



BHEL
GOINDWAL

SPECIAL TERMS & CONDITIONS

BHARAT HEAVY ELECTRICALS LIMITED

Industrial Valve Plant: 433, Industrial Complex,
Goindwal Sahib, Dist. Tarn Taran,
Punjab-143422 (INDIA)

Tender Description: Rate contract for carrying out repair of valve castings (Gouging / Grinding / Welding)

Tender enquiry no.	2122-046
Enquiry date	27.10.2021
Tender Download / Bid Submission Start Date	27.10.2021
Tender Download / Bid Submission End Date	18.11.2021 (15:00 Hrs. IST)
Tender / Bid Opening Date	18.11.2021 (15:30 Hrs. IST)
Quotation Parts	Two-part Bid
Tender evaluation	As per clause 03
Scope of Work	Rate contract for carrying out repair of valve castings (Gouging / Grinding / Welding)
Item Specification	As per attached documents
Validity of offer (In days)	As per clause no. 08
Delivery schedule	As per clause no. 13

1. INVITING TENDERS

Sealed tenders in two parts; Part-I (Techno-commercial bid) and Part-II (Price bid) are hereby invited for rate contract for carrying out repair of valve castings (Gouging / Grinding / Welding) as per tender enquiry. The relevant documents are attached with the enquiry.

The two bids should be submitted in separate sealed inner envelopes duly mentioning the detail as follows:

Bid	Bid description	Superscribing envelope on	*** Should contain ***
Part I	Techno-Commercial Offer	Part-I (Techno-Commercial) bid against tender enquiry no: 2122-046 dated 27.10.2021 , due date: 18.11.2021	<ol style="list-style-type: none"> Acceptance of all terms and conditions of tender enquiry. (Preferred is submitting signed copy of terms and conditions; if nothing is mentioned for any term, it shall be summarily concluded that the same is acceptable and no representation whatsoever shall be entertained later on). Un-priced bid as per format attached. All details, i.e. whether quoted for item, duties and taxes etc. should be filled.
Part II	Price Bid	Part-II (Price) bid against tender enquiry no: 2122-046 dated 27.10.2021 , due date: 18.11.2021	Price bid in the format attached.



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Both the sealed envelopes should be put in outer sealed envelope superscribing all details i.e. Enquiry Number, Date, Supplier's Name and Address and Item.

2. SCOPE OF WORK

Scope of work includes to provide manpower (IBR qualified welder) for carrying out repair of steel castings (material grade of A216 Gr. WCB/WCC, A217 WC6/WC9, A351 Gr CF8/CF8M/C12A for pressure class of C150/300/400/500/600) as per description given below. Applicable procedure for repair of castings shall be as per document SIP:VS:17/Rev04 (dated 16.02.2019) is enclosed.

Enquiry sl. no.	Description of material	Enquiry Qty (cc)
1	Material removal by gouging, dressing by grinding, material deposit by carrying welding & then dressing by grinding of valve castings at BHEL premises with all BHEL resources except labour	20000
2	Material removal by grinding in case of excess casting at BHEL premises with all BHEL resources except labour	7000
3	Material deposit by carrying out welding of valve castings & then dressing by grinding at BHEL premises with all BHEL Resources except labour	4000

The facility of material handling, electric power, welding source, consumables etc. will be provided by BHEL. All the rework is to be carried out the BHEL premises only and no vendor will be allowed to take the material outside the BHEL premises.

3. Evaluation of L1 vendor

Evaluation shall be for combined total value of all three-line items and contract shall be awarded L1 vendor.

4. Pre-Qualification terms for participating in the Rate Contract:

4.1. As per the repair procedure SIP:VS:17/Rev04 (dated 16.02.2019), point 5, welders employed for repair work shall be qualified in accordance with IBR.

“During the validity of the contract for repair of castings, Labour deployed by vendor for repair of steel castings shall be qualified in accordance with IBR. Vendor shall be required to submit valid IBR certificate valid as on date of part I of tender opening. In case validity has lapsed, vendor to submit undertaking to renew the same and to submit a valid IBR certificate within 15 days of award of contract.”

4.2. Vendor shall possess a valid PAN and submit same along with the bid.



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5. ISSUE OF CONTRACT & WORK ORDER

The contract will be issued to vendor after finalization of tender. The vendor has to submit copy of IBR certificate maximum within 15 days of award of contract. The work Order will be issued from BHEL to the vendor on time to time basis. The first work order will be given after submission of IBR certificate. Raw materials shall be issued by BHEL against the Work Order. The facility for material movement will be provided by BHEL. The vendor has to start the work within 02 days of receiving the work order and the material at the allocated work area.

6. ISSUE OF CASTINGS

All the castings (as per the work order) will be provided to the vendor at the allocated work area with all the resources required to carry out the work however vendor has to co-ordinate for getting material from stores/shop. Vendor shall be required to complete the work as per the schedule requested by BHEL.

7. INSPECTION

Inspection of the repaired castings will be done after receipt of inspection request on the rework order itself. Where gauging is involved, stage inspection will be done by BHEL.

8. Validity of Bid

Bid shall be valid for 60 days from date of Part I opening.

9. DELIVERY OF REPAIRED CASTINGS

All the repaired castings need to be handover to BHEL after the acceptance. All the repaired components need to be submitted to BHEL (from the location from where the material has been issued) along with the Challan and Inspection Report. The original rework order showing the acceptance by BHEL along with 02 copies of Bills for that rework will be submitted to BHEL by the vendor.

10. VALIDITY OF THE CONTRACT

The contract will be in operation for One year from the date of approval and will be applicable for all work orders released during the currency of the contract. Same can be extended again for one more year on mutual agreement.



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11. QUANTITY

The total quantity for the repair of castings mentioned in enquiry is tentative only. Also tender quantity may vary between different enquiry Sl. Nos. of tender.

12. RECORD MAINTAINACE

The vendor is required to maintain a record for all the consumables issued to him/her, along with the consumption of consumables for all the rework orders individually which will be certified by BHEL. Along vendor is also required to maintain record of all castings issued to him for rework.

13. DELIVERY SCHEDULE

Repair may be carried out as per schedule requested by BHEL. **Further any rework order is to be closed maximum within 15 days** and after this period LD will be applicable on that rework order as per "Penalty for Late Delivery" clause of tender.

