



ISO 9001 Company

Heavy Engineering Corporation Limited
(A Govt. of India Enterprise)
Heavy Machine Building Plant
(Purchase Department/ MM Division)

Tender Enquiry No HMB/PUR/07/12/003/EL(Crane)-3538

Dtd 22.11.12

To

We request you to submit your most competitive offer for the following items as per the given schedule & Technical specifications.

SI no	Description	Total Qty.
1	Limit Switch as per DAP No. 109/12M	As per technical specification

Note: The items shall be strictly as per the technical specification which is attached herewith

Schedule of Tender receipt by 13.12.12 up to 1 PM

Opening of Tender on 13.12.12 at 3 PM

This Enquiry Consist of Two parts as under:

1. Schedule I - Terms and Conditions
2. Schedule II - Technical Specification – DAP No . 104/12M
3. Schedule III - Price Format



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Schedule-I

Terms & Conditions

1. The rate quoted shall be Inclusive of all packing & forwarding. Freight charges and insurance charges on FOR HMBP Basis only.
2. The Price quoted by the tenderer should be exclusive of Sales Tax / VAT. The rate and nature of sales tax applicable should be shown separately. Tax will be paid to the seller at the rate at which it is liable to be assessed or has actually been assessed on the date of supply provided the transaction of sale is legally liable to sales tax and within the delivery period. Any change on the taxes & duty structure beyond the delivery period will not be considered by HEC.
3. The rates quoted must be firm and the offers made must remain open for acceptance for three months from the due date of opening of the tender.
4. Quotations erased or over written are likely to be rejected unless all corrections are authenticated with the tenderers signature.
5. Delivery date offered must be specified and guaranteed.
6. Payment-Full payment will be made within 60 days of the receipt of supplies at destination duly inspected.
7. Full particulars specifications, literature and / or drawing wherever applicable should be submitted along with the quotation. The brand and 'Make' name must be indicated.
8. The Corporation does not pledge itself to accept the lowest or any tender and reserves to itself the right of accepting the whole or any part of tender or portion of the quantity offered and you shall supply the same at the rate quoted.
9. Supplies will be subject to inspection by our Inspection wing / or Inspection agencies prescribed by us.
10. Order placed as a result of this tender will be subject to the Corporation's General Terms and Conditions of contract, which can be down loaded from our web site www.hecltd.com.
11. Corporation reserves the right to call for and examine at any time the books of accounts and other documents and papers of the firm for the purpose of ascertaining whether any excess payments has been made or the firm likely to be received/ received undue benefit out of execution of the particular contract.
12. Earnest Money- Earnest money to the extent of 2% of the total value to be deposited by demand draft on the State Bank of India, Ranchi Hatia Branch, in favour of Heavy Engineering Corporation Ltd. Ranchi-4 along with the offer. EMD will be converted to security deposit in case of successful bidder.
13. Security Deposit- The firm has deposit a sum equal to a 5 percent of the total value of the contract as Security Deposit for the due fulfillment of the contract within 14 days after placement of order. Failing this the contract will be cancelled at the risk & expense of the supplier. This will be in addition to other remedies available to the purchaser for the successful completion of the contract. The validity of the security deposit shall be up to the receipt of the last consignment.
Note:-In case the EMD is converted into security deposit the firm will have to deposit 3% amount of the total value (5% of the total value – 2% of the converted value).
14. Delivery- The time for and the date of delivery of the Stores stipulated in the acceptance of tender shall be deemed to be the essence of the contract and delivery must be completed not later than the dates specified therein. Otherwise:
 - (a) The purchaser to recover from the contractor a sum of 0.5 % per week (completed week) of the price any stores (up to maximum 10%) as liquidated damages, which the contractor has failed to deliver as aforesaid or



