



SPECIAL TERMS AND CONDITIONS

Tender Enquiry no. **2021-014E** dated **17.06.2020** Due date **29.06.2020**
ITEM: **Actuators**

Tender Enquiry No.	2021-014E
Enquiry date	17.06.2020
Last time and date of tender submission	1500 Hrs 29.06.2020
Tender opening time and date	1530 Hrs 29.06.2020
Quotation Parts	Two-part Bid
Tender evaluation	Item Wise
Item Description	Electrical Actuator and Electrical Actuator with Gearbox Combination
Item Specification	As per attached documents
Delivery schedule	Within 14 weeks from date of techno-commercial clear Purchase order
Validity of offer (In days)	90 days

Documents required along with supply of material	
1. Test Certificate	<u>Required</u>
2. Guarantee certificate	<u>Required</u>
3. Third Party Inspection Report	<u>Required</u>

PRE-QUALIFICATION CRITERIA

Pre-qualification criteria shall be as per attached document for “Qualifying criteria for multi turn electrical actuator”.

SPECIAL TERMS

S1. QUOTATION SUBMISSION

This tender is through **e-procurement** mode for supply of “**Electrical Actuator and Electrical Actuator with Gearbox Combination**” as per specifications mentioned in below tender terms. Please refer clause no. G1.2 in “General Contract Conditions of tender”, regarding instructions to bidder for submission of offer for e-procurement tender.

S2. SCOPE OF SUPPLY

In addition to the clause no. G5 in “General Contract Conditions of tender”, All the items are to be supplied as per below mentioned specifications:



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- a. Electrical Actuator (With Integral starter, Plug & Socket and diagnostic module) with Gear Box combination refer DOC No: SPEC:AC+GB:IS: DIA1:Rev:01
- b. Electrical Actuator (With Integral starter, Plug & Socket and diagnostic module) refer DOC No: SPEC: AC: IS: DIA: Rev: 01
- c. Actuator packing Details -VAL_ACT_PACKING_001_REV_00 Dated 12.07.2013

Sl. no.	Material code	Material description	Specification no.	Quantity, nos.
10	969991873100	ACTR-3.5KGM/18RPM,IS,PL&SO, NTPC S&I,DIAG	SPEC: AC: IS: DIA: Rev: 01	13
20	969991873200	ACTR-6 KGM/24RPM,,IS,PL&SO, NTPC S&I,DIAG		6
30	969991873300	ACTR-15 KGM/36RPM,IS,PL&SO, NTPC S&I,DIAG		14
40	969991873400	ACTR-30 KGM/36RPM,IS,PL&SO, NTPC S&I,DIAG		8
50	969991873600	ACTR-60 KGM/96RPM,IS,PL&SO, NTPC S&I,DIAG		23
60	969991873800	ACTR-100KGM/96RPM,IS,PL&SO, NTPC S&I,DIAG		23
70	969991873900	ACTR-200KGM/32RPM,IS,PL&SO, NTPC S&I,DIAG		1
80	969991874300	ACTR-15 KGM,IS,CLEPT,PL&SO, NTPC S&I,DIAG		3
90	969991874400	ACTR-30 KGM,IS,CLEPT,PL&SO ,NTPC S&I,DIAG		4
100	969991874600	ACTR-60 KGM,IS,CLEPT,PL&SO, NTPC S&I,DIAG		3
110	969991874800	ACTR-100KGM,IS,CLEPT,PL&SO, NTPC S&I,DIAG		4
120	969991876000	ACTR+GBX200KGM,IS,CEPT,P&S, NTPC S&I,DIAG	SPEC:AC+GB:IS: DIA1:Rev:01	1
130	969991876300	ACTR+GBX800KGM,IS,CEPT,P&S, NTPC S&I,DIAG		4
140	969991876400	ACTR-700KGM,IS,CLEPT,PL&SO, NTPC S&I,DIAG	SPEC: AC: IS: DIA: Rev: 01	1
150	969991877600	ACTR-30 KGM/96RPM,IS,PL&SO, NTPC S&I,DIAG		11
Total				119

S3. DELIVERY SCHEDULE

Material shall be delivered within 14 weeks from date of techno-commercial clear Purchase Order i.e. delivery date will start from date of submission of approved documents to supplier.



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S4. LIQUIDATED DAMAGES

Liquidated Damages shall be 0.5% of the undelivered order value for each week of delay or part thereof subject to a maximum of 10% of undelivered order value.

S5. LOADING CRITERIA CUM COUNTER OFFER

Counter offering is applicable for the enquiry with vendors other than L1, in order to have broader vendor base for ensuring delivery within time. The L1 rates will be counter-offered to other eligible vendors as per below points:

- In case there are only two qualified offers for any item, the L1 rate will be counter-offered to the L2 vendor.
- In case of more than two qualified offers for any item, the L1 rates will be counter-offered to maximum (n-1) vendors (where 'n' is the no. of techno-commercially qualified vendors) except MSE Vendors whose rates falling in the range of L1 +15%.
- In case a lower ranked vendor does not accept the counter-offered rates, the rates may be offered to next higher ranked vendor.
- Tender quantity shall be divided in the proportion as mentioned below:

Table-I

Sl. no.	Material code	Material description	Total quantity, nos.	Proportion of quantity to be divided		
				L1	L2	MSE
10	969991873100	ACTR-3.5KGM/18RPM,IS,PL&SO, NTPC S&I,DIAG	13	8	2	3
20	969991873200	ACTR-6 KGM/24RPM,,IS,PL&SO, NTPC S&I,DIAG	6	4	NA	2
30	969991873300	ACTR-15 KGM/36RPM,IS,PL&SO, NTPC S&I,DIAG	14	8	2	4
40	969991873400	ACTR-30 KGM/36RPM,IS,PL&SO, NTPC S&I,DIAG	8	6	NA	2
50	969991873600	ACTR-60 KGM/96RPM,IS,PL&SO, NTPC S&I,DIAG	23	14	3	6
60	969991873800	ACTR-100KGM/96RPM,IS,PL&SO, NTPC S&I,DIAG	23	14	3	6
70	969991873900	ACTR-200KGM/32RPM,IS,PL&SO,NTPC S&I,DIAG	1	1	NA	NA
80	969991874300	ACTR-15 KGM,IS,CLEPT,PL&SO, NTPC S&I,DIAG	3	3	NA	NA
90	969991874400	ACTR-30 KGM,IS,CLEPT,PL&SO, NTPC S&I,DIAG	4	3	NA	1
100	969991874600	ACTR-60 KGM,IS,CLEPT,PL&SO, NTPC	3	3	NA	NA



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Sl. no.	Material code	Material description	Total quantity, nos.	Proportion of quantity to be divided		
				L1	L2	MSE
		S&I,DIAG				
110	969991874800	ACTR-100KGM,IS,CLEPT,PL&SO, NTPC S&I,DIAG	4	3	NA	1
120	969991876000	ACTR+GBX200KGM,IS,CEPT,P&S, NTPC S&I,DIAG	1	1	NA	NA
130	969991876300	ACTR+GBX800KGM,IS,CEPT,P&S, NTPC S&I,DIAG	4	3	NA	1
140	969991876400	ACTR-700KGM,IS,CLEPT,PL&SO, NTPC S&I,DIAG	1	1	NA	NA
150	969991877600	ACTR-30 KGM/96RPM,IS,PL&SO, NTPC S&I,DIAG	11	6	2	3

NA: Not applicable

BHEL will give counter offers to other than L1 vendor (as per below conditions):

1. In case the L1 vendor is not a MSE, below mentioned conditions shall be followed:

In tender, participating MSE quoting price within price band of L1+15% shall be offered quantity as mentioned in the above table-I (for item sl. nos. 10 to 60, 90, 110, 130 & 150) at L1 price.

In case of more than one such MSE bidders, for item sl. no. 90, 110 & 130, counter offer shall be limited to one MSE only based on upon their ranking in final price comparative and for sl. no. 10 to 60 & 150, counter offer quantity shall be shared proportionality based on number of qualified MSE bidders and their ranking in final price comparative.

If MSE vendor doesn't accept the counter offer for item sl. nos. 10 to 60, 90, 110, 130 & 150, then the quantity shall be offered to L2 bidder.

If there is no MSE in the Price band of L1+15% then quantity as mentioned in the above table-I (for item sl. nos. 10 to 60, 90, 110, 130 & 150) shall be offered to L2 vendor subject to his acceptance of L1 rates.

2. In case if the L1 vendor is MSE then portion of MSE bidder for item sl. nos. 10 to 60, 90, 110, 130 & 150 shall be given to L2 bidder.

In case of non- acceptance of counter offer by any bidder after above applicable provisions, then quantity would be offered to L1 bidder.

All above mentioned preferences shall be given to MSEs only on the submission of documentary evidence.



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If there are more than one L1 bidders, following process shall be followed:

“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.

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”.

S6. REVERSE AUCTION

Reverse auction will not be conducted in this tender.

S7. OTHER CONTRACT CONDITIONS

The following terms & conditions will be applicable to this enquiry:

1. Third party inspection & NTPC inspection are mandatory for Actuators.
2. Submit your competitive offer indicating compliance or deviation for each point of the specification.
3. Your offer shall be supported by relevant technical documents like Quality plans, catalogues, leaflet, General arrangement drawings etc. for technical evaluation and for getting customer approvals.
4. Only Manufacturers are eligible to participate in this bid. Traders & Dealers will be considered only when OEM refuses to deal directly with BHEL (and gives a letter to this effect) and insists on availing the services of an agent / distributor / dealer / trader etc.
5. Evaluation will be done enquiry item wise.
6. Prices shall be firm till entire execution of the Purchase Order. i.e. Price variation clause is not acceptable.
7. If the supply is short, the extra cost to BHEL in replenishing the short fall will be debited to the vendor.
8. Supplier's has to submit test reports for each serial no's as per our TDC conditions and packing also to be done for each item separately.
9. The materials are to be dispatched with proper packing and binding as mentioned in the packing specifications.
10. The actuators specialties like Diagnostic module, Integral starter, EPT etc. shall be plug in type / easily to add / remove at shop or site. If the vendor does not have plug in type, the fittings required for these addition/removal shall be supplied free of cost when required.