14. PENALTY FOR LATE DELIVERY

'Time is the essence of the contract'. Any rework order is to be closed within 15 days. Penalty for late delivery will be applicable @ 0.5% per week or part thereof subject to a maximum of 10.0 %.

If any vendor does not accept LD ½% of the supply for each week of delay subject to a maximum of 5%, their offer is likely to be rejected by BHEL and the price bid shall not be opened. Bidders accepting for 10% LD shall not be loaded on account of LD. However bidders who offer any other % LD [between 5% to 10%] shall be loaded @ % deviation from 10% and their accepted %.e.g. If a bidder accepts for a max of 7% LD only, their offer would be loaded @ 3% (10 – 7 = 3).

15. PERFORMANCE MONITORING

The Sub-contractor/s with whom contract is entered into will be evaluated based on the "System for Performance Monitoring & Rating for Vendors", enclosed herewith.

Based on performance of the vendor, supplier control checks will be specified from time to time and will be binding on the sub-contractor.

16. CONFIDENTIALITY OF BHEL DRAWINGS/DOCUMENTS

Vendor shall ensure confidentiality of BHEL drawings and documents issued to them and shall not pass on the same to any unauthorized agency/person. Violation of the same shall tantamount to cancellation of the contract of the Sub-contractor.



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17. OTHER CONDITIONS

- a) Components shall be welded/repared in accordance to BHEL WPS/BHEL repair procedure.
- b) Vendor will be responsible for fulfillment of all requirements in respect of labor engaged by him including medical (ESI), insurance, provident fund and safety, PPEs
- c) Vendor shall ensure adherence of all statutory requirements in accordance with ISO and OHSAS systems
- d) Only one source shall be kept alive for fulfilling material requirements.
- e) During the currency of Rate Contract, vendor shall be liable to gauge/machine/weld any of the repaired component
- f) In case of any loss that might be caused to BHEL due to lapse on the part of the workers deployed by vendor, such loss shall be compensated by Sub Contractor and in this connection, BHEL has the right to deduct appropriate amount from his bills etc to make good of such loss to BHEL beside imposition of penalty. In case of any deficiencies /lapses on the part of personnel deployed by Sub contractor, BHEL shall be within its right to terminate the contract forthwith or take any other action with assigning a valid reason thereof.
- g) All Personnel Protective Equipments/Safety Equipments are to be provided by vendors to its workers deployed for work inside BHEL premises.
- h) In case of death/mishap/physical disability occurred during discharging the duties by Sub Contractor/ workers deployed by vendor inside BHEL premises, the compensation liability solely rests with the vendor.
 - a) The identification and traceability w.r.t. Make / Melt / Heat & Material type of raw material issued to Sub Contractor shall be maintained by him during processing and onward final submitting the components in BHEL Stores. BHEL reserves the right to verify the compositions/mechanical/chemical properties of material at any stage of processing and also of final repaired components submitted in BHEL stores.
 - b) The vendor(s) who have deployed their labor for work within BHEL Premises shall be responsible for compliance of following Labour laws / Acts
 1. Payment of Wages Act 1936.
 2. The Employees Provident Fund and Miscellaneous Provision Act 1952.
 3. The Factory Act 1948.
 4. The Employee State Insurance Act 1948.
 5. The Employment of Children's Act 1938.
 6. The Minimum Wages Act 1948.
 7. Workmen Compensation Act 1923(Any other Labour laws as applicable will be taken into consideration for compliance of labour laws in this contract.)

These Special terms & conditions and GCC collectively are the part of tender terms and conditions.



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Checklist and sequence of documents to be submitted

Sl. No.	Documents		Status
1	Part-I envelope should contain: (1) Techno-Commercial bid (2) Acceptance to tender terms & conditions These documents should be contained in a separate envelope superscribing tender enquiry detail, due date of opening, sender's address. (3) Documents required as per pre qualification criteria (Clause 4.0)	Sealed envelope marked as Part-I "Techno-Commercial Bids"	Yes, Sealed
2	Part-II envelope should contain Price Bid sealed in separate envelope superscribing tender enquiry detail, due date of opening, sender address	Sealed envelope marked as Part-II "Price Bid"	Yes, sealed
3	<u>All two sealed envelopes put in an outer envelope mentioning all details like Enquiry no., description, due date</u>		<u>Yes</u>



General Contract Conditions (GCC) of MM Tenders

BHARAT HEAVY ELECTRICALS LIMITED

Industrial Valve Plant: 433, Industrial Complex,
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Punjab-143422 (INDIA)

TABLE OF CONTENTS

1. INSTRUCTION TO BIDDER.....	2
2. SCOPE OF SUPPLY	2
3. PRICE BASIS.....	3
4. DISCREPANCY IN WORDS AND FIGURES.....	3
5. EVALUATION IN CASE OF MORE THAN ONE L-1 BIDDER	3
6. REVERSE AUCTION.....	4
7. VALIDITY OF OFFERS.....	4
8. SUPPLIED MATERIAL ADJUSTMENT	4
9. DELIVERY SCHEDULE.....	4
10. LIQUIDATED DAMAGES (LD) FOR LATE DELIVERY	4
11. PAYMENT TERMS.....	5
12. TAXES & DUTIES	5
13. LIABILITY UNDER REVERSE CHARGE (RCM)	6
14. ACCESS TO MANUFACTURING PREMISES.....	6
15. INSPECTION	6
16. GUARANTEE / WARRANTEE AND CORRESPONDING REPAIR / REPLACEMENT OF GOODS	7
17. LOI (LETTER OF INTENT).....	7
18. SUB-CONTRACT	7
19. RISK PURCHASE	7
20. FORCE MAJEURE	8
21. CLARIFICATIONS.....	8
22. PREFERENCES FOR MICRO AND SMALL ENTERPRISES (MSEs)	9
23. PREFERENCE TO MAKE IN INDIA.....	9
24. RESTRICTIONS UNDER RULE 144(XI) OF THE GENERAL FINANCIAL RULES (GFRs), 2017	9
25. DISPUTES	10
26. JURISDICTION	10
27. BANNED FIRMS.....	10
28. FRAUD PREVENTION POLICY	10
29. PREVENTIVE CHECKS TO ELIMINATE SUSPECTED CARTEL FORMATION .	11
30. SUSPENSION OF BUSINESS DEALINGS WITH DEFAULTERS	11
31. GENERAL.....	12



1. INSTRUCTION TO BIDDER

Quotations shall be submitted before due date and time. Late offers are liable to be rejected, so please ensure to submit bid well within due date and time. Techno-commercial part will be opened on due date.