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- (b) The purchaser may procure the un deliver stores/ similar items from elsewhere, without notice to the contractor at the risk of the contractor without canceling the contract in respect of the consignment not yet due for delivery or,
- (c) To cancel the contract or a portion thereof.
15. Income Tax Clearance Certificate- All tenderers shall submit along with their tender an Income Tax Clearance Certificate duly countersigned by the Income Tax Officer of the Circle concerned under the seal of the office. Copy of permanent A/c no. (PAN) (of income tax) to be enclosed with the bid.
16. There is no obligation on our part to accept delayed / late tenders received after the due date of opening and there are liable to be summarily rejected.
17. The rates quoted shall also be inclusive of embossing on the material. The Ownership namely "HMBP" at a predominant place of the material to a size/thickness depending upon the volumes of the material.
18. Guarantee-The stores supplied shall be guaranteed for a period of 12 months from the date of commissioning against defective materials or bad workmanship.
19. Performance Bank guarantee- Performance Bank guarantee amounting to 10% of the contract price is to be submitted in HEC's Format issued by any Nationalized Bank (Preferably State Bank of India) valid till guarantee period.
20. **SPECIAL INSTRUCTIONS**

The tender is to be submitted in Two bid system along with EMD. The tenderers are to clearly super scribe description along with tender reference number and date of opening on the top of sealed envelope.

1. Part I – Techno commercial bid
2. Part II- **Price Bid along with EMD**

The complete and sealed tender is to be submitted by 1:00 PM of scheduled date in the tender box at MM Division, Ground floor,HMBP ADM Building, HEC Ltd, Ranchi 4.

If the tender is bulky & voluminous the tenders are to be handed over to the following persons against receipt date & time:

1. Sri K.K.Das
Jr. Manager/Pur/HMBP
2. Sri Upendra Nath
SDGM/PUR/EL

If the offer is not submitted as per the above instructions the same can be rejected

Regards

(Upendra Nath)
SDGM/PUR/EL/HMBP



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Schedule II DAP No. 104/12M



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W.O. No.	Capacity of Crane	Qty
1156.002 to 003 .150	20(Under Magnet)/5T EH X 30.5M (Equip. No. 101/102)	2
1156 .004 to 005 .150	20(Under Magnet)/5T EH X 30.5M (Equip. No. 103/104)	2
1156 .006 .150	25/5T EH X 24.5M (Equip. No. 105)	1
1156.007.150	25(On Hook)/5T EH X 24.5M (Equip. No. 109)	1
1156 .008.150	20(Under Magnet)/5T X 33.5M (Equip. No. 106)	1
1156 .009 to 010 .150	20(Under Magnet)/5T X 33.5M (Equip. No. 107/108)	2
1156 .011 to 012 .150	12(Under Magnet)/5T EH X 24.5M (Equip. No. 110/111)	2
1156 .013 to 015 .015	20(Under Magnet)/5T EH X 24.5M (Equip. No. 112/113/114)	3
1156 .016 .150	20T(Under Magnet) X 24.5M (Equip. No. 115)	1
1156 .017 .150	20/5T X 24.5M (Equip. No. 116)	1
1156 .018. 150	30T (Under Magnet) X 21.5M (Equip. No. 401)	1
1156. 019 to 020. 150	30T (Under Magnet) X 27.5M (Equip. No. 402/403)	2
1156 .021 to 022 .150	20/5T X 27.5M (Equip. No. 406/407)	2
1156 .023 .150	30/10T X 27.5M (Equip. No. 404)	1
1156. 024 .150	50/15T X 27.5M (Equip. No. 405)	1
1156. 025 to 026 .150	30T(Under Magnet) X 33.5M (Equip. No. 411/412)	2
1156 .027 to 028 .150	50/15T X 33.5M (Equip. No. 413/414)	2
1156 .029 .150	20/5T X 33.5M (Equip. No. 415)	1
1156. 030 to 031.150	20/5T X 33.5M (Equip. No. 418/419)	2
1156.032 to 033.150	20/5T X 30.3M (Equip. No. 421/422)	2
1156.034.150	20/5T X 43.05M (Equip. No. 416)	1
1156.035.150	20/5T X 30.85M (Equip. No. 417)	1
1156.036.150	20/5T X 18.50M (Equip. No. 424)	1
1156.039 to 041.150	20(Under Magnet) X 27.15M (Equip. No. 408/409/410)	3

1.0 TECHNICAL SPECIFICATION

1.1 General:-

- 1.1.1 The brakes shall follow the general requirements of IPSS: 1.08.005-86 and IPSS: 1.10.009-88 & also GS-01, GS-03, GS-05, GS-09 & GS-13 of GTS of BSP / MECON.

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1.1.2 The brakes & rectifier panel with resistors shall be suitable for the following ambient conditions.