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11. Services required till the first commissioning of actuator shall provide free of cost.
12. In case of actuator complaints from project sites, service person should be deputed to site within a time period of 72hrs.
13. In addition to all the above conditions, BHEL GCC given as a separate annexure shall also be applicable to the extent they are not superseded by the above conditions.

Non-adherence to these special conditions of enquiry and BHEL's general terms and conditions may lead to disqualification of offer.

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

Documents submitted with the offer shall be signed and stamped in each page by authorized representative of the bidder.

G1. 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.

G1.1 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 tender please handover quotation to Sh Rakesh Kumar/ SDGM/Head-MM or Sh Gurcharan Singh / AGM-Operations & MM. [Contact: 01859 224 615/631]. Bid can be send to following address:

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

G1.2 INSTRUCTION TO BIDDER (In case of E-Procurement)

Interested bidders/Suppliers shall submit their offer through e-Procurement mode at <https://bhel.abcpurchase.com>. Offers in any other mode will not be accepted.

For Enterprise Procurement System (EPS) Bidders/Suppliers are requested to follow these steps:

a. Requirements

1. Computer with good Internet Connection.
2. Operating System should be Windows Vista / Windows 7 and above.
3. Web Browsers: Internet Explorer 9.0 (32-bit Browser only) & above

b. Mandatory Requirements:

Suppliers interested for registration for BHEL Open Tenders should have a valid DSC (Digital Signature Certificate) before Proceeding forward for Registration. Herein a Valid DSC refers to 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.

For Unregistered Suppliers in EPS:

Procedure for Online Registration in EPS for Open Tender Suppliers for BHEL. Please follow the below steps for registration: -

1. Click Register Button (Top of the Screen).



General Contract Conditions (GCC) of MM Tenders

[Address: BHEL Industrial Valve Plant: 433, Industrial Complex, Goindwal Sahib, Distt Tarn Taran, Punjab-143422]

2. Please input your organization PAN No (in case of Indian supplier) or select your "country" in case you are an overseas Supplier.
3. Select Units to participate in.
4. Fill up Company details.
4. Key in your desired login id If you have registered by keying in PAN No. then your desired login id will be prefixed by "OTI", In case of overseas suppliers it will be also prefixed with "OTI".
5. Fill in the Captcha code & agree to the terms & conditions and privacy policy of this website and click SUBMIT.

Once the above steps are completed, contact to M/s eProcurement Technologies Limited for ID Activation. M/s e Procurement Technologies limited, Ahmedabad will activate your ID within 2 business hours. After registering, follow the steps provided in "For Registered Supplier" to view RFQ.

NB: - 1 BHEL Administrator or user will have no role for approving Registration and Open Tenders and DSC for any supplier who has registered himself from the front END which is in case of OT.

For Registered Supplier in EPS:

1. Supplier visits EPS home page
2. Supplier Login in with their user id and password
3. Search the RFQ ID and views it.
4. Attaches themselves to the RFQ by clicking the "I/We wish to participate".
5. Supplier fills the bid template and makes necessary attachments
6. Supplier submits their bid by clicking Sign, Encryption & Save button.

In any problem is faced by supplier while login/registration in EPS (<https://bhel.abcpocure.com>) and any other assistance, please contact the support team of M/s e Procurement Technologies limited, Ahmedabad as per details mentioned in table below: -

Name	Contact Nos.	e-mail ID	Role	Location
Mukunthan	+91 6353215001	Trichy.bhel@eptl.in	Support Executive	Trichy
Swapnil Hamilton	+91 7940270549	swapnil.h@eptl.in	Support Executive	HO – Ahmedabad
Hardik Oza	+91 7940270560	Hardik.oza@eptl.in	Support Executive	HO – Ahmedabad
Ankur Bhatt	+91 7940270590	ankur.bhatt@eptl.in	Support Executive	HO – Ahmedabad
Prashant Rajyaguru	+91 7940270545	prashant@eptl.in	Asst. Manager – Implementation & Support	HO – Ahmedabad
Dharam Rathod	+91 7940270596	dharam@eptl.in	Manager – Implementation & Support	HO – Ahmedabad
Pradip Parmar	+91 7940270532	pradip@eptl.in	Sr Mgr – Implementation & Support	HO – Ahmedabad
Devang Patel	+91 7940270576	devang@eptl.in	Sr Manager – Implementation & Support	HO – Ahmedabad

G2 OTHER IMPORTANT INFORMATION RELATED TO E-PROCUREMENT TENDERS

1. 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.
2. 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.
3. 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.
4. 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.
5. 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. 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.
6. 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.
7. 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.

G3 PRICE BASIS

- a. Order of enquiry item sl. No. shall be maintained in the quotation.
- b. The rates quoted shall be firm and fixed. No price variation is proposed and allowed.
- c. Rates quoted should be F.O.R Goindwal basis. If bidder has quoted Ex Works, loading shall be done as per BHEL discretion for tender evaluation.

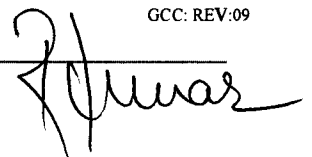
Variation in GST or any other statutory levies during contractual delivery period shall be to BHEL's account

G4 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 extension of tender opening date, the validity shall be suitably revised.

G5 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





General Contract Conditions (GCC) of MM Tenders

[Address: BHEL Industrial Valve Plant: 433, Industrial Complex, Goindwal Sahib, Distt Tarn Taran, Punjab-143422]

Enquiry. National & International material Standards shall have to be arranged by vendors themselves.

G6 REPLACEMENT OF REJECTION

If the material is rejected due to defective workmanship during inspection or at the time of actual use, within the guarantee period (i.e. as per clause 13), 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, qty 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.

G7 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 to reconcile the pending PO statement every month/frequently. BHEL will give pending PO statement every month. This can also be viewed at Portal (<http://vis.bheltry.co.in/mm/index.jsp>).

G8 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.

G9 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.

G10 TERMS OF PAYMENT:

- a. 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.
- b. Documents to be submitted (if applicable)
 - i. Tax invoice (Invoice shall be GST compliant and should contains all the required information such as GST No, HSN code etc.)
 - ii. Transporter copy along with material/consignment.
 - iii. Material Test Certificates (MTC) and
 - iv. Compliance Certificate.
- c. GST registration number is to be submitted by qualified vendor as per GST law.
- d. It is mandatory to mention proper material codes in the invoices and separate invoices to be raised for different POs.

e. BHEL releases payment through EFT mode ONLY. Necessary details may please be submitted by filling required format before release of payment.

f. Conditions relating to release of GST portion:

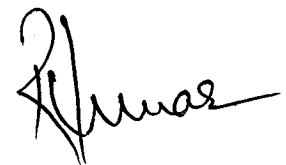
Payment of GST portion will be released to vendor only upon completion of statutory requirement and further subject to following:

The reimbursement of GST portion of invoice shall be released only upon: -

1. vendor declaring such invoice in his GSTR-1 and
 2. receipt of goods and Tax invoice by BHEL and
 3. Confirmation of payment of GST thereon by vendor on GSTN portal.
 4. 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.
- In case GST credit is delayed/denied to BHEL due to non/delayed receipt of goods and/or tax invoice or expiry of timeline prescribed in GST law for availing such ITC, or any other reasons not attributable to BHEL, GST amount shall be recoverable from vendor along with interest levied / leviable on BHEL.
 - In case vendor delays declaring such invoice in his return and GST credit availed by BHEL is denied or reversed subsequently as per GST law, GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from vendor/contractor along with interest levied / leviable on BHEL.

G11 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.



GCC: REV:09



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G12 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.

G13 INSPECTION

- a. All required tests as called in referred material standard/BHEL/TDC/drawing etc shall be carried out by vendor at no extra cost. **BHEL may decide to inspect itself/arrange third party at vendors' works itself as and when necessary with prior intimation to the vendor.** No additional charges shall be claimed for such inspections.
- b. Third party inspection charges will be borne by BHEL. Moreover, all required infrastructure (testing, tools etc) have to be arranged by supplier.
- c. **Vendor will give inspection call sufficiently in advance considering the delivery period stipulated in the purchase order.**
- d. Material Test Certificates (MTC), Inspection reports and Compliance/Guarantee Certificate are to be provided along with the supplies.
- e. Latest applicable revisions of standards/procedures to be referred. International/National standards are to be arranged by vendor.
- f. 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.
- g. 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.
- h. 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.

G14 PREFERENCES FOR MSE's

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", 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 along with the offer UAM (Udyog Aadhaar Memorandum), attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (Format enclosed at Annexure -1 where deemed validity of EM II certificate of five years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents is not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer.

G15 GUARANTEE/WARRANTEE

Vendor shall give a guarantee 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.

G16 PENALTY 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% 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).

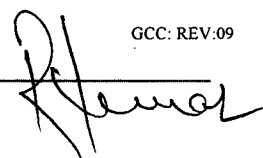
BHEL reserves the right to receive or not receive the material after the due date of PO. Applicable GST shall also be recovered from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice number.

G17 RISK PURCHASE

BHEL shall be entitled to terminate the contract/pending POs at any stage and to purchase elsewhere at the risk and cost of the vendor, either the whole of the goods or any part thereof which the supplier has failed to deliver or dispatch within the time stipulated as aforesaid. Vendor shall be liable for the losses, which BHEL may sustain by way of such risk purchase.

G18 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.



G19 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.

G20 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.

G21 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.

G22 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.

G23 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.

G24 WORDS AND FIGURES

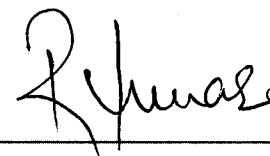
- a. If, in the price structure quoted for the required goods/ services/ works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion 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.
- b. 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
- c. 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.
- d. 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.
- e. 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.
- f. All overwriting/cutting, etc will be numbered by bid opening officials and announced during bid opening.