Based on evaluation of techno-commercial offers, Price bids of bidders who qualify from techno-commercial evaluation shall be opened. BHEL may decide to open the Price bid same day at 1700 hrs. If not opened on the same day, all qualifying bidders shall be notified for date of opening of Price bids by email/fax/post/courier/E-procurement system generated email.

1.1 Instruction to Bidder (In case of Non-E-Procurement / Paper/ Manual/ Hard Copy based tenders)

Sealed Tenders can be dropped in the tender box labeled as 'Tender box for MM contracts'. This tender box is located at the entrance of Admin block BHEL Goindwal. Fax (01859-222061) / E-Mail (tendermm_ivp@bhel.in) offers received in time shall be considered only when such offers are complete in all respects. In case of bulky tenders, please handover quotation to Sh. Rakesh Kumar/ SDGM - Head-MM or Sh. Sumeet Bansal / Sr. Manager - MM [Contact: 01859 224 615 / 628]. Bid can be send to following address:

**BHEL, Industrial Valve Plant,
 #433, Industrial Complex,
 Goindwal Sahib, Distt. Tarn Taran,
 Punjab-143422.**

1.2 Instruction to bidder (In case of E-Procurement)

- Interested bidders / suppliers shall submit their offer through e-procurement mode at <https://eprocurebhel.co.in/>.
- Offers in any other mode will not be accepted.
- Procedure for Submission of Tender is available in the "Bidder Manual Kit" at E-tender portal <https://eprocurebhel.co.in/> only.
- In case of any difficulty faced while registering on BHEL's e-Procurement portal developed by NIC, queries may be addressed to 0120-4001002, 0120-4001005 and 0120-6277787; email: support-eproc@nic.in. These details are also available on 'Contact Us' page of the portal.
- 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.
- Disclaimer clause:** Neither the Organization (Bharat Heavy Electricals Ltd.) nor the service provider is responsible for any failure of submission of bids due to failure of internet or other connectivity problems or reasons thereof.

2. SCOPE OF SUPPLY

Material shall be supplied as per the applicable latest Technical Delivery Conditions (TDC)/ Material Standard requirements/BPS/Drawing and other requirement as given in the Tender Enquiry. National & International material Standards shall have to be arranged by vendors themselves. Latest applicable revisions of standards/procedures to be referred.

All required tests as called in referred material standard/BHEL/TDC/drawing etc. shall be carried out by vendor at no extra cost. Material Test Certificates (MTC), inspection reports and Compliance/Guarantee Certificate are to be provided along with the supplies.

3. PRICE BASIS

1. Order of enquiry item sl. no. shall be maintained in the quotation.
2. The rates quoted shall be firm and fixed. No price variation is proposed and allowed.
3. Rates quoted should be FOR BHEL Goindwal basis. The offers quoted on other than FOR Goindwal basis are liable to be rejected.

In case bidder has quoted Ex-works prices, then he/she will be given an opportunity to accept price basis as FOR Goindwal either by accepting delivery as FOR Goindwal in same quoted price or by providing loading factor on his/her quoted ex-works prices to make them FOR prices.


Variation in GST or any other statutory levies during contractual delivery period shall be to BHEL's account.

4. DISCREPANCY IN WORDS AND FIGURES

1. If, in the price structure quoted for the required goods/ services/ works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.
2. If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
3. If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject of (a) and (b) above.
4. If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date upto which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored.
5. Bids should be free from correction, overwriting, using corrective fluid, etc. Any interlineation, cutting, erasure or overwriting shall be valid only if they are attested under full signature(s) of person(s) signing the bid else shall be liable for rejection.
6. All overwriting/cutting, etc will be numbered by bid opening officials and announced during bid opening.

5. EVALUATION IN CASE OF MORE THAN ONE L-1 BIDDER

In the course of evaluation, if more than one bidder happens to occupy L1 status, effective L1 will be decided by soliciting discounts from the respective L1 bidders.

	<p align="center">General Contract Conditions (GCC) of MM Tenders BHARAT HEAVY ELECTRICALS LIMITED Industrial Valve Plant: 433, Industrial Complex, Goindwal Sahib, Dist. Tarn Taran, Punjab-143422 (INDIA)</p>
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In case more than one bidder happens to occupy the L1 status even after soliciting discounts, the L1 bidder shall be decided by a toss / draw of lots, in the presence of the respective L1 bidder(s) or their representative(s).

Ranking will be done accordingly. BHEL's decision in such situations shall be final and binding.

6. REVERSE AUCTION

In case, it is declared in special terms & conditions of tender enquiry that RA is applicable for the NIT, then RA will be conducted as per following clause:

BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on <https://www.bhel.com/>) for this tender. RA shall be conducted among the techno-commercially qualified bidders as per RA guidelines.

Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered for RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.

7. VALIDITY OF OFFERS

The offers shall be kept open for acceptance 'for number of days mentioned in special terms and conditions' from the date of opening of the tender. In case of tender extension, the bid validity shall be considered from the date of tender opening.

8. SUPPLIED MATERIAL ADJUSTMENT

Item/s pending in previous PO has to be billed in previous PO only. Otherwise, BHEL will be free to adjust the supplies in previous PO. Any implication of tax will be on supplier's account. For this it is desirable that vendor should reconcile the pending PO statement every month/frequently with BHEL. Vendor can also view these details at Portal (<https://trichy.bhel.com/mm/index.jsp>).

9. DELIVERY SCHEDULE

Supplies shall be affected and completed as per schedule mentioned in special terms and conditions. **Further, BHEL may release delivery schedule from time to time based upon our requirement with mutual understanding.** Vendor shall be required to complete the order as per the BHEL schedule requested. Commencement of delivery period shall be reckoned from the date of PO / LOI or any other agreed milestone.

