83.62	48	46.40	37.1	75	74	1240
M56x4	56	60.5	79.6	98	94.69	56	54.10	43.3	85	83.8	1760
M64x4	64	69.1	88.5	110	105.2	54	52.10	41.7	95	93.1	2460
(M64x6)	64	69.1	88.5	110	105.2	54	52.10	41.7	95	93.3	2460

NOTE:

1. Sizes in brackets are non-preferred
2. Weights are given in Kg per 1000 numbers only

QUALITY ASSURANCE

QA:3.2.1:003:99

Date:09-02-99

Sub: Release of revised TDC:5:166/04 TDC for Carbon & Alloy steel nuts to specn SA 194 Gr 2H/2HM/Gr4/Gr7 for Valves, Oil field equipments & other applications.

Please find enclosed the subject TDC for your official use and record.

(K.Rangachari)
SR.MANAGER/QA

Distribution:

DGM/Valves/Matl Plng/Bldg 6...Sri.R.Prabudoss

DGM/Spares/Matl Plng/Bldg 53..Sri.K.Y.Prabu

DGM/Matl Plng/Bldg 2&4.....Sri.V.Balakrishnan

SM/Purchase/Valves.Bldg 24....Sri.Sam Manohar Nayagam

SM/Purchase/FB/Bldg 24..... Sri.P.Namasivayam

SM/QC (Proc)/Bldg 2&4.....Sri.G.Mathivanan

M/Engg/Valves/Bldg.6.....Sri.K.Nagarajan

Master file

BHEL - Quality Assurance Department. TECHNICAL DELIVERY CONDITION

TDC:5:166 Rev.No.:04 Effective Dt.:13/01/99

Page 1

CARBON & ALLOY STEEL NUTS TO SPECN SA 194 Gr2H/2HM/Gr4/Gr7
for VALVES, OIL FIELD EQUIPMENT & OTHER APPLICATIONS

Revision record:

Rev:00/11.04.90 : First issue

Rev:01/21.06.90 : Editorial corrections

Rev:02/21.04.91 : TC for nuts added

Rev:03/20.10.96 : NDT, Acid pickling added & rewritten

Rev:04/13/01/99 : Studs/bolts changed as nuts in Cl.5,7.1,7.2

1.0 MATERIAL SPECIFICATION - SA 194 Gr2H/Gr2HM/Gr4/Gr7{latest on date of Purchase Order (P.O)}

2.0 GENERAL

This TDC is applicable for API 6A applications including NACE MR-01-75 cl.II & cl.III also.

Shall be manufactured to the relevant drawing and P.O.requirements.

Nuts shall be hot/cold forged or manufactured from hot rolled/cold drawn bars. If made from hexagonal bars, 100% MT is to be done on bars. If made from round bars, the bars shall be machined to remove 2mm from surface, (ie 4mm in dia) to remove all surface defects. Atleast 10% of the machined bars shall be MT tested to ensure that the surface defects are fully removed.

Nuts shall be heat treated to meet the requirements of SA194 only in a salt bath, or controlled atmosphere furnace. After HT the threads shall be thoroughly cleaned to remove all deposits. When acid pickling is done for cleaning it shall be done as per Cl 7.3.

Cadmium plating as per (Cl 7.1) if specified in drg/P.O. or rust preventive fluid coating as per (Cl 7.2) shall be done.

3.0 CHEMICAL & MECHANICAL PROPERTIES

Mill certificate for chemical composition from steel manufacturer for conformance to the specification heat-wise. Additionally, product analysis shall be done for one piece/heat by the nut manufacturer.

HARDNESS

For SA194 2H, Gr4, & Gr7

Hardness check on finished nut as per SA194, using sampling plan (Cl.7.4). Hardness in the finished nut shall be 24 to 35 HRC or 248 to 352 BHN.

For SA194 Gr2HM:

Hardness check on 100% of nuts. Hardness must be within 159 to 237 BHN.

Proof load test shall be done as per SA194 for all grades.

After final heat treatment, sample nuts shall be heat treated as below and meet the corresponding hardness requirements.

Grade	Temp	Time	Cooling	Hardness at room temp.
2H	540°C	24Hrs	Slow cool	179 BHN (min)
2HM	540°C	-do-	Slow cool	159 BHN (min)
Gr4/Gr7	590°C	-do-	Slow cool	201 BHN (min)

CONE STRIPPING TEST: This test shall be performed as per SA194 in case of visible surface discontinuities. On such cases Proof load shall be as per ASTM A194 (latest std).

4.0 FINAL INSPECTION

All inspection shall be as per drawing and SA194.

The threads shall be checked with calibrated plug gauge in the final heat-treated condition for black variety and in final plated condition for the plated variety.

Visual and Dimensional checks in the finished nuts and their acceptance shall be as per IS 2614 Table-I(latest).

5.0 MARKING & PACKING

Punch/emboss each finished nuts with material grade (2H/2HM/Gr4/Gr7); supplier's emblem.

Punch/emboss Sl.no also in 2HM nuts in addition to the above to co-relate with hardness. In addition, the grade symbol shall be underlined.

Pack in wooden box of convenient size for easy handling & transportation. Mark quantity in each box.

6.0 CERTIFICATION

The manufacturer shall provide TC (ref. page 3) duly countersigned by the Authorised Inspecting Authority nominated by BHEL in P.O. (if specified) along with Raw Material TC from Steel Maker. Manufacturer's TC shall contain P.O.No,heat no., Chem & Mech properties, HT parameters, surface coating with coating thickness, baking details and certify soundness & confirmation to P.O. requirements.