G25 GENERAL

- a. 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.
- b. 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.
- c. 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.
- d. If possible, please submit soft copy of price quotation [copied on a blank CD of standard make] put in the sealed offer.
- e. 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.
- f. BHEL may increase/decrease item/s based on BHEL requirement before price bid opening. Suitable price implication may be asked from suppliers.
- g. 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.
- h. 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.
- i. Any term is special tender terms and conditions will supersede the GCC.
- j. BHEL reserves the right to negotiate with L1 bidder/s.

G26 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 www.bhel.com.



GCC: REV:09



General Contract Conditions (GCC) of MM Tenders

[Address: BHEL Industrial Valve Plant: 433, Industrial Complex, Goindwal Sahib, Distt Tarn Taran, Punjab-143422]

G27 DISCLAIMER CLAUSE: (Only for E procurement)

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.

G28 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 <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.

G29 REVERSE AUCTION

BHEL reserves the right to go for Reverse Auction (RA) (Guidelines as available on www.bhel.com) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. Bidders to give their acceptance with the offer for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA.

Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit 'Process compliance form' (to the designated service provider) as well as 'Online sealed bid' in the Reverse Auction. Non-submission of 'Process compliance form' or 'Online sealed bid' by the agreed bidder(s) will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com).

The bidders have to necessarily submit online sealed bid less than or equal to their envelope sealed price bid already submitted to BHEL along with the offer. The envelope sealed price bid of successful L1 bidder in RA, if conducted, shall also be opened after RA and the order will be placed on lower of the two bids (RA closing price & envelope sealed price) thus obtained. The bidder having submitted this offer specifically agrees to this condition and undertakes to execute the contract on thus awarded rates.

If it is found that L1 bidder has quoted higher in online sealed bid in comparison to envelope sealed bid for any item(s), the bidder will be issued a warning letter to this effect. However, if the same bidder again defaults on this count in any subsequent tender in the unit, it will be considered as fraud and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com).

G30 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 www.bhel.com.

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

1.1. Commitment by BHEL:

General Contract Conditions (GCC) of MM Tenders

[Address: BHEL Industrial Valve Plant: 433, Industrial Complex, Goindwal Sahib, Distt
Tarn Taran, Punjab-143422]

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 commit 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.

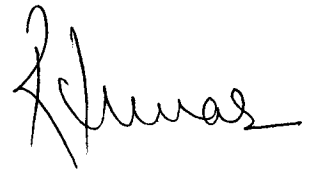
1.2.3. The bidder/ supplier/ contractor will perform/ execute the contract as per the contract terms & conditions and will not default without any reasonable cause, which causes loss of business/ money/ reputation, to BHEL.

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 [www. bhel.com](http://www.bhel.com) and/or under applicable legal provisions

G31 PREFERENCE TO MAKE IN INDIA

For this procurement, Public Procurement (Preference to Make in India), Order 2017 dated 15.06.2017, 28.05.2018 & 29.05.2019 and subsequent Orders issued by the respective Nodal Ministry shall be applicable even if issued after issue of this NIT 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.



Instruction for packing of Electrical Valve actuators

Packing box

- 1.1) The actuator shall be supplied packed in wooden crates / hard card board box.
- 1.2) The box shall have inner lining of polythene sheet (minimum of 250G polythene sheet)/waxed paper/water proof paper or similar protection against water entry.
- 1.3) Use fillers like thermocol / loose fill or air-cellular cushioning material such as Bubble Wrap to fill void spaces and prevent movement inside the box during shipping

Actuator Covering

- 1.4) Further the actuator shall be completely covered with a water-proof barrier highly resistance to the passage of water-vapor - like thick polythene bag (Minimum of 500G thickness). Sharp corners, edges and projects of the actuators should be covered to prevent abrasion or puncture of the water proof barrier with anti-abrasive material like felt. Extra length and projections of the polythene bags are to be wrapped and secured by strips of self-adhesive tapes.
- 1.5) After opening the box, the water-proof barrier shall be intact and it is intended to store actuator for long time with this water-proof barrier.
- 1.6) Suitable desiccants shall be provided in to the sealed water proof barrier. The desiccant shall be in small bags and disposed uniformly. They shall be secured in position to minimize chances of desiccant dust escaping. The amount of total desiccant shall be such to limit the relative humidity within the cover to a maximum value of 50 percent – for a long time of storage.

Marking on the box

- 1.7) All spares shall be packed separately in boxes marked SPARE. Spare components are also to be covered separately with water-proof packing.
- 1.8) Actuator model and material code shall be prominently marked on the box.
- 1.9) Special precaution notations such as 'Fragile', 'This side up', 'center of gravity', 'weight', 'Owner's particulars', 'Purchase Order No.', 'Order item No.' etc. shall be clearly marked on the package together with other details as per purchase order.

PREPARED: DD		APPROVED: KN	DATE: 12.07.2013
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PART - A
**QUALIFYING CRITERIA FOR MULTI TURN ELECTRICAL
 ACTUATOR**

S.No.	BHEL Specification	Vendor's Offer
1.0	QUALIFYING CRITERIA	
1.1	Only those vendors who have designed, manufactured and supplied Multi turn Electrical Actuator meeting the following requirements shall quote: 1. Multi turn Electrical Actuator should have been supplied to minimum two power plants in India and working satisfactorily for more than one year after commissioning (as on date of opening of Tender) 2. Vendor shall furnish Endurance test reports of each of the offered actuator models. 3. The actuator shall include a diagnostic module, which will store and enable down load historical down load operation and torque data to permit analysis of actuator and valve in service performance. Data down load shall be carried out without removing any covers and all shall be available locally to the actuator or remotely via telecommunication data transfer. Diagnostic and configuration software shall be made for user PC system. 4. Actuator shall have minimum Two numbers adjustable torque switches (one for open and one for close) each with 2 NO and 2 NC potential free contacts. 5. Actuator shall have minimum Two numbers of position limit switches (one for open and one for close) each with 2 NO and 2 NC potential free contacts and Two Auxiliary limit switches (one for open and one for close) each with 2 NO and 2 NC potential free contacts.	
1.2	Vendor has to submit at least one Performance Certificate from their customers, for satisfactory performance of	

	supplied Multi turn Electrical actuator quoted against this enquiry, for a minimum period of one year (as on date of opening tender).	
1.3	BHEL reserves the right to verify the information provided by the vendor. In case the information provided by the vendor is found to be false/ incorrect, the offer shall be rejected.	
2.0	INFORMATION TO BE PROVIDED BY VENDOR	
	The following details shall be provided for the Multi turn Electrical actuator for which the performance certificate has been furnished	
2.1	Name and address of the customer along with contact details of the concerned person	
2.2	Name and location of the power plant	
2.3	No. of units and MW rating of the power plant	
2.4	Name of the system in which these Multi turn Electrical actuators are used	
2.5	Maximum Rating of Multi turn Electrical actuator provided	
2.6	Model No. of the actuator supplied	

Product: Electrical Actuator (With Integral starter, Plug & Socket and diagnostic module) with Gear Box combination

IMPORTANT INSTRUCTION:

- a) ***Vendor shall furnish point-to-point confirmation / deviation to each clause of this specification explicitly.***
- b) ***The offer shall be submitted along with all the documents required in this specification. Offer without all supporting documents requested in this specification will not be considered for Technical evaluation.***

Clause. No	Specification requirement	Vendor confirmation / comments / deviation
G.1.0	GENERAL	
G.1.1	The offered Actuator with Bevel Gear box shall be brand new with state of the art technology having a proven field track record. No prototype equipment shall be offered.	
G.1.2	Vendor shall ensure availability of spare parts and maintenance support services for the offered equipment for at least 10 years from the date of supply.	
G.1.3	Vendor shall give a notice of at least one year to the end user of equipment before phasing out the product/ spares to enable the end user to place order for spares and services.	
G.1.4	The vendor shall be responsible for design, engineering and manufacturing of the complete actuator and gear box to fully meet the intent and requirements of this specification.	
G.2.0	ENCLOSURE:	
G.2.1	Actuators including motor, integral starter, control transformer unit and all control devices shall be of totally enclosed weather proof and dust proof construction with min. IP 68 enclosure, which shall include the 'O' ring for complete environmental protection. The same shall be suitable for outdoor applications and capable of operating in ambient temperature of -20 deg.C to +70 deg.C. The motor operators/actuators shall conform to AWWA specification. Actuator with integral starter and 9 pin plug and socket arrangement shall be considered.	
G.3.0	VOLTAGE:	
G.3.1	The unit shall be suitable for operation on a 415V, 3 phases, 50Hz, 3-wire AC supply. All the internal power supply required for Starter unit and other accessories shall be derived from the above indicated power supply through control transformers.	

Clause. No	Specification requirement	Vendor confirmation / comments / deviation
G.4.0	CONSTRUCTION:	
G.4.1	The actuator with bevel gear box shall be suitable for mounting directly on the valve. The actuator along with Bevel gear box shall be capable of giving the required torque, rpm and thrust. Indicate the adjustable range of torque and starting torque of actuator with bevel gear box in kgm/Nm for each offered models. The maximum thrust capability of the actuators with bevel gear box shall also be furnished. The actuators with bevel gear box shall be designed to take the full thrust. All Gears used shall be metallic. Fiber gears are not acceptable. Metallic gear trains used shall be self-locking type to prevent drift. Indicate the maximum stem acceptance diameter in the offer. Gear operators are to be supplied with input flanges to suit the keyed shaft of the Electrical actuator. Details of the input flange for each model shall be furnished. The gear casing shall be designed adequately to withstand shock and vibration of the pipeline. The design shall be compact and less weight and shall not cause any trouble during operation at sites. Bevel gear box Enclosure protection shall be min IP65. The gear operator shall have base suitable to take the thrust with ball/roller bearings. An Aluminum Bronze drive sleeve with a pilot bore shall be provided as a standard supply. The drive sleeve will be threaded by BHEL to suit the stem thread. The assembly of all gears, shafts etc... shall be done properly to have smooth operation without any noise. The flange for connecting the valve shall have dimensions as per BHEL Requirement indicated in the table All Gear operators shall have provision to accommodate raising spindle of the valve and the hole shall be properly covered with a removable lid. The Gear box shall be supplied with stem protection tube to accommodate larger spindle travel. The length of stem protection cover shall be as indicated in the table. All the above parts, i.e. the threaded portion of Gear box, removable lids and stem protection tubes shall be able to withstand the prolonged outdoor storage without getting rusted or damaged.	
G.4.2	Actuator with Bevel gear box mounting arrangement with dimensions, the thread connection of the Stem Protection Cover shall be clearly furnished along with the offer. The flange dimension shall be as indicated elsewhere in this specification.	
G.4.3	The dimension drawing of the blank adopter bush shall be furnished along with the offer.	