10. LIQUIDATED DAMAGES (LD) FOR LATE DELIVERY

Time is the essence of the contract'. As such, delivery of goods specified in the Purchase Orders released under the scope of this contract shall be made within the time limit prescribed therein. Penalty for late delivery will be applicable @0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the undelivered portion.

In case of Ex-works delivery terms for indigenous supplies, the document date (Invoice/Challan date) in Goods Receipt (GR) document shall be reckoned for LD deduction. In case of FOR Delivery terms for Indigenous supplies, the posting date in GR document shall be reckoned for LD deduction.

If any vendor does not accept LD $\frac{1}{2}\%$ of the supply for each week of delay subject to a maximum of 5%, their offer is likely to be rejected by BHEL and the price bid shall not be opened. Bidders accepting for 10% LD shall not be loaded on account of LD. However, bidders who offer any other % LD [between 5% to 10%] shall be loaded @ % deviation from 10% and their accepted %. e.g. If a bidder accepts for a max of 7% LD only, their offer would be loaded @ 3% ($10 - 7 = 3$).

BHEL reserves the right to receive or not receive the material after the due date of PO. Applicable GST shall also be recovered from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice number.

11. PAYMENT TERMS

- Due payment against supplies received shall be due after 30 days of receipt and acceptance of material and shall be paid within next 15 days' period. In case of any deviation from standard payment term mentioned, BHEL at its discretion may load on the item price at "Base rate of SBI (as applicable on the date of bid opening; Techno-commercial bid opening) + 6% shall be considered for loading for the period of relaxation sought by bidders.
- Documents to be submitted (if applicable)
 - Tax invoice (Invoice shall be GST compliant and should contains all the required information such as GST No, HSN code etc.)
 - Transporter copy along with material/consignment.
 - Material Test Certificates (MTC) and
 - Compliance Certificate.
- GST registration number is to be submitted by qualified vendor as per GST law.
- It is mandatory to mention proper material codes in the invoices and separate invoices to be raised for different POs.
- BHEL releases payment through EFT mode ONLY. Necessary details may please be submitted by filling required format before release of payment.**

12. TAXES & DUTIES

Payment of GST portion will be released to vendor only upon completion of statutory requirement and further subject to following:

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

Following may please be noted for availing Input Tax Credit (ITC) by BHEL:

1. Since ITC can be availed only when BHEL is in possession of GST Tax invoice and after receipt of goods. Thus, vendor to ensure timely dispatch of goods and Tax invoice. It may be noted that in case of any delay in receipt of Tax Invoice and/or receipt of goods, the ITC availment by BHEL will get delayed thus entailing additional cash outflow & may even get denied if ITC availment timelines are breached.
2. Further ITC can be availed only when vendor has declared such invoice in his outward supply Return GSTR-1 and after GST thereon has been paid by him at the time of filing of monthly Return.
3. If GST credit is delayed/denied to BHEL due to non/delayed receipt of goods and/or tax invoice or expiry of timeline prescribed in GST law for availing such ITC, or any other reasons not attributable to BHEL, GST amount shall be recoverable from vendor along with interest levied/leviable on BHEL.
4. Further, in case vendor delays declaring such invoice in his return and GST credit availed by BHEL is denied or reversed subsequently as per GST law, GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from vendor/contractor along with interest levied/leviable on BHEL.

13. LIABILITY UNDER REVERSE CHARGE (RCM)

Any GST liability arising on BHEL under Reverse Charge (RCM) before actual receipt of goods and/ or Invoice thereof would be subject to recovery of Interest leviable for the period between the date of such liability and actual date of eligibility of ITC based on receipt of goods, receipt of Invoices and other conditions specified in GST Law as applicable.

14. ACCESS TO MANUFACTURING PREMISES

While Purchase Orders placed on the vendor are under execution, authorized representatives of BHEL shall be allowed free access to the manufacturing facilities for the purpose of inspection or monitoring the progress of purchase orders. This access will also be extended to representatives of BHEL's customers accompanying the authorized representative/s of BHEL (which shall be intimated in advance), if our contractual requirements with our customers call for the same.

15. INSPECTION

1. The seller shall give adequate notice, of 1 week or as mutually agreed period, in writing to the Purchaser about the date and place at which the goods will be ready for inspection/ testing, as provided for in the contract.
2. Purchaser or his authorized representative shall be entitled to carry out inspection of material and workmanship/Surveillance Audit at Seller's premises or at his sub-contractor's premises at all reasonable times during execution of contract; Such inspection, examination and testing, if made, shall not absolve the Seller from his obligations under the contract. No additional charges shall be claimed for such inspections. Moreover, all required infrastructure (testing, tools etc) have to be arranged by supplier.
3. Any inspection carried out before supply by vendor/incoming stage at BHEL notwithstanding, if any defect/non-conformity is noted during processing, the same shall be attended/replaced by vendor at no extra cost.
4. BHEL representative from unit or CQ is authorized to carry out audits along with TPIA at vendor's works before clearing the items for dispatch.

5. Necessary tooling including thread gauges etc. have to be arranged by vendor. Only in exceptional cases, based on BHEL discretions item/nature, BHEL may consider request to provide gauges if available with BHEL. But in no case this shall be linked with delivery of material.

16. GUARANTEE / WARRANTEE AND CORRESPONDING REPAIR / REPLACEMENT OF GOODS

Goods shall comply with the specifications for material, workmanship and performance. Vendor shall give a guarantee / warrantee of 18 months from the date of dispatch or 12 months from date of receipt, against manufacturing defects, whichever is earlier. In case of non-acceptance of this term, bid will be rejected.

If the material is rejected due to defective workmanship during inspection or at the time of actual use, within the guarantee / warrantee period, the rejected material shall be replaced by the supplier. Corresponding quantity shall be treated as unsupplied against respective purchase order till replacement is received at BHEL. If the material is found defective and rejected during use for which payment has already been released the rejected quantity shall be supplied free of cost by the vendor within a month of intimation of the rejection by BHEL.