7.0 SPECIAL REQUIREMENTS

7.1 CADMIUM PLATING REQUIREMENTS

Clean the nuts to make it free from rust, grease, oil, scale, etc., before plating.

When pickling is considered essential, it shall be done as per Cl 7.3.

Apply Cadmium Plating to the specified thickness on specified areas.

After plating, Bake the parts at 175 Deg.C to 205 Deg.C for a minimum period of 3 hours. The elapsed time between plating and baking shall not exceed 8 hours.

Apply a Chromate Conversion coating after plating and baking.

7.2 RUST PREVENTIVE COATING REQUIREMENTS

Clean the nuts to make it free from rust, grease, oil, scale, etc., before applying protective coating.

When pickling is considered essential it shall be done as per Cl 7.3.

One coat of rust preventive fluid of any of the following vendors shall be applied.

CHEMICAL**VENDOR**

1. **BONITA-RPF** M/s Bonita Chemicals, 64, Industrial Estate, Nunhai, Agra-282 006.
2. **CHAMPION-RPF** M/s Guardian Chemicals, 8, Rajaji Ind st, West Lake Area, Nungambakkam, Madras-600 034
3. **ECONOL RPF** M/s Process Aids, Bangalore
(non-drying type)
4. **TECTYL 506** M/s Plastipeel Chemicals and Plastics (P) Ltd, Thane-400 604
5. **TRPF** M/s Sundaram Paints Pvt. Ltd., Thanjavur-613 004
6. **TRPF** M/s Solar Paints, Pudukkotai.
7. **WICOR-P** M/s Western India Paint and Color Co P. Ltd, Madras-600 017

7.3 ACID PICKLING

When pickling is considered essential for cleaning, it shall be done using Hydrochloric acid of 5 to 10% acid concentration at 50 deg C with inhibitor.

The concentration and type of inhibitors shall be as recommended by any of the following vendors.

- 1) M/s Agromore Ltd. Bangalore.
- 2) M/s Prosol Corporation, Hyderabad.
- 3) M/s Guardian Anti-corrosives, Madras.
- 4) M/s Mascot Chemicals, Bombay.

After pickling thorough rinsing shall be carried out with water to remove acid residues.

Immediately after pickling, the components shall be dried and baked at 175 to 205 deg C for 3 hours before taking up the next operation.

7.4 SAMPLING PLAN FOR HARDNESS CHECK AFTER HT

The following double sampling plan shall be used. Hardness values shall be 25 to 34 HRC after HT. IS 2500 (Double Sampling) Normal Inspection, Level 2.

No. of Pieces in the lot	Acceptable Quality Level (2.5%)							
	First sample		Acceptance number	Reject numbers	Second sample	Combined sample	Acceptance number	Rejection number
	(n1)	(Ac)	(Rc)	(n2)	(n1+n2)	(Ac)	-	
0 - 500	32	1	4	32	64	4	5	
501 - 1200	50	2	5	50	100	6	7	
1201 - 3200	80	3	7	80	100	8	9	
3201 -10000	125	5	9	125	250	12	13	
10001-35000	200	7	11	200	400	18	19	

Ac:-Acceptance number: Max. no. of defectives allowed in the sample for the acceptance of the lot.

Rc:-Rejection number: Min.no. of defectives in the sample resulting in the lot's rejection.

PROCEDURE FOR OPERATING THIS PLAN : Suppose the lot size is 1,000. From table chose the class, which includes 1,000 viz 501 - 1200. Hence, use the sampling plan given against this class. Take a sample of 50 pieces and test for hardness.

TEST CERTIFICATE FOR NUTS - SAMPLE FORMAT

TC NO:

DATE:

CUSTOMER :

P.O.NO:

Dt:

D.C.NO:

Dt:

Specn :

PRODUCT :
SIZE OF BAR USED:

RAW MATL TC NO:

HEAT NO.:

LOT NO:

QUANTITY:

TDC NO:

DRG NO:

Thread specn:

CHEMICAL COMPOSITION(%) :

C	Si	Mn	P	S	Cr	Ni	Others

HEAT TREATMENT:

<u>HARDENING</u> : TEMP:	Deg.C;	SOAKING TIME:	Minutes;	COOLING MEDIUM:
<u>TEMPERING</u> : TEMP:	Deg.C.	SOAKING TIME:	Minutes;	COOLING MEDIUM:
BAKING TEMP :	Deg.C.	BAKING TIME:	Minutess.	

MECHANICAL TESTING:

HARDNESS AFTER HT (MIN & MAX) :	BHNNO OF SAMPLES
HARDNESS AFTER 24 HRS TEMPERING ON SAMPLE NUT :	BHN
PROOF LOAD APPLIED : Kg	
CONE PROOF LOAD TEST :	LOAD APPLIED:

MAGNETIC TESTING (IN PROCESS):

FINAL INSPECTION (VISUAL):

SURFACE COATING :

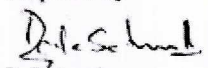
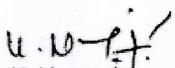
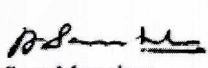
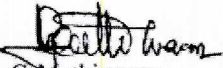
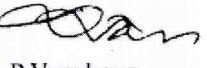
COATING THICKNESS :

Micr

IDENTIFICATION :

It is certified that the above results are correct and the parts are as per specification & P.O. requirements.

Signature
Incharge of Quality

Prepared by		REVIEWED BY			Approved by
					
R. Rajasekar	K. Nagarajan	Sam Monohar Nayagam	G. Mathivanan	P. Vasudevan	K. Rengachari
Qual Assurance	Engg/Valves	Purchase/Valves	Quality Control	Quality assurance	Qual Assurance