Clause. No	Specification requirement	Vendor confirmation / comments / deviation
G.4.4	Each actuator shall have a hand wheel fitted on it for manual operation in case of power failure. It shall be possible to fully open /close the valve with the hand wheel. The hand wheel shall be designed such that its engaging lever declutches automatically when the power supply to the motor is restored. The material of the hand wheel shall be either malleable iron or steel. The hand wheel-engaging lever shall give trouble free performance under repeated operations. Side mounted hand wheel with gear / Top mounted hand wheel can be offered. The hand wheel construction shall be strong enough to withstand the impacts of normal handling and storage of actuator without any damage. The hand wheel shall be able support the weight of the actuator, without any damage to actuator or hand wheel, when actuator is rested on the hand wheel.	
G.4.5	Actuators offered shall be with self-locking worm.	
G.5.0	TECHNICAL DATA:	
G.5.1	Desired output shaft speeds are given below for different torque ranges. Actual speeds of actuators offered shall be clearly indicated.	
G.5.2	Actuator + Bevel gearbox combination shall have provision to set the Torque value from 40% of the maximum Torque mentioned in the below table.	

Actuators with bevel gearbox - Technical requirements

Sl.No	Maximum Torque (Kg-m)	RPM (Approx)	Output flange details	Thrust (Kgf)	Stem Protection Cover in mm (unless otherwise specified)
1	200	14	177.8x298.5-8NOS M20	32000	400
2	400	9	215.9x355.6-8 NOS M24	45000	400
3	500	9	215.9x355.6-8 NOS M24	63000	400
4	800	8	228.6x406.4-8NOS M30	82000	400
5	1050	8	228.6x406.4-8NOS M30	120000	500
6	1400	6	228.6x406.4-8NOS M30	130000	500

Clause. No	Specification requirement	Vendor confirmation / comments / deviation
G.6.0	WEIGHT:	
G.6.1	Furnish weight of actuator with bevel gear box including all accessories.	
G.7.0	LUBRICANT:	
G.7.1	Oil plugs shall be provided for filling and draining separately.	
G.7.2	The gearbox of the actuator shall be oil filled or grease filled. The oil/grease must be suitable for operation for 80 Deg. above ambient temperature. Furnish detail of lubricant used with Indian oil Company's BPCL & HPCL's equivalent. The actuator shall have proper seals to prevent leakage of oil at all installation positions. The actuator construction shall be such that the oil/grease does not leak to other compartments or outside. Incase of any complaint of such leakage, the complaint shall be attended free of cost within one week and root cause of the problem shall be eliminated within one month.	

Clause No	Specification requirement	Vendor confirmation / comments / deviation
G.8.0	DIMENSIONAL CATALOGUES:	
G.8.1	Two copies of catalogues of the actuators with bevel gear box in English language describing the constructional details shall be sent along with the offer. The catalogues shall also provide over all dimensions of the actuators, bevel gear box, mounting flange, maximum spindle acceptance diameters and other details called for in the specification.	
G.9.0	O & M INSTRUCTION MANUALS:	
G.9.1	a. One copy of Operating and Maintenance Instruction Manual shall accompany each actuator with bevel gear box ordered. b. One set of Operating and Maintenance Instruction Manual of each type of actuator with bevel gear box both in Hard copy and in Soft copy in CD (in pdf format) shall be sent to us before dispatch of the actuator.	
A.0	ACCESSORIES	
A.1.0	TORQUE SWITCHES::	
A.1.1	Two numbers adjustable torque switches (one for open and one for close) each with 4 NO and 4 NC potential free contacts. The type of torque switch like rotary/cam shall be mentioned in the offer.	
A.1.2	The torque switches shall have accuracy of plus or minus 3% of set value.	
A.1.3	A scale shall be provided for each torque switch to set required torque. Each division shall indicate actual value of torque. The scale-setting knob shall have locking screw to avoid any setting disturbance at site due to line vibration.	
A.1.4	Actuators shall have provision for bypassing the torque switch during initial 5% opening of valves. Details for this must be indicated in the wiring diagram.	
A.1.5	The wiring diagram shall include details of changes to be done for making the actuator suitable for torque seating or position seating valves.	
A.2.0	LIMIT SWITCHES:	
A.2.1	Two numbers of position limit switches (one for open and one for close) each with 2 NO and 2 NC potential free contacts. The type of limit switch like rotary/drum/cam type shall be mentioned in the offer.	
A.2.2	Two Auxiliary limit switches (one for open and one for close) each with 2 NO and 2 NC potential free contacts.	
A.2.3	Each limit switch shall be capable of being set to trip at any position independently between fully open and fully closed position.	
A.2.4	Limit switches and torque switches shall be weather proof suitable for damp atmospheres, and shall not cause any trouble during commissioning and operation.	
A.2.5	The torque and position limit switches shall be suitable for the following ratings, both 240 volts, AC, 5 amps and 220 volts DC, 0.5 amps. The insulation level between each set of contacts shall be minimum of 1.2KV for 1min.	
A.3.0	LOCAL POSITION INDICATORS:	
A.3.1	Each actuator shall have a local position indicator to indicate 0 to 100% of valve travel.	

Clause No	Specification requirement	Vendor confirmation / comments / deviation
A.3.2	The actuator with gearbox unit shall be suitable for operating different valve size with varying lifts. The actuators shall have adjustable gear for the local position indicator so that accurate indication of valve position can be obtained for all valve lifts by adjusting the gears. The gears selection chart for setting of local position indicator and mechanical transmitter for different valve lifts (output shaft revolutions) shall be furnished along with offer. Also one set of change gears shall be supplied along with each actuator.	
A.4.0	ANTI-CONDENSATION HEATER (SPACE HEATER):	
A.4.1	Each actuator shall have an anti-condensation heater in the limit switch compartment suitable for 240V AC 50 c/s single phase supply with thermostat for automatic switch ON/OFF Space heater based on the temperature inside limit switch compartment. The wattage of the heater shall be specified in the data sheet and wiring diagram shall represent the same.	
A.5.0	REMOTE POSITION TRANSMITTER:	
A.5.1	Open/Close actuator shall have two Nos. of resistance type position transmitter for remote indication. Rating of position transmitter 100ohms, 50 Volts, AC/DC. A suitable fixed dropping resistor must be put in series for limiting the power consumption.	
A.5.2	If enquiry item description contains “ CLEPT/CEPT/CPT ”, then inching duty actuators shall be considered. The same shall be offered with one no. of LVDT type (Non-contact type) electronic position transmitter, suitable for 24V DC with an output of 4-20mA and 2 wire system.	
M.0	MOTORS	
M.1.0	POWER SUPPLY:	
M.1.1	Motor shall be suitable for operation on a 415V, 3 phase, 3 wire ungrounded supply system.	
M.1.2	Motor shall operate without any trouble under the following conditions.	
	a. If the voltage varies within plus or minus 10% of the rated value of 415 Volts.	
	b. If the frequency of the power source varies within plus or minus 5% of 50 c/s.	
	c. If the voltage and frequency of the source vary simultaneously and the sum of the absolute percentage values in variation does not exceed 10%.	
M.2.0	CONSTRUCTION:	
M.2.1	Motor shall be totally enclosed with min IP 68 or better weatherproof enclosure and shall be suitable for outdoor installation without canopy. All electrical equipment, accessories and wiring shall be provided with tropical finish to prevent fungus growth. In case of any water leakage due to enclosure failure it shall be attended free of cost within one week and root cause of the problem shall be eliminated within one month	
M.2.2	Motor shall be conforming to IEC 60034 or any other equivalent international standard for all requirements unless otherwise specified herein.	
M.2.3	The enclosures shall be treated and prepared for painting with suitable painting system for withstanding 500Hrs of salt spray as per ASTM B-117/ ISO9227 standard. Motor shall be painted with corrosion proof epoxy resin paint. Paint shade shall be RAL 7032	

Clause No	Specification requirement	Vendor confirmation / comments / deviation
M.3.0	INSULATION:	
M.3.1	Motor shall have class F non-hygroscopic insulation with tropicalisation suitable for polluted dusty and corrosion atmospheres of relative humidity 100%. Motor shall be designed for an ambient temp of 70 degree C. However, the temperature rise of the motor winding shall be limited to the maximum temperature allowed for class 'B' insulation. It shall also be possible to rewind the motor in case the windings and insulation get burnt out.	
M.4.0	RATING:	
M.4.1	For ON/OFF Motors shall be S2-15 min. rating. This shall not be less than the highest of the following: 1) Fifteen minutes. 2) As required for three successive open/close operations For Inching service, 150 starts per hour shall be considered.	
M.5.0	STARTING:	
M.5.1	Motor shall be suitable for direct on-line starting.	
M.5.2	Starting current shall be limited to 6 times the full load current.	
M.5.3	Motor shall be capable of a. Starting at 85% of rated voltage. b. Running at 80% of rated voltage at rated torque for a period of 5 minutes c. Running at 85% of rated voltage at 33% excess rated torque for a period of 5 minutes d. The torque at reduced supply voltage shall be mentioned for 75% voltage, 80% voltage, 85% voltage & 90% voltage.	
M.6.0	BEARINGS:	
M.6.1	Bearing shall be of double shielded, grease lubricated antifriction type. The anticipated bearing life shall be indicated for all models.	
M.7.0	EARTHING TERMINALS:	
M.7.1	Two earthing terminals shall be provided on either side of the motor.	
M.8.0	MOTOR DATA:	
M.8.1	One set of hard and soft copies of motor data sheets for each type of actuators ordered shall be furnished as per format furnished.	
M.9.0	TESTS:	
M.9.1	Tests shall be carried out as per approved QP.	
C.0	CONTROLS	
C.1.0	INTERNAL WIRING:	
C.1.1	Internal wiring diagram shall be neatly pasted on cover of terminal box.	
C.1.2	Internal wiring shall be done with 1.5 sq.mm PVC insulated copper wires. Ferrules should be provided on both ends of the wire for easy identification.	