Ambient Temperature : 55°C
Humidity : 100%

1.1.3 Painting shall be as per IPSS: 1.07.064.03.

1.2 Specification of Brake: -

1.2.1 The brake shoes shall be of hinged type. Brake levers shall be forged or fabricated or of cast steel. Hinged pins shall be of hardened alloy steel and shall be lubricated. The pins shall have bushes at bearing points. The rubbing surfaces of the brakes shall be asbestos base material smooth and free from defects.

The brake lining shall be effectively & permanently secured to the brake shoes during the effective life of the lining and shall be protected from water, grease, oil & other adverse effects. The temperature of rubbing surfaces shall not exceed 124°C. The brakes shall have a simple and accessible means of adjustment to compensate for wear and removal of brake lining. Necessary locking devices at the brake level shall be provided.

1.2.2 Electro-Magnet: -

The DC electromagnet shall be shunt type, suitable for operation from 415V, 50 Hz, single-phase supply with rectifier, permanent resistance & forcing resistance.

1.2.2.1 Type of Electromagnet : DC Electromagnet

1.2.2.2 No. of operation per hour : 600

1.2.2.3 Coil winding with flexible lead : Copper

1.2.2.4 Coil insulation : Epoxy filled Class-F insulation.

1.2.2.5 Max. Permissible temp. rise by resistance method : Limited to 85°C

1.2.2.6 C.D.F. (based on 10 min. duty Cycle) : 100%

1.2.2.7 The electromagnet shall be able to pick up at 80% of rated voltage with the spring set for rated braking torque and shall not over heat at 110% rated voltage.

1.2.2.8 The terminals shall be suitable for termination of 6 sq. mm conductor.

1.2.2.9 A suitable lever arrangement shall be provided for manual release of the brake.

1.3 Technical Specification of Rectifier Panel



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- 1.3.1 Supply Voltage : 415V, +10% to –15%, 50Hz +4% to –6%, Single phase
- 1.3.2 Control Supply : 240V, +10% to –15%, 50Hz +4% to –6%, Single phase
- 1.3.3 The panel shall consist of bridge rectifier for coil load. It shall be suitable for taking switching in-rush current and repeated voltage surges during opening of the coil.
- 1.3.4 The panel shall be wired up with suitable HR-PVC single core copper cable with stranded conductors of size minimum 2.5 sq. mm.
- 1.3.5 The panel consisting of bridge rectifiers, relays, contactors, switches, fuses etc. shall have single gasketed door having IP-54 enclosure & shall be made up of 2 mm thick CRCA sheet steel.
- 1.3.6 The permanent and forcing resistor shall be housed in a separate sheet steel enclosure with louvered side covers and shall be mounted on top of the rectifier panel thus making the panel and resistance box as one complete unit. The degree of protection of resistor housing shall be IP- 33.
- 1.3.7 One no. auxiliary relay for monitoring healthiness of fuses at the incoming side shall be provided.
- 1.3.8 Devices used in the rectifier panel shall be of following make.
- a) **Power Contactor** – BCH (BIL) / BHEL / L & T / SCHNEIDER
(TELOMECANIQUE) / GE (USA) / ABB / LENIOR
ELEC (FRANCE) / MICROELECTRICA
SCIENTIFIC (ITALY)
 - b) **Aux. Relay** – OEN / L & T / SCHNEIDER / ANDREW YULE / GE
POWER CONTROL / BCH (BIL) / EASUN REROLLE
/ JYOTI / ROCKWELL AUTOMATION / CONTROL
& SWITCHGEAR
 - c) **HRC Fuse** – GE POWER CONTROL / L & T / SIEMENS /
BHARAT LINDER / INDO ASIAN / HAVELLS /
STANDARD / BUSSMAN / CONTROL & SWITCH
GEAR / ABB.
 - d) **MCB** – SIEMENS / L & T / GE POWER CONTROL /
SCHNEIDER (PROTEC/MG) / STANDARD /
INDO-ASIAN / HAVELLS / MDS (LEGRAND) /
ABB / CONTROL & SWITCHGEAR.
 - e) **Pneumatic Timers** – BCH (BIL) / SCHNEIDER (TELOMECANIQUE) /
BHEL / ESAUN REFOLLE
 - f) **Power Diodes** – RUTTON-SHAW, USHA RECTIFIER, HIND
RECTIFIER, INSEL, SEMIKRON RECTIFIER, WEST



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CODE, EUPEC.