Lifting of rejected material is under Supplier's scope. BHEL will inform related invoice, quantity etc. to supplier. Supplier is expected to give the plan to lift and advance intimation when visiting to lift the material. Material should be lifted within one month from date of intimation. After one-month BHEL will not be responsible for rejected material. BHEL may decide to send the rejected material on to Pay basis to supplier. Any leniency/ unresponsiveness/delay on part of supplier may lead to appropriate action by BHEL. Any request to postpone in written may be considered but replacement should not be linked with lifting of material.

17. LOI (LETTER OF INTENT)

BHEL may issue LOI prior to the PO for any reason whatsoever. The LOI in such cases is to be treated as PO for all practical purposes and all the Terms & Conditions of the tender shall be applicable from the date of issue of LOI.

18. SUB-CONTRACT

The purchase order or any part thereof shall not be sub-contracted, assigned or otherwise transferred without previously obtaining the BHEL's consent in writing.

19. RISK PURCHASE

BHEL at its option will be entitled for withdrawal of portion of balance supply or termination of the contract and to purchase elsewhere at the risk and cost of the supplier either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated as per contract delivery terms. The supplier shall be liable for losses, which BHEL may sustain by way of such risk purchases.

The value shall be calculated as follows:

$$\text{Risk \& Cost Amount} = [(A-B) + (A \times H/100)]$$

Where,

A= Value of Balance scope of Supply (*) as per rates of new contract

B= Value of Balance scope of Supply (*) as per rates of old contract being paid to the supplier at the time of termination of contract i.e. inclusive of PVC, if any.

H = Overhead Factor shall be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

*** Balance Scope of Supply:** Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Supply for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

20. FORCE MAJEURE

If at any time during the continuance of the contract, the performance in which or in any part by either party of any obligations under the contract are prevented or delayed by reason of any war, hostilities, acts of public enemy, civil commotion, sabotage, fires, explosions, epidemics, quarantine restrictions, or acts of God (hereinafter referred to "an events" then provided the notice of happening of any such event is given by either party to the other within 21 days of the occurrence thereof, neither party shall by reason of such event be entitled to terminate the contract nor shall either party have any claim for damages against the other in respect of such non-performance and delay in performance and delivery under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist. If the performance in whole or part of any obligation under the contract is prevented or delayed by reason of any such event, claims of extension of time shall be granted for periods considered reasonable by BHEL subject to prior notification by the vendor to BHEL of the particulars of the event and supply to BHEL, if required, of any supporting evidence. Any waiver of time in respect of partial installment shall not be deemed a waiver of time in respect of remaining deliveries.

21. CLARIFICATIONS

The correspondence exchanged against the tender from both tenderer and BHEL through email/e-procurement are considered as valid document legally though it is not signed. It is treated as valid confirmations made on behalf of the respective company and very much comes under the legal ambit of the business transaction and hence it is binding on both the parties to the business. Any transaction pertaining to the tender from both the parties of business done round the clock irrespective of the office or business hours of the companies, are valid legally and binding on both the parties. This applies to the extent only in such cases where deadline time for transaction is not specifically declared by either or both the parties to the business.

22. PREFERENCES FOR MICRO AND SMALL ENTERPRISES (MSEs)

Preferences as mentioned in “Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012” & “Public Procurement Policy for Micro and Small Enterprises (MSEs) Amendment Order, 2018”, or as per latest guidelines issued by government shall be given to Micro and Small enterprises.

Main points which are mentioned in the above orders are as follows:

- 25% Procurement of the tender value shall be made from MSE (Micro, Small Enterprises) firms.
- 25% of the 25% quantity (i.e. 6.25% of the tender quantity) offered to the MSE's shall be reserved for MSE's owned by SC/STs. Failure to participate by any MSE owned by SC/ST's; this 6.25% quantity shall be procured from other MSEs.
- 3% from within the 25% quantity offered to the MSE's shall be reserved for women owned MSE's. Failure to participate by any MSE owned by women; this 3% quantity shall be procured from other MSEs.
- EMD shall be exempted for MSE's. All these benefits are subject to production of all statutory documents
- In tender, participating Micro and Small Enterprises quoting price within price band of L1+15 per cent shall also be allowed to supply a portion of requirement by bringing down their price to L1 price in a situation where L1 price is from someone other than a Micro and Small Enterprise and such Micro and Small Enterprise shall be allowed to supply up to 25 per cent of total tendered value. In case of more than one such Micro and Small Enterprise, the supply shall be shared proportionately (to tendered quantity).

MSE suppliers can avail the intended benefits only if they submit **Udyam Registration Certificate** along with the offer. No other document shall be considered for availing MSE benefits. Non-submission of such document 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 is not cleared before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required document is to be uploaded on the portal.

23. PREFERENCE TO MAKE IN INDIA

This procurement shall be governed by notification no. P-45021/2/2017-PP (BE-II) dated 16.09.2020 of Government of India issued by DPIIT and subsequent circulars issued afterwards. Accordingly, the minimum local content, the margin of purchase preference and the procedure for purchase preference to make in India shall be adhered.

24. RESTRICTIONS UNDER RULE 144(XI) OF THE GENERAL FINANCIAL RULES (GFRs), 2017

All provisions of Order No. F.No.6/18/2019-PPD of Department of Expenditure (DoE) shall be applicable for this tender enquiry (Order copy is available at <https://doe.gov.in/procurementpolicy-divisions>). Accordingly, any bidder from a country which shares a land border with India (except the countries to which the Govt. of India has extended lines of credit or in which the Govt. of India is

engaged in development projects for which list is available at <https://www.mea.gov.in/>) will be eligible to bid in this tender only if the bidder is registered with the Competent Authority as specified in Annex I of the said Order of DoE.

Updated list of the countries to which lines of credit have been extended or in which development projects are undertaken are available on the Ministry of External affairs website (<https://www.mea.gov.in/>)

For the purpose of this order, definition of Bidder from a country which shares a land border with India shall be same as defined in the Annex III of the said order.

Registration with the competent authority as stipulated in the said order is responsibility of bidder.
Bidder has to submit a certificate certifying following along with offer:

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that bidder (.... Name of Bidder) is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that bidder (.....Name of bidder) fulfils all requirements in this regard and is eligible to be considered"

If the bidder is from such country which shares a land border with India evidence of valid registration by the Competent Authority shall also be attached along with offer."