Clause No	Specification requirement	Vendor confirmation / comments / deviation
C.2.0	FEATURES APPLICABLE TO INTEGRAL STARTER	
C.2.1	The actuators shall have integral starters. Control supply shall be derived with step down transformer from 415V, 3PH incoming supply. Necessary primary and secondary fuses shall be provided. All the PCBs shall be protected against moisture by suitable coating and treatment. In case of failure of PCBs due to moisture entry, it shall be attended free of cost within one week and root cause of the problem shall be eliminated within one month	
C.2.2	Automatic phase correction facility and single phasing prevention shall be available.	
C.2.3	Lockable Selector switch for LOCAL-OFF-REMOTE selection with OPEN-STOP-CLOSE pushbuttons (for local operation) shall be provided.	
C.2.4	It should also be possible to reverse the direction of travel for inching valves (in LOCAL and REMOTE) without giving stop command.	
C.2.5	Lamp indication for full open, full close and in-travel positions shall be provided.	
C.2.6	Electrically and mechanically interlocked contactors shall be provided for forward and reverse operation. Contactor rating shall be sufficient to withstand the extreme conditions Like valve jamming and instantaneous reversal of motor.	
C.2.7	Potential free contacts for LOCAL-OFF- REMOTE positions shall be wired to terminals and available for customer connections.	
C.2.8	Open/Close command termination logic with position and torque set points shall be suitably built in the PCB inside the actuator.	
C.2.9	The selection of the following mode shall be available locally on actuator through suitable switch programming. It shall also be clearly described in wiring diagram. a) Valve seating by torque (close) or limit (close) shall be available. b) Inching (non self-retaining) or non-inching (self-retaining) for remote command and local mode shall be field configurable.	
C.2.10	Provision shall be there for bypassing the torque switch during initial 5% opening and closing of valves. Details for this must be indicated in the wiring diagram. This shall be done through electronic circuit or through one 'NC' contact of 'limit switch'.	
C.2.11	All the contacts of Main & Auxiliary limit switches and torque switches shall be wired up to terminal box for customer use.	
C.2.12	a) Actuator shall be suitable for remote operation by potential free contacts for open / close and stop, the necessary 24V DC power supply shall be derived internally. Also It shall be possible to energise the interposing relays provided (with coil burden $\leq 2.5VA$, one for open and one for close) to initiate opening and closing by 24V DC signal from the external control system, accordingly suitable isolated interface in the actuator shall be provided. b) Potential-free change-over contact for Open feedback, close feedback, system ready/ Ready to start feedback, Open torque acted feedback, Close torque acted feedback, OLR acted for connecting to remote DCS/PLC system	

Clause. No	Specification requirement	Vendor confirmation / comments / deviation
C.2.13	The actuator shall include a diagnostic module , which will store and enable down load historical down load operation and torque data to permit analysis of actuator and valve in service performance. Data down load shall be carried out without removing any covers and all shall be available locally to the actuator or remotely via telecommunication data transfer. Diagnostic and configuration software shall be made for user PC system.	
C.2.14	24V Power supply for Contact less EPT shall be derived internally.	
C.2.15	Thermal over load relay shall be provided in addition to thermostats embedded in motor winding. Overload relay and thermostats shall be connected in control circuit to trip actuator incase of overload. OLR set value shall be mentioned in wiring diagram/ Data sheets .	
C.2.16	A common potential free contact (monitoring relay) shall be available to annunciate the following faults. a) Thermostat trip b) OLR trip c) Valve jammed in mid-travel. d) Motor single phasing. e) Control supply failure. f) Local stop or local/remote selector switch in local mode.	
C.2.17	The following status annunciation shall be made available locally (integral to actuator) a) Actuator running in OPEN b) Actuator running in CLOSE c) Internal 24VDC Control voltage healthy d) 24VDC availability for customers use healthy.	
C.2.18	The following individual fault annunciation shall be made available locally (integral to Actuator)for easy trouble shooting a) Open Torque sensor acted b) Close Torque sensor acted c) Thermostat trip d) Thermal overload relay trip e) Motor single phasing f) Wrong phase sequence protection acted	
C.2.19	BLINKER RELAY: Blinker relay contact for remote indication of 'actuator running' is to be provided as a standard part of integral starter actuator.	
C.2.20	In the event of voltage dips/ power outage, status of MOVs (OPEN/ CLOSE indication) for remote annunciation shall not undergo any change. The wiring for all MOVs feedback controls shall be fail safe type. Any backup for power supply & hardware required for achieving the same shall be provided by vendor within the actuator. No other power supply other than 415V+/- 10%, three phase, 50Hz+/-3% incoming supply to each of MOV Actuator shall be provided.	
C.3.0	TERMINAL BOX:	
C.3.1	All terminals of position limit switches, torque limit switches, space heaters and position transmitters shall be brought to a common terminal board. The terminals shall be clip-on type/screw type with sufficient insulation between 2 adjacent terminals. All terminals must be suitable for 2 nos. of 2.5 sq.mm wires.	
C.3.2	Minimum 10 numbers of terminals shall be available in the terminal board as spare terminals.	

Clause. No	Specification requirement	Vendor confirmation / comments / deviation
C.3.3	Terminal box of actuator shall be weather proof. One Number PVC insulated armoured copper / aluminium conductor power cable (Exact Cable size will be furnished after ordering). Motor terminals shall be of stud type, screw type and press fit type depending on the power rating. Terminal box shall be fitted with a removable front cover plate. Termination of Control Cable :- 9 Pin plug & sockets (2 Nos. wired + 1 No. spare as loose supply) shall be provided to suit 4 pair 0.5 sq.mm. Copper overall shielded (16 mm OD), instrumentation cable. The socket shall be fixed on the terminal board and wired to the terminal blocks as per the wiring drawing.	
C.3.4	Default setting of torque switch, dial indicator on and torque/limit closing to be included in the documents.	
C.4.0	CABLE GLAND:	
C.4.1	Actuators are to be provided as a standard with one cable gland for power and 3 cable glands for control (Exact Cable OD will be furnished after ordering). All the cable glands shall be of double compression type and made of Ni plated Brass material. Un used cable entries shall be plugged with Ni plated Brass plugs with suitable sealing (like 'o' ring) to ensure IP68 or better protection.	
C.4.2	Preferably all the cable glands shall be provided on one direction (face) only. Wherever this is not technically feasible, the cable gland on the second side shall be provided with necessary elbows, so that all glands will be facing at one side.	
S.0	SPARES	
S.1.0	Supplier shall specify a list of recommended spares for 2/5 years trouble free operation. An exploded view of the actuator with bevel gear box shall be furnished with part numbers for identifying the spares.	
D.0	DOCUMENTS	
D.1.0	Furnish the following documents along with offer & after ordering:	
	a. Outline dimension of assembled motor with gear box. - GA drawings for all models (Motor with gearbox) including dismantling clearances and material specification of critical components. - The dimension drawing of the drive sleeve - Data sheet for all models, along with weight of the actuator - Dimensional catalogue with maximum spindle acceptance details - Wiring diagram for all models. - Gear selection chart for setting of local position indicator	
	b. Outline dimension of actuator with gear box.	
	c. Dimensional drawing of terminal showing the method of terminating incoming cables.	
	d. General arrangement drawing of actuator with gear box consisting following as minimum	
	e. Identification of critical component with its material composition.	

Clause. No	Specification requirement	Vendor confirmation / comments / deviation
	f. Mounting flange dimension	
	g. Hand wheel dimensions	
	h. Actuator cover removal clearances	
	i. Weight of actuator + gear box with and without integral starter	
	j. Stem protection cover length, thread size and type	
	k. Double compression cable gland & plugs	
	l. Separate drawing for details of cable gland cross section, min/ max. cable OD that can be accommodated, critical dimension etc.	
	m. Quality plan	
	n. Type test certificates	
	o. Default settings of torque, dial indicator and torque/limit closing for all models.	
T.0	TEST REQUIREMENTS FOR ACTUATORS	
T.1.0	ROUTINE TEST:	
T.1.1	Dimensions: Overall and mounting	
T.1.2	Details of painting as per specification and vendor practice: Anti-corrosiveness Epoxy.	
	i. Shade.	
	ii. Finish	
	iii. Paint thickness	
T.1.3.	Manual operation through hand wheel.	
T.1.4.	Testing of position and torque limit Sensors for accuracy and repeatability.	
T.1.5.	Hand-Auto switching function.	
T.1.6	For motors, all routine tests as called in IEC- 60034 from motor manufacturer.	
T.1.7	Output shaft speed and torque of actuator and corresponding current.	
T.1.8	Stall current and stall torque for the actuator assembly.	
T.1.9	a. Position indicator and transmitter: Calibration check for accuracy, linearity and repeatability.	
	b. Functional test for electronic position transmitter (If applicable).	
T.1.10	Leakage test for gear case (visual).	
T.1.11	HV test at 1.6 KV (80% of 2 KV) for the assembled actuator.	
T.1.12	Operation of actuator under variation in supply voltage (plus or minus 10%) for verifying rated torque and speed.	
T.1.13	Checking of wiring as per approved wiring diagram	
T.1.14	The following tests are applicable for integral starter actuators	
	a. Functional test for local / remote / off selection	
	b. Open/close/stop operation in local and remote mode.	
	c. OLR tripping	
	d. Functional test, temperature raise test and burn-in test on PCB	
T.2.0	TYPE TEST certificates shall be provided for the following tests.	
T.2.1.	Type test for motor as per IEC- 60034	
T.2.2.	Noise and vibration test for total assembly IS: 4729/BS 4999.	
T.2.3.	Temperature rise test during:	
	a. Operation of actuator at 90% voltage.	
	b. Operation of actuator at 50 degree C ambient.	
T.2.4.	Operation with variation in frequency (plus or minus 5%) for verifying rated torque and speed.	
T.2.5.	Enclosure protection for the total assembly.	