Make of items, not appearing in the preferred make list, will be subject to approval by MECON / BSP.

2. Scope of Supply: -

The scope of supply consist of package basis of supply all the brake, commissioning spares and list of 2 years operational spares with item wise price and list of insurance spares with item wise price.

DC Brakes :-

i) 20T (Under magnet) x 30.5M (Equipment no. 101 & 102)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - →300 mm Mechanism - MH Max. Torque – 76 Kg-m Set Torque – 67.35 Kg-m	2	4
2	5533309535	DC shunt brake - →160 mm Mechanism - SLEW Max. Torque – 7.6 Kg-m Set Torque – 3.91 Kg-m	1	2
3	5533309534	DC shunt brake - →200 mm Mechanism - MCT Max. Torque – 13 Kg-m	1	2
4	5533309533	DC shunt brake - →250 mm Mechanism - LT Max. Torque – 27.7 Kg-m Set Torque – 17.42 Kg-m	4	8

ii) 20T (Under magnet) x 30.5M (Equipment no. 103 & 104)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - →300 mm Mechanism - MH Max. Torque – 76 Kg-m Set Torque – 67.35 Kg-m	2	4
2	5533309535	DC shunt brake - →160 mm Mechanism - SLEW Max. Torque – 7.6 Kg-m Set Torque – 3.91 Kg-m	1	2
3	5533309534	DC shunt brake - →200 mm Mechanism - MCT Max. Torque – 13 Kg-m	1	2



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4	5533309533	DC shunt brake - —250 mm Mechanism - LT Max. Torque – 27.7 Kg-m Set Torque – 17.42 Kg-m	4	8
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iii) 25T x 24.5M (Equipment no. 105)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309531	DC shunt brake - —400 mm Mechanism - MH Max. Torque – 138 Kg-m Set Torque – 90.93 Kg-m	2	2
2	5533309535	DC shunt brake - —160 mm Mechanism - MCT Max. Torque – 7.6 Kg-m	1	1
3	5533309534	DC shunt brake - —200 mm Mechanism - LT Max. Torque – 13 Kg-m Set Torque – 10.34 Kg-m	2	2

iv) 25T (On hook) x 24.5M (Equipment no. 109)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - —300 mm Mechanism - MH Max. Torque – 76 Kg-m Set Torque – 67.35 Kg-m	2	2
2	5533309535	DC shunt brake - —160 mm Mechanism - SLEW Max. Torque – 7.6 Kg-m Set Torque – 3.91 Kg-m	1	1
3	5533309534	DC shunt brake - —200 mm Mechanism - MCT Max. Torque – 13 Kg-m	1	1
4	5533309533	DC shunt brake - —250 mm Mechanism - LT Max. Torque – 27.7 Kg-m Set Torque – 16.88 Kg-m	4	4

v) 20T (Under magnet) x 33.5M (Equipment no. 106)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - —300 mm Mechanism - MH	2	2



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		Max. Torque – 76 Kg-m Set Torque – 58.37 Kg-m		
2	5533309533	DC shunt brake - –250 mm Mechanism - Aux. Hoist Max. Torque – 27.7 Kg-m Set Torque – 15.93 Kg-m	1	1
3	5533309534	DC shunt brake - –200 mm Mechanism - MCT Max. Torque – 13 Kg-m	1	1
4	5533309532	DC shunt brake - –300 mm Mechanism - LT Max. Torque – 76 Kg-m Set Torque – 30.49 Kg-m	2	2

vi) 20T (Under magnet) x 33.5M (Equipment no. 107 & 108)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - –300 mm Mechanism - MH Max. Torque – 76 Kg-m Set Torque – 58.37 Kg-m	2	4
2	5533309533	DC shunt brake - –250 mm Mechanism - Aux. Hoist Max. Torque – 27.7 Kg-m Set Torque – 15.93 Kg-m	1	2
3	5533309534	DC shunt brake - –200 mm Mechanism - MCT Max. Torque – 13 Kg-m	1	2
4	5533309532	DC shunt brake - –300 mm Mechanism - LT Max. Torque – 27.7 Kg-m Set Torque – 30.49 Kg-m	2	4

vii) 12T (Under magnet) x 24.5M (Equipment no. 110 & 111)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - –300 mm Mechanism - MH Max. Torque – 76 Kg-m Set Torque – 53.89 Kg-m	2	4
2	5533309535	DC shunt brake - –160 mm Mechanism - SLEW Max. Torque – 7.6 Kg-m Set Torque – 3.91 Kg-m	1	2