25. DISPUTES

In the event of any dispute and/or difference arising between the Vendor and BHEL as to interpretation and/or execution of the contract and/or the respective rights and liabilities of the parties, such disputes and/or differences shall be referred to the sole arbitrator nominated by BHEL. The provisions of the Indian Arbitration Act and the rules there under shall apply to such arbitration. The award passed by the arbitrator shall be final and conclusively binding on all the parties.

26. JURISDICTION

The court of the place from where the purchase order is issued during the contractual period shall alone have jurisdiction to decide any dispute arising out of or in connection with the purchase order.

27. BANNED FIRMS

The offers of the bidders who are on the banned list as also the offer of the bidders, who engage in the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL website <https://www.bhel.com/>.

28. FRAUD PREVENTION POLICY

The 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 <https://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.

29. PREVENTIVE CHECKS TO ELIMINATE SUSPECTED CARTEL FORMATION

The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.

30. SUSPENSION OF BUSINESS DEALINGS WITH DEFAULTERS

The offers of the bidders who are under suspension as also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site <https://www.bhel.com/>.

1.0 Integrity commitment, performance of the contract and punitive action thereof:

1.1. Commitment by BHEL:

BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL will during the tender process treat all Bidder(s) in a transparent and fair manner, and with equity.

1.2. Commitment by Bidder/ Supplier/ Contractor:

1.2.1. The bidder/ supplier/ contractor commits to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India.

1.2.2. The bidder/ supplier/ contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to relevant guidelines issued from time to time by Govt. of India/ BHEL.

1.2.3. The bidder/ supplier/ contractor will perform/ execute the contract as per the contract terms & conditions and will not default without any reasonable cause, which causes loss of business/ money/ reputation, to BHEL.

If any bidder/ supplier/ contractor during pre-tendering/ tendering/ post tendering/ award/ execution/ post-execution stage indulges in mal-practices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then, action may be taken against such bidder/ supplier/ contractor as per extant guidelines of the company available on <https://www.bhel.com/> and/or under applicable legal provisions



General Contract Conditions (GCC) of MM Tenders

BHARAT HEAVY ELECTRICALS LIMITED

Industrial Valve Plant: 433, Industrial Complex,
Goindwal Sahib, Dist. Tarn Taran,
Punjab-143422 (INDIA)

31. GENERAL

1. BHEL will not be bound by any power of attorney granted by the vendors or by changes in the composition of the firm made subsequent to the execution of the contract. They may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the vendor concerned.
2. BHEL reserves the right to extend the due date of opening, which shall be informed. Validity of offer shall be deemed to be revised accordingly.
3. BHEL reserves the right to accept or reject any part or whole of the tender of a bidder by assigning a valid reason thereof. BHEL reserves the right to cancel the tender without assigning any reason thereof and without any obligation before any commitment.
4. Acceptance of all terms and conditions, in the form of signed copy of T&C or confirmation separately written, shall be submitted along with quotation. If nothing is mentioned, it shall be concluded that terms and conditions are acceptable.
5. BHEL may increase/decrease item/s based on BHEL requirement before price bid opening. Suitable price implication may be asked from suppliers.
6. BHEL may drop item/items from tender at any stage of tender before placing PO. BHEL may also delete PO with consent with supplier within delivery date of PO.
7. After releasing PO, it is assumed that supplier has accepted PO if we do not receive acknowledgement from supplier within 5 days of date of PO.
8. In case of unscheduled holiday on opening day of tender, the next working day will be treated as scheduled prescribed day of opening of tender.
9. 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.
10. Ranking L-1, L-2 etc. shall be done for individual item for the techno-commercially acceptable offers on landed cost to BHEL, IVP Goindwal basis and BHEL reserves the right to place order for individual items with different vendors.
11. 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.
12. If supplier is mentioning delivery destination within state/ outside state depending upon his location of factory, Free on Road etc. these are assumed as on FOR Goindwal. If supplier is wishing to give delivery on Ex works basis, then he has to clearly mention about it.
13. 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.
14. Any term in special tender terms and conditions will supersede the GCC.





Un-Price Bid Format for Enquiry no. **2122-046** Dated **27.10.2021**, Due date **18.11.2021**

Enquiry sl. no.	Description of material	Enquiry Quantity (cc)	Quoted (Kindly tick)	
1	Material removal by gouging, dressing by grinding, material deposit by carrying welding & then dressing by grinding of valve castings at BHEL premises with all BHEL resources except labour	20000	Yes / No	
2	Material removal by grinding in case of excess casting at BHEL premises with all BHEL resources except labour	7000	Yes / No	
3	Material deposit by carrying out welding of valve castings & then dressing by grinding at BHEL premises with all BHEL Resources except labour	4000	Yes / No	
Terms & Conditions Confirmation Sheet			Response (Kindly tick)	Remarks (if any)
GST	Whether GST is applicable?		Applicable / Not applicable	
	If GST is applicable, kindly tick whether IGST or CGST & SGST is applicable		IGST / CGST & SGST	
	If GST is applicable, kindly tick whether it is Extra / Inclusive		Extra / Inclusive	
	% age rate of GST (if applicable)		<i>Please mention clearly>></i>	
I have thoroughly gone through the attached tender terms & conditions and understood the above techno-commercial requirements.			Accepted unconditionally / Accepted with deviation	
<div> <div></div> <div>Authorised signatory with seal</div> </div>				



Price Bid Format for Enquiry no. 2122-046 Dated 27.10.2021, Due date 18.11.2021

Enquiry sl. no.	Description of material	Enquiry Quantity (cc)	Unit Basic Price, ₹ <i>(to be filled by bidder)</i>	
			In Figures	In Words
1	Material removal by gouging, dressing by grinding, material deposit by carrying welding & then dressing by grinding of valve castings at BHEL premises with all BHEL resources except labour	20000		
2	Material removal by grinding in case of excess casting at BHEL premises with all BHEL resources except labour	7000		
3	Material deposit by carrying out welding of valve castings & then dressing by grinding at BHEL premises with all BHEL Resources except labour	4000		

Nothing except prices will be entertained in price bid of tender.