Clause No	Specification requirement	Vendor confirmation / comments / deviation
T.2.6.	Endurance test for actuator.	
T.2.7.	Endurance test for limit sensors (if applicable)	
T.2.8.	Damp heat cycle test as per IS:9000/IEC 68-30.	
T.2.9.	Following test are applicable for integral starter actuators	
	a. Type test on bare PCB	
	b. Life cycle test	
T.3.0.	The gear operator shall be tested to the design requirement of torque and thrust and type test certificates shall be furnished. The mechanical efficiency shall not be less than 95%.	
T.3.1.	Certificate for routine test.	
T.3.2.	Routine and type test reports for motors.	
T.3.3.	Type test report for all tests listed under 'T.2.0'	
T.3.4.	TC for endurance test for limit sensor and torque sensor (if applicable).	
T.3.5	The gear operator shall be tested to the design requirement of torque and thrust and type test certificates shall be furnished. The mechanical efficiency shall not be less than 95%.	
N.1.0	NOTES:	
N.1.1.	The supplier shall submit quality plan covering quality checks carried out in different stages of procurement process, manufacturing assembly, testing and final inspection stage. These quality plans shall be approved by BHEL.	
N.1.2.	All testing facilities shall be arranged by the vendor, at his works before calling BHEL / TPI representative for inspection.	
N.1.3.	Approved drgs., PO specification and relevant standards if any shall be made available during testing / inspection.	
N.1.4.	All measuring and testing instruments shall be periodically calibrated from National test house and certificates made available during inspection.	
N.1.5	All relevant GA drawings, data sheets & wiring diagrams shall be submitted as controlled copy and approval shall be obtained from BHEL. All supply shall be as per these documents.	
N.1.6	<u>Nameplate:</u> Each motorized valve actuator with gear box shall be provided with a stainless steel nameplate furnishing the following details as minimum, attached firmly to it at a place convenient for reading: <u>Actuator:</u> a) Actuator tag number as per data sheet b) Motor kW rating, motor short time rating, motor supply voltage, nominal motor phase current, auxiliary switch rating c) Maximum torque setting d) Actuator enclosure type, lubricant type e) Actuator type, wiring diagram number/ catalogue number, actuator serial number. <u>Gearbox:</u> Make, Model Number, Serial Number, Output Torque, Permissible Thrust, Gear Ratio.	

Clause. No	Specification requirement	Vendor confirmation / comments / deviation
N 1.7	Packing &Transport: The actuator with gearbox unit shall be supplied to site packed in wooden crates / Carton boxes. They shall be wrapped with polythene sheets. They shall have skid bottoms for handling. All spares shall be packed separately in boxes marked SPARE. Special precaution notations such as Fragile. This side up, center of gravity, weight, Owner's particulars. Purchase number etc. shall be clearly marked on the package together with other details as per purchase order. The equipment shall be properly packed for the selected mode of transportation whether indigenous or imported, i.e. by ship, rail or trailer. If the equipment is supplied through ship, Sea worthy packing shall be considered to prevent damage.	

DATE	DESCRIPTION	PREPARED & CHECKED	APPROVED
11.01.2020	INITIAL RELEASE	D. Kavitha	K.Chinnasamy
20.04.2020	Revised	D. Kavitha	K.Chinnasamy

Product: Electrical Actuator (With Integral starter, Plug & Socket and diagnostic module)

IMPORTANT INSTRUCTION:

- a) ***Vendor shall furnish point-to-point confirmation / deviation to each clause of this specification explicitly.***
- b) ***The offer shall be submitted along with all the documents required in this specification. Offer without all supporting documents requested in this specification will not be considered.***

Clause No	Specification requirement	Vendor confirmation / comments / deviation
G.1.0	GENERAL	
G.1.1	The offered Actuator shall be brand new with state of the art technology having a proven field track record. No prototype equipment shall be offered.	
G.1.2	Vendor shall ensure availability of spare parts and maintenance support services for the offered equipment for at least 10 years from the date of supply.	
G.1.3	Vendor shall give a notice of at least one year to the end user of equipment before phasing out the product/ spares to enable the end user to place order for spares and services.	
G.1.4	The vendor shall be responsible for design, engineering and manufacturing of the complete actuator to fully meet the intent and requirements of this specification.	
G.2.0	ENCLOSURE:	
G.2.1	Actuators including motor, integral starter, control transformer unit and all control devices shall be of totally enclosed weather proof and dust proof construction with min. IP 68 enclosure, which shall include the 'O' ring for complete environmental protection. The same shall be suitable for outdoor applications and capable of operating in ambient temperature of -20 deg.C to +70 deg.C. The motor operators/actuators shall conform to AWWA specification. Actuator with integral starter and 9 pin plug and socket arrangement shall be considered.	
G.3.0	VOLTAGE:	
G.3.1	The unit shall be suitable for operation on a 415V, 3 phases, 50Hz, 3-wire AC supply. All the internal power supply required for Starter unit and other accessories shall be derived from the above indicated power supply through control transformers.	

Clause No	Specification requirement	Vendor confirmation / comments / deviation
G.4.0	CONSTRUCTION:	
G.4.1	Actuators shall have provision to accommodate raising spindle of the valve and the hole shall be properly covered with a removable lid. The actuator shall be supplied with stem protection tube to accommodate larger spindle travel as indicated elsewhere in this specification. All the above parts, i.e. The threaded portion of actuator, removable lids and stem protection tubes shall be able to withstand the prolonged outdoor storage without getting rusted or damaged.	
G.4.2	The actuator shall be suitable for mounting directly on the valve. The actuator shall be capable of giving the required torque, rpm and thrust. The actuator shall be suitable for mounting in any position. Indicate the adjustable range of torque and starting torque of actuator in kgm/Nm for each actuator offered. The maximum thrust capability of the actuators shall also be furnished. The actuators shall be designed to take the full thrust. All Gears used shall be metallic. Fiber gears are not acceptable. Metallic gear trains used shall be self-locking type to prevent drift.	
G.4.3	Actuator shall have thrust base with blank removable adaptor bush of aluminum bronze, which can be threaded to accommodate raising spindles of valve.	
G.4.4	The exact mounting arrangement with dimensions shall be clearly furnished along with the offer. The flange dimension shall be as indicated elsewhere in this specification.	
G.4.5	The dimension drawing of the blank adaptor bush shall be furnished along with the offer.	
G.4.6	Each actuator shall have a hand wheel fitted on it for manual operation in case of power failure. It shall be possible to fully open /close the valve with the hand wheel. The hand wheel shall be designed such that its engaging lever declutches automatically when the power supply to the motor is restored. The material of the hand wheel shall be either malleable iron or steel. The hand wheel-engaging lever shall give trouble free performance under repeated operations. Side mounted hand wheel with gear / Top mounted hand wheel can be offered. The hand wheel construction shall be strong enough to withstand the impacts of normal handling and storage of actuator without any damage. The handwheel shall be able support the weight of the actuator, without any damage to actuator or hand wheel, when actuator is rested on the hand wheel.	
G.4.7	Actuators offered shall be with self-locking worm.	
G.5.0	REVOLUTIONS:	
G.5.1	Desired output shaft speeds are given below for different torque ranges. Actual speeds of actuators offered shall be clearly indicated.	
G.5.2	Actuator shall have provision to set the Torque value from 40% of the maximum Torque mentioned in the below table.	

Actuators -Technical requirements

Sl.No	Maximum Torque (Kg-m)	RPM (Approx)	Out put flange details (LD x PCD x Bolt Details.)	Stem Protection Cover in mm (unless otherwise specified)
1	3.5	18	60 x 102 x 4Nos M10	100
2	6	24	60 x 102 x 4Nos M10	100
3	15	36	60 x 102 x 4Nos M10	150
4	30	36	100 x 140 x 4Nos M16	250
5	50	36	127 x 165 x 4Nos M20	300
6	60	96	100 x 140 x 4Nos M16	400
7	80	36	152 x 254 x 8Nos M16	400
8	100	96	127 x 165 x 4Nos M16	500
9	200	32	152 x 254 x 8Nos M16	400
10	400	32	177.8x298.5-8NOS M20	400
11	700	22	215.9x355.6-8 NOS M24	400
12	1100	22	228.6x406.4-8NOS M30	500
13	1600	22	228.6x406.4-8NOS M30	500

Clause. No	Specification requirement	Vendor confirmation / comments / deviation
G.6.0	WEIGHT:	
G.6.1	Furnish weight of actuator including all accessories.	
G.7.0	LUBRICANT:	
G.7.1	Oil plugs shall be provided for filling and draining separately.	
G.7.2	The gearbox of the actuator shall be oil filled or grease filled. The oil/grease must be suitable for operation for 80 Deg. above ambient temperature. Furnish detail of lubricant used with Indian oil Company's BPCL & HPCL's equivalent. The actuator shall have proper seals to prevent leakage of oil at all installation positions. The actuator construction shall be such that the oil/grease does not leak to other compartments or outside. In case of any complaint of such leakage, the complaint shall be attended free of cost within one week and root cause of the problem shall be eliminated within one month.	
G.8.0	DIMENSIONAL CATALOGUES:	
G.8.1	Two copies of catalogues of the actuators in English language describing the constructional details shall be sent along with the offer. The catalogues shall also provide over all dimensions of the actuators, maximum spindle acceptance diameters and other details called for in the specification.	
G.9.0	O & M INSTRUCTION MANUALS:	
G.9.1	a. One copy of Operating and Maintenance Instruction Manual shall accompany each actuator ordered. b. One set of Operating and Maintenance Instruction Manual of each type of actuator both in Hard copy and in Soft copy in CD (in pdf format) shall be sent to us before dispatch of the actuator.	

Clause No	Specification requirement	Vendor confirmation / comments / deviation
A.0	ACCESSORIES	
A.1.0	TORQUE SWITCHES::	
A.1.1	Two numbers adjustable torque switches (one for open and one for close) each with 4 NO and 4 NC potential free contacts. The type of torque switch like rotary/cam shall be mentioned in the offer.	
A.1.2	The torque switches shall have accuracy of plus or minus 3% of set value.	
A.1.3	A scale shall be provided for each torque switch to set required torque. Each division shall indicate actual value of torque. The scale-setting knob shall have locking screw to avoid any setting disturbance at site due to line vibration.	
A.1.4	Actuators shall have provision for bypassing the torque switch during initial 5% opening of valves. Details for this must be indicated in the wiring diagram.	
A.1.5	The wiring diagram shall include details of changes to be done for making the actuator suitable for torque seating or position seating valves.	
A.2.0	LIMIT SWITCHES:	
A.2.1	Two numbers of position limit switches (one for open and one for close) each with 2 NO and 2 NC potential free contacts. The type of limit switch like rotary/drum/cam type shall be mentioned in the offer.	
A.2.2	Two Auxiliary limit switches (one for open and one for close) each with 2 NO and 2 NC potential free contacts.	
A.2.3	Each limit switch shall be capable of being set to trip at any position independently between fully open and fully closed position.	
A.2.4	Limit switches and torque switches shall be weather proof suitable for damp atmospheres, and shall not cause any trouble during commissioning and operation.	
A.2.5	The torque and position limit switches shall be suitable for the following ratings, both 240 volts, AC, 5 amps and 220 volts DC, 0.5 amps. The insulation level between each set of contacts shall be minimum of 1.2KV for 1min.	
A.3.0	LOCAL POSITION INDICATORS:	
A.3.1	Each actuator shall have a local position indicator to indicate 0 to 100% of valve travel.	
A.3.2	The actuator shall be suitable for operating different valve size with varying lifts. The actuators shall have adjustable gear for the local position indicator so that accurate indication of valve position can be obtained for all valve lifts by adjusting the gears. The gears selection chart for setting of local position indicator and mechanical transmitter for different valve lifts (output shaft revolutions) shall be furnished along with offer. Also one set of change gears shall be supplies along with each actuator.	
A.4.0	ANTI-CONDENSATION HEATER (SPACE HEATER):	
A.4.1	Each actuator shall have a anti-condensation heater in the limit switch compartment suitable for 240V AC 50 c/s single phase supply with thermostat for automatic switch ON/OFF Space heater based on the temperature inside limit switch compartment. The wattage of the heater shall be specified in the data sheet and wiring diagram indicating the same.	
A.5.0	REMOTE POSITION TRANSMITTER:	
A.5.1	Open/Close actuator shall have two Nos. of resistance type position transmitter for remote indication. Rating of position transmitter 100ohms, 50 Volts, AC/DC. A suitable fixed dropping resistor must be put in series for limiting the power consumption.	

Clause No	Specification requirement	Vendor confirmation / comments / deviation
A.5.2	For inching duty applications, actuators shall have one electronic position transmitter (EPT), suitable for 24V DC with an output of 4-20mA and 2 wire system. LVDT type shall be offered.	
M.0	MOTORS	
M.1.0	POWER SUPPLY:	
M.1.1	Motor shall be suitable for operation on a 415V, 3 phase, 3 wire ungrounded supply system.	
M.1.2	Motor shall operate without any trouble under the following conditions.	
	a. If the voltage varies within plus or minus 10% of the rated value of 415 Volts.	
	b. If the frequency of the power source varies within plus or minus 5% of 50 c/s.	
	c. If the voltage and frequency of the source vary simultaneously and the sum of the absolute percentage values in variation does not exceed 10%.	
M.2.0	CONSTRUCTION:	
M.2.1	Motor shall be totally enclosed with min IP 68 or better weatherproof enclosure and shall be suitable for outdoor installation without canopy. All electrical equipment, accessories and wiring shall be provided with tropical finish to prevent fungus growth. In case of any water leakage due to enclosure failure it shall be attended free of cost within one week and root cause of the problem shall be eliminated within one month	
M.2.2	Motor shall be conforming to IEC 60034 or any other equivalent international standard for all requirements unless otherwise specified herein.	
M.2.3	The enclosures shall be treated and prepared for painting with suitable painting system for withstanding 500Hrs of salt spray as per ASTM B-117/ ISO9227 standard. Motor shall be painted with corrosion proof epoxy resin paint. Paint shade shall be RAL 7032	
M.3.0	INSULATION:	
M.3.1	Motor shall have class F non-hygroscopic insulation with tropicalisation suitable for polluted dusty and corrosion atmospheres of relative humidity 100%. Motor shall be designed for an ambient temp of 70 degree C. However, the temperature rise of the motor winding shall be limited to the maximum temperature allowed for class 'B' insulation. It shall also be possible to rewind the motor in case the windings and insulation get burnt out.	
M.4.0	RATING:	
M.4.1	For ON/OFF Motors shall be S2-15 min. rating. This shall not be less than the highest of the following: 1) Fifteen minutes. 2) As required for three successive open/close operations For regulating service, 150 starts per hour shall be considered.	
M.5.0	STARTING:	
M.5.1	Motor shall be suitable for direct on-line starting.	
M.5.2	Starting current shall be limited to 6 times the full load current.	

Clause No	Specification requirement	Vendor confirmation / comments / deviation
M.5.3	Motor shall be capable of a. Starting at 85% of rated voltage. b. Running at 80% of rated voltage at rated torque for a period of 5 minutes c. Running at 85% of rated voltage at 33% excess rated torque for a period of 5 minutes d. The torque at reduced supply voltage shall be mentioned for 75% voltage, 80% voltage, 85% voltage & 90% voltage.	
M.6.0	BEARINGS:	
M.6.1	Bearing shall be of double shielded, grease lubricated antifriction type. The anticipated bearing life shall be indicated for all models.	
M.7.0	EARTHING TERMINALS:	
M.7.1	Two earthing terminals shall be provided on either side of the motor.	
M.8.0	MOTOR DATA:	
M.8.1	One set of hard and soft copies of motor data sheets for each type of actuators ordered shall be furnished as per format furnished.	
M.9.0	WEIGHT	
M.9.1	Weight of the actuator shall be furnished separately along with the offer.	
M.10.0	TESTS:	
M.10.1	Tests shall be carried out as per approved QP.	
C.0	CONTROLS	
C.1.0	INTERNAL WIRING:	
C.1.1	Internal wiring diagram shall be neatly pasted on cover of terminal box.	
C.1.2	Internal wiring shall be done with 1.5 sq.mm PVC insulated copper wires. Ferrules should be provided on both ends of the wire for easy identification.	
C.2.0	FEATURES APPLICABLE TO INTEGRAL STARTER	
C.2.1	The actuators shall have integral starters. Control supply shall be derived with step down transformer from 415V, 3 PH incoming supply. Necessary primary and secondary fuses shall be provided. All the PCBs shall be protected against moisture by suitable coating and treatment - in case of failure of PCBs due to moisture entry. It shall be attended free of cost within one week and root cause of the problem shall be eliminated within one month	
C.2.2	Automatic phase correction facility and single phasing prevention shall be available.	
C.2.3	Lockable Selector switch for LOCAL-OFF-REMOTE selection with OPEN-STOP-CLOSE push buttons (for local operation) shall be provided.	
C.2.4	It should also be possible to reverse the direction of travel for inching valves (in LOCAL and REMOTE) without giving stop command.	
C.2.5	lamp indication for full open, full close and in-travel positions shall be provided.	
C.2.6	Electrically and mechanically interlocked contactors shall be provided for forward and reverse operation. Contactor rating shall be sufficient to withstand the extreme conditions like valve jamming and instantaneous reversal of motor.	
C.2.7	Potential free contacts for LOCAL-OFF-REMOTE positions shall be wired to terminals and available for customer connections.	
C.2.8	Open/Close command termination logic with position and torque set points shall be suitably built in the PCB inside the actuator.	

Clause. No	Specification requirement	Vendor confirmation / comments / deviation
C.2.9	The selection of the following mode shall be available locally on actuator through suitable switch programming. It shall also be clearly described in wiring diagram. a) Valve seating by torque (close) or limit (close) shall be available. b) Inching (non self-retaining) or non-inching (self-retaining) for remote command and local mode shall be field configurable.	
C.2.10	Provision shall be there for bypassing the torque switch during initial 5% opening and closing of valves. Details for this must be indicated in the wiring diagram. This shall be done through electronic circuit or through one 'NC' contact of 'limit switch'.	
C.2.11	All the contacts of Main & Auxiliary limit switches and torque switches shall be wired up to terminal box for customer use.	
C.2.12	a) Actuator shall be suitable for remote operation by potential free contacts for open / close and stop, the necessary 24V DC power supply shall be derived internally. Also It shall be possible to energise the interposing relays provided (with coil burden $\leq 2.5\text{VA}$, one for open and one for close) to initiate opening and closing by 24V DC signal from the external control system, accordingly suitable isolated interface in the actuator shall be provided. b) Potential-free change-over contact for Open feedback, close feedback, system ready/ Ready to start feedback, Open torque acted feedback, Close torque acted feedback, OLR acted for connecting to remote DCS/PLC system	
C.2.13	The actuator shall include a diagnostic module , which will store and enable down load historical down load operation and torque data to permit analysis of actuator and valve in service performance. Data down load shall be carried out without removing any covers and all shall be available locally to the actuator or remotely via telecommunication data transfer. Diagnostic and configuration software shall be made for user PC system.	
C.2.14	24V Power supply for EPT shall be derived internally.	
C.2.15	Thermal overload relay shall be provided in addition to thermostats embedded in motor winding. Overload relay and thermostats shall be connected in control circuit to trip actuator in case of overload. OLR set value shall be mentioned in wiring diagram / Data sheets .	
C.2.16	A common potential free contact (monitoring relay) shall be available to annunciate the following faults. a) Thermostat trip b) OLR trip c) Valve jammed in mid-travel. d) Motor single phasing. e) Control supply failure. f) Local stop or local/remote selector switch in local mode.	
C.2.17	The following status annunciation shall be made available locally (integral to actuator) a) Actuator running in OPEN b) Actuator running in CLOSE c) Internal 24V DC Control voltage healthy d) 24V DC availability for customers use healthy.	