Authorised signatory with seal




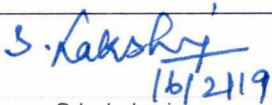

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI 620 014

QUALITY ASSURANCE

SIP:VS:17 / Rev.04

Page 1 of 7

PROCEDURE FOR REPAIR OF STEEL CASTINGS - VALVES

REV.	DATE	PREPARED	REVIEWED	APPROVED
04	16.02.2019	 16/02/19. N.Nagamuthu Pandian	 16/2/19 S.Lakshmi	 16/02/19 Amitroy

RECORD OF REVISIONS

Rev No	Date	Clause No.	Details of revision
00	01.08.1996	--	This replaces PR:QE:195/00
01	22.06.2006	1.1	Specification A217 C12A added.
		2.2.1	Revised.
		4.2	C12A requirement added
		5.14	ROH & ROC requirements added
		Table-1	Modified and details of Specification A217 C12A added
		Table-2	Added
02	15.07.2011	5.4	Revised
		5.14	Changed to Cl.5.16 and sub clause 5.16.1 to 5.16.4 added. Details on C12A added.
		5.14.2	Changed to Cl.5.15
		Table-1	Note-1 change to Cl.5.16.2
03	06.06.2013	5.16.1	Revised. Ni+Mn content restricted for C12A welding consumable.
04	16.02.2019	1.1, 5.14.2a&b 5.5& 5.16.2 Table-1 5.16.1	Requirements added for ASTM A995 CD3MN Welding electrodes preservation control requirements updated Requirements added for ASTM A217 C12A, ASTM A217 CA15, ASTM A995 CD3MN Welding electrodes trade names updated to current requirements

1.0 SCOPE

- 1.1 This procedure details out the requirements for repair of Steel castings used in Valves covering the following specifications.

Carbon steel:	ASTM A 216 WCB & WCC
Alloy steel:	ASTM A217 C5, C12A, WC6, WC9 & CSN 422744.6
Martensetic Stainless steel:	ASTM A 217 CA15
Austenitic Stainless steel:	ASTM A 351 CF3M, CF8, CF8M & CF8C
Austenitic ferritic (duplex) stainless steel	ASTM A995 CD3MN

2.0 DEFECTS THAT DO NOT REQUIRE WELD REPAIR

2.1 Machinable surfaces

- 2.1.1 Foundry defects other than cracks, shrinkages and cold shuts can be left without weld repair on machinable areas provided that the depth of such defects is less than 75% of the machining allowance provided.
- 2.1.2 After machining, if any sand inclusions or blow holes are found, which are less than 3 mm in size and separated from the adjacent defect by at least 25 mm, they can be left without repair. This should be judiciously decided when defects are noticed on sealing surfaces.

2.2 Non-machinable surfaces

- 2.2.1 Foundry defects other than cracks, shrinkages and cold shuts can be dressed smoothly by grinding provided that the depth of such defects is less than 5% of the specified wall thickness with size less than 10 mm, separated from one another by at least 100 mm and maintaining minimum wall thickness at those locations.

3.0 DEFECTS THAT REQUIRE WELD REPAIR

- 3.1 All the defects, which are not acceptable as per the respective standards of Visual inspection and NDE excluding those listed in clause 2.0, and defects detected during machining or hydraulic test can be salvaged by sound welding practices, provided that the defects are not extensive and are accessible for repair.

4.0 SURFACE PREPARATION

- 4.1 The defective areas shall be identified and marked for repair.
- 4.2 Defects shall be removed by grinding, machining or air arc gouging to obtain a sound base for welding. If air arc gouging is employed, it shall be done with preheating as given in Table 1. The gouged area shall be ground to remove all black spots. Gouging is not permitted for C12A materials. The ground/machined area shall be tested by LPI/MPI to ensure defect removal.
- 4.3 The defective area must be adequately prepared to permit correct manipulation of the electrode.
- 4.4 The area to be welded shall be free from sand, oil, paint, grease etc.

5.0 WELDING PROCEDURE

- 5.1 The repair welding shall be done only by IBR approved works.
- 5.2 The procedure used for welding shall be qualified in accordance with ASTM A 488/ASME Section IX.
- 5.3 The welders employed for repair work shall be qualified in accordance with IBR.

- 5.4 The welding consumables and parameters shall be as per the qualified procedures. The recommended welding consumables are given in Table 1. Only BHEL approved brands of Electrodes are to be used. The use of other welding filler material is only allowed after prior agreement with the BHEL.
- 5.5 Before welding, the electrodes shall be baked at 250-300 deg. C for 1 hour for stainless steel and 300-350 deg. C for 1 hour for others and stored at 150 deg. C till use (or) The welding electrodes shall be dried as per electrode manufacturer procedure or vendors/supplier electrode drying written down procedure.
- 5.6 Preheating for welding shall be as given in Table 1.
- 5.7 The welding current should be kept as low as possible consistent with smooth operation and a good wash at the sides.
- 5.8 Wherever possible, the casting should be positioned for down hand welding operation. When extra long welds or several repair positions are involved, it is preferable to stagger the welding operation to distribute the heat and to minimise the distortion.
- 5.9 Welding shall be done using stringer bead technique, with beads not more than 50-75 mm in length.
- 5.10 After completing each layer, the weld surface shall be thoroughly cleaned to ensure complete slag removal before depositing the next layer.
- 5.11 When restriking, the arc should be started ahead of the previous weld run, moved back over the tapered portion and then continued forward.
- 5.12 After completion of welding and during interruptions, the job shall be post heated at temperatures as given in Table 1.
- 5.13 The weld profile shall merge smoothly with the contour of the casting and shall be free from slag, spatter and notches. The weld reinforcement shall be dressed up.
- 5.14 Major Repair:
 - 5.14.1 For CS & AS, A major repair is defined as the repair on castings that have leaked during hydraulic test or where the depth of repair exceeds 20% of the wall thickness of the casting or 25 mm whichever is less or the extent of repair exceeds 65 Sq.cm. All major repaired castings shall be post weld heat treated.
 - 5.14.2a For Austenitic ferritic (duplex) stainless steel, Weld repairs shall be considered major in the case of a casting that has leaked on hydrostatic testing or when the depth of the cavity after preparation for repair exceeds 20 % of the actual wall thickness, or 1 in. [25 mm], whichever is smaller, or when the extent of the cavity exceeds approximately 10 in.2 [65 cm2]. Castings shall be heat treated after major weld repairs.
 - 5.14.2b Post-weld heat treatment shall be in accordance with Heat to 1120 °C minimum with a minimum soaking time as specified in WPS(or 1 hour per inch of the weld thickness if no where specified) to heat casting uniformly to temperature and water quench, or the casting may be furnace cooled to 1010 °C minimum, hold for 15 min minimum and then water quench. A rapid cool by other means may be employed in lieu of water quench. Rate of heating shall be as per Table-2
- 5.15 After welding, post weld heat treatment shall be done at temperatures indicated in Table-1, with a minimum soaking time as specified in WPS (or 1 hour per inch of the weld thickness if no where specified) and cooled in furnace up to 400 deg. C. Rate of heating and cooling shall be as per Table-2