Clause No	Specification requirement	Vendor confirmation / comments / deviation
C.2.18	The following individual fault annunciation shall be made available locally (integral to Actuator) for easy trouble shooting a) Open Torque sensor acted b) Close Torque sensor acted c) Thermostat trip d) Thermal overload relay trip e) Motor single phasing f) Wrong phase sequence protection acted	
C.2.21	BLINKER RELAY: Blinker relay contact for remote indication of 'actuator running' is to be provided as a standard part of integral starter actuator.	
C.2.22	In the event of voltage dips/ power outage, status of MOVs (OPEN/ CLOSE indication) for remote annunciation shall not undergo any change. The wiring for all MOVs feedback controls shall be fail safe type. Any backup for power supply & hardware required for achieving the same shall be provided by vendor within the actuator. No other power supply other than 415V+/-10%, three phase, 50Hz+/-3% incoming supply to each of MOV Actuator shall be provided.	
C.3.0	TERMINAL BOX:	
C.3.1	All terminals of position limit switches, torque limit switches, space heaters and position transmitters shall be brought to a common terminal board. The terminals shall be clip-on type/screw type with sufficient insulation between 2 adjacent terminals. All terminals must be suitable for 2 nos. of 2.5 sq.mm wires.	
C.3.2	Minimum 10 numbers of terminals shall be available in the terminal board as spare terminals.	
C.3.3	Terminal box of actuator shall be weather proof. One Number PVC insulated armoured copper / aluminium conductor power cable (Exact Cable size will be furnished after ordering). Motor terminals shall be of stud type, screw type and press fit type depending on the power rating. Terminal box shall be fitted with a removable front cover plate. Termination of Control Cable :- 9 Pin plug & sockets (2 Nos. wired + 1 No. spare as loose supply) shall be provided to suit 4 pair 0.5 sq.mm. Copper overall shielded (16 mm OD), instrumentation cable. The socket shall be fixed on the terminal board and wired to the terminal blocks as per the wiring drawing.	
C.3.4	DEFAULT SETTING OF TORQUE SWICTH, DIAL INDICATOR ON AND TORQUE/LIMIT CLOSING. The requirement of the default setting of torque switch, dial indicator and torque closing/limit closing selections are already provided by BHEL for all models. The same has to be followed. The list of default setting to be included in the documents.	
C.4.0	CABLE GLAND:	
C.4.1	Actuators are to be provided as a standard with one cable gland for power and 3 cable glands for control (Exact Cable OD will be furnished after ordering). All the cable glands shall be of double compression type and made of Ni plated Brass material. Un used cable entries shall be plugged with Ni plated Brass plugs with suitable sealing (like 'o' ring) to ensure IP68 or better protection.	

Clause. No	Specification requirement	Vendor confirmation / comments / deviation
C.4.2	Preferably all the cable glands shall be provided on one direction (face) only. Wherever this is not technically feasible, the cable gland on the second side shall be provided with necessary elbows, so that all glands will be facing at one side.	
C.5.0	FEATURES APPLICABLE TO FLAMEPROOF ACTUATORS	
C.5.1	Actuators along with its accessories (like cable gland, plug, plug and socket etc) meant for hazardous area shall meet the requirements of latest IS 2148/IEC60079, IEC –79 or equivalent International Standards.	
C.5.2	ENVIRONMENT: - Area Classification: Class 1, Zone 1 & Zone 2 - Gas Group: IIA & IIB. - Temperature Class (As per IEC-79):T3 - Construction: Flame Proof Ex(d) as per IS 2148/IEC60079	
C.5.3	Indigenous equipment shall be certified by CIMFR and approved by PESO and DGFASLI and shall carry the BIS License Marking. All the certification shall be valid at the time of delivery.	
C.5.4	Imported equipment shall be tested and certified by an independent certifying agency of country of equipment origin.	
S.0	SPARES	
S.0.1	Supplier shall specify a list of recommended spares for 2/5 years trouble free operation. An exploded view of the actuator shall be furnished with part numbers for identifying the spares.	
D.0	DOCUMENTS	
D.0.1	Furnish the following documents along with offer & after ordering: - Outline dimension of assembled motor. - GA drawings for all models including dismantling clearances. - The dimension drawing of the blank adopter bush - Data sheet for all models. Along with weight of the actuator - Dimensional catalogue with maximum spindle acceptance details - Wiring diagram for all models. - Gear selection chart for setting of local position indicator - Outline dimension of actuator. - Dimensional drawing of terminal showing the method of terminating incoming cables. - General arrangement drawing of actuator consisting following as minimum - Identification of critical component with its material composition. - Mounting flange dimension - Hand wheel dimensions - Actuator cover removal clearances - Weight of actuator with and without integral starter - Stem protection cover length, thread size and type - Double compression cable gland & plugs - Separate drawing for details of cable gland cross section, min/ max. cable OD that can be accommodated, critical dimension etc. - Quality plan - Type test certificates - Default settings of torque, dial indicator and torque/limit closing for all models.	

Clause No	Specification requirement	Vendor confirmation / comments / deviation
T.0	TEST REQUIREMENTS FOR ACTUATORS	
T.1.0	ROUTINE TEST:	
T.1.1	Dimensions: Overall and mounting	
T.1.2	Details of painting as per specification and vendor practice: Anti-corrosiveness Epoxy.	
	i. Shade.	
	ii. Finish	
	iii. Paint thickness	
T.1.3.	Manual operation through hand wheel.	
T.1.4.	Testing of position and torque limit Sensors for accuracy and repeatability.	
T.1.5.	Hand-Auto switching function.	
T.1.6	For motors, all routine tests as called in IEC- 60034 from motor manufacturer.	
T.1.7	Output shaft speed and torque of actuator and corresponding current.	
T.1.8	Stall current and stall torque for the actuator assembly.	
T.1.9	a. Position indicator and transmitter: Calibration check for accuracy, linearity and repeatability.	
	b. Functional test for electronic position transmitter (If applicable).	
T.1.10	Leakage test for gear case (visual).	
T.1.11	HV test at 1.6 KV (80% of 2 KV) for the assembled actuator.	
T.1.12	Operation of actuator under variation in supply voltage (plus or minus 10%) for verifying rated torque and speed.	
T.1.13	Checking of wiring as per approved wiring diagram	
T.1.14	The following tests are applicable for integral starter actuators	
	a. Functional test for local / remote / off selection	
	b. Open/close/stop operation in local and remote mode.	
	c. OLR tripping	
	d. Functional test, temperature raise test and burn-in test on PCB	
T.2.0	TYPE TEST certificates shall be provided for the following tests.	
T.2.1.	Type test for motor as per IEC- 60034	
T.2.2.	Noise and vibration test for total assembly IS: 4729/BS 4999.	
T.2.3.	Temperature rise test during:	
	a. Operation of actuator at 90% voltage.	
	b. Operation of actuator at 50 degree C ambient.	
T.2.4.	Operation with variation in frequency (plus or minus 5%) for verifying rated torque and speed.	
T.2.5.	Enclosure protection for the total assembly.	
T.2.6.	Endurance test for actuator.	
T.2.7.	Endurance test for limit sensors (if applicable)	
T.2.8	Damp heat cycle test as per IS:9000/IEC 68-30.	
T.2.9	Following test are applicable for integral starter actuators	
	a. Type test on bare PCB	
	b. Life cycle test	
T.2.10.	BIS and CMRI/PESO certificate for flame proof actuators	
T.3.0	DOCUMENTS TO BE PROVIDED:	
T.3.1.	Certificate for routine test.	
T.3.2.	Routine and type test reports for motors.	
T.3.3.	Type test report for all tests listed under 'T.2.0'	
T.3.4.	TC for endurance test for limit sensor and torque sensor (if applicable).	

Clause No	Specification requirement	Vendor confirmation / comments / deviation
N.1.0	NOTES:	
N.1.1.	The supplier shall also submit quality plan covering quality checks carried out in different stages of procurement process, manufacturing assembly, testing and final inspection stage. These quality plans shall be approved by BHEL.	
N.1.2.	All testing facilities shall be arranged by the vendor, at his works before calling BHEL / TPI representative for inspection.	
N.1.3.	Approved drgs., PO specification and relevant standards if any shall be made available during testing / inspection.	
N.1.4.	All measuring and testing instruments shall be periodically calibrated from National test house and certificates made available during inspection.	
N.1.5	All relevant GA drawings, data sheets & wiring diagrams shall be submitted as controlled copy and approval shall be obtained from BHEL. All supply shall be as per these documents.	
N.1.6	Nameplate: Each motorized valve actuator shall be provided with a stainless steel nameplate furnishing the following details as minimum, attached firmly to it at a place convenient for reading: a) Actuator tag number as per data sheet b) Motor kW rating, motor short time rating, motor supply voltage, nominal motor phase current, auxiliary switch rating c) Maximum torque setting d) Actuator enclosure type, lubricant type e) Actuator type, wiring diagram number/ catalogue number, actuator serial number. f) Apart from the nameplate indicating the tag no., a separate nameplate shall also be provided on each actuator to indicate the Details of the testing agency (CIMFR or equivalent), test certificate number with date, statutory approval number with date, approval agency (PESO / equivalent).	
N 1.7	Packing & Transport: The actuator shall be supplied to site packed in wooden crates / Carton boxes. They shall be wrapped with polythene sheets. They shall have skid bottoms for handling. All spares shall be packed separately in boxes marked SPARE. Special precaution notations such as Fragile. This side up, center of gravity, weight, Owner's particulars. Purchase number etc. shall be clearly marked on the package together with other details as per purchase order. The equipment shall be properly packed for the selected mode of transportation whether indigenous or imported, i.e. by ship, rail or trailer. If the equipment is supplied through ship, Sea worthy packing shall be considered to prevent damage.	

DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED
09/09/2019	INITIAL RELEASE	J. Krishna		D. Kavitha
20/04/2020	Revised	D.kavitha		K.Chinnasamy

Certificate by Chartered Accountant on letter head

This is to Certify that M/S,
(hereinafter referred to as 'company') having its registered office at
..... is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-11) dtd:.....,
Category:..... (Micro/Small)). (Copy enclosed).

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

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

(Strike off whichever is not applicable)

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

Or

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

Date:

(Signature)

Name-

Membership number-

Seal of Chartered Accountant