- 5.16 Weld repair in P15E Group-1 (C12A) material to be done only after approval by BHEL. All repaired C12A castings to be Post weld heat treated irrespective of depth or size of repair.

- 5.16.1 The welding consumables shall be in accordance to the WPS. The available welding electrode brand names are :

CM-95B91 (KOBELCO)

CROMOTHERME-91 (D& H Secheron)

In addition, the sum of the Ni+Mn content, in all welding consumables used to weld repair C12A castings, shall not exceed 1.0%.

- 5.16.2 Preheat shall be maintained for till welding is completed. Interpass temperature shall be limited to 350 deg.C. After welding, the outside surface temperature of weld joint shall be dropped to below 90 deg.C and hold it for 1 hour before commencement of PWHT. Do PWHT within 8 hours or Hydrogen Baking immediately as per table 2. If hydrogen baking is performed then PWHT shall be taken up within 72 hours. Heating and cooling rates for PWHT shall be as Table-2, but shall not exceed 140 deg.C/ hour and controlled cooling shall be done up to 350 deg. C.

- 5.16.3 Total holding time of all heat treatment performed (tempering and stress relieving) after normalizing shall not exceed 40 hrs at $\geq 730^{\circ}\text{C}$. If many heating cycles are necessary, the temperature before last heating can be reduced to 730°C .

- 5.16.4 On each casting, weld hardness shall be checked random wise and documented accordingly. Values of max 350 HV10 are allowed.

6.0 NON DESTRUCTIVE EXAMINATION

- 6.1 For minor defect, after completion of welding, the repair weld shall be tested by LPI/MPI.

- 6.2 For major defect, the repaired area shall be re-examined by the NDE method which originally disclosed the defect. MT/PT shall be performed after PWHT if performed as above. Weld repairs made as a result of RT shall be RT tested after welding. The acceptance standards for porosity and slag inclusion shall be as per UW-51 of ASME Section VIII Division 1.

7.0 SURFACE TREATMENT AFTER WELDING

- 7.1 Austenitic stainless steel castings (A 351 CF3M, CF8, CF8C & CF8M) shall be acid pickled and passivated after welding as per the following procedure.

7.1.1 Pickling

- 7.1.1.1 Pickling shall be done by immersing the castings in the pickling solution, which consists of Nitric acid 15-20% by volume, Hydrofluoric acid 2-5% by volume and the rest water, for 2 hours. The pickling tank shall be of stainless steel material. After pickling, the entire surface shall be bright. If any black patches are present, they shall be scrubbed using stainless steel wire brushes and the effectiveness of pickling shall be checked.

- 7.1.1.2 After pickling, the castings shall be rinsed in running service water having chloride content not exceeding 25 PPM. The rinsing shall be continued until there is no sign of free acid left when tested with Methyl orange indicator.

7.1.2 Passivation

- 7.1.2.1 Passivation shall be done by immersing the castings in the passivation bath, which consists of Nitric acid 15-20% by volume and the rest demineralised water, for 3 hours. The passivation tank shall be of stainless material.

- 7.1.2.2 After passivation, the castings shall be rinsed in running service water having chloride

content not exceeding 25 PPM. The rinsing shall be continued until there is no sign of free acid left when tested with Methyl orange indicator.

7.1.2.3 The satisfactory passivity of the surface shall be checked using stainless steel passivity test kit.

7.1.2.4 After satisfactory completion of this test, the castings shall be again rinsed in demineralised water having chloride content not exceeding 0.5 PPM and specific conductivity not exceeding 10 micro mhos. The rinsings shall be checked for chloride with 1% Silver nitride, which shall not exceed 0.5 PPM.

8.0 DOCUMENTATION

8.1 The details of repair work carried out shall be documented and correlated to welder and NDE reports.

Table - 1

Welding procedure for repair of steel castings

Casting Material	Electrode Specification	Minimum Preheat in ° C	Minimum Post heat Temperature in ° C	PWHT Temperature in ° C
A 216 WCB, A 216 WCC	E 7018 - A1	150	150 for 2 hours	595 to 625
A 217 WC6	E 8018 B2	220	220 for 2 hours	650 to 680
A 217 WC9, A 217 C5, CSN 422744	E 9018 B3	220	220 for 2 hours	675 to 705
A 217 C12A	E 9015 B9	220	220-280 for 2 hrs Hydrogen Baking: 260-400° C for 2 hours	750 to 770
A 217 CA15	E 410	220	220 for 2 hours	595-615
A 351 CF3M, A 351 CF8M	E 316	Nil	Nil	Nil
A 351 CF8	E 308/E 347	Nil	Nil	Nil
A 351 CF8C	E347	Nil	Nil	Nil
A995 CD3MN	E2209	Nil	Nil	Refer 5.14.2b

Table – 2

Rate of heating / cooling shall be as below unless otherwise specified. Cooling shall be in furnace up to 400 deg. C and further in Air.

Thickness of Material	Maximum Rate of Heating & Cooling above 400 deg. C (For A217 C12A it shall be 350 deg.C)
Up to 25mm	220°C/Hr (140°C/Hr max for A217 C12A)
Over 25 - 50mm	110°C/Hr
Over 50 - 75mm	75°C/Hr
Over 75mm	55°C/Hr