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3	5533309534	DC shunt brake - –200 mm Mechanism - MCT Max. Torque – 13 Kg-m	1	2
4	5533309533	DC shunt brake - –250 mm Mechanism - LT Max. Torque – 27.7 Kg-m Set Torque – 14.38 Kg-m	4	8

viii) 20T (Under magnet) x 24.5M (Equipment no. 112,113 & 114)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - –300 mm Mechanism - MH Max. Torque – 76 Kg-m Set Torque – 74.09 Kg-m	2	6
2	5533309535	DC shunt brake - –160 mm Mechanism - SLEW Max. Torque – 7.6 Kg-m Set Torque – 4.10 Kg-m	1	3
3	5533309534	DC shunt brake - –200 mm Mechanism - MCT Max. Torque – 13 Kg-m	1	3
4	5533309533	DC shunt brake - –250 mm Mechanism - LT Max. Torque – 27.7 Kg-m Set Torque – 10.34 Kg-m	4	12

ix) 20T (Under magnet) x 24.5M (Equipment no. 115)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - –300 mm Mechanism - MH Max. Torque – 76 Kg-m Set Torque – 74.09 Kg-m	2	2
2	5533309535	DC shunt brake - –160 mm Mechanism - SLEW Max. Torque – 7.6 Kg-m Set Torque – 4.10 Kg-m	1	1
3	5533309534	DC shunt brake - –200 mm Mechanism - MCT Max. Torque – 13 Kg-m	1	1
4	5533309533	DC shunt brake - –250 mm Mechanism - LT	4	4



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		Max. Torque – 27.7 Kg-m Set Torque – 16.66 Kg-m		
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x) 20/5T x 24.5M (Equipment no. 116)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - –300 mm Mechanism - MH Max. Torque – 76 Kg-m Set Torque – 74.10 Kg-m	1	1
2	5533309533	DC shunt brake - –250 mm Mechanism - Aux. Hoist Max. Torque – 27.7 Kg-m Set Torque – 19.71 Kg-m	1	1
3	5533309535	DC shunt brake - –160 mm Mechanism - MCT Max. Torque – 7.6 Kg-m	1	1
4	5533309533	DC shunt brake - –250 mm Mechanism - LT Max. Torque – 27.7 Kg-m Set Torque – 23.69 Kg-m	2	2

xi) 30T (U/M) X 21.5M (Equipment no. 401)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309531	DC shunt brake - –400 mm Mechanism - MH Max. Torque – 138 Kg-m Set Torque – 129.04 Kg-m	2	2
2	5533309535	DC shunt brake - –160 mm Mechanism - SLEW Max. Torque – 7.6 Kg-m Set Torque – 5.3 Kg-m	1	1
3	5533309534	DC shunt brake - –200 mm Mechanism - MCT Max. Torque – 13.00 Kg-m Set Torque – 12.23 Kg-m	1	2
4	5533309533	DC shunt brake - –250 mm Mechanism - LT Max. Torque – 27.7 Kg-m Set Torque – 17.96 Kg-m	4	4

xii) 30T (U/M) X 27.5M (Equipment no. 402 & 403)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
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1	5533309531	DC shunt brake - —400 mm Mechanism - MH Max. Torque – 138 Kg-m Set Torque – 117.92 Kg-m	2	4
2	5533309535	DC shunt brake - —160 mm Mechanism - SLEW Max. Torque – 7.6 Kg-m Set Torque – 4.6 Kg-m	1	2
3	5533309534	DC shunt brake - —200 mm Mechanism - MCT Max. Torque – 13.0 Kg-m Set Torque – 11.83 Kg-m	1	2
4	5533309533	DC shunt brake - —250 mm Mechanism - LT Max. Torque – 27.7 Kg-m Set Torque – 19.06 Kg-m	4	8

xiii) 30/10T X 27.5M (Equipment no. 404)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - —300 mm Mechanism - MH Max. Torque – 76 Kg-m Set Torque – 71.85 Kg-m	2	2
2	5533309532	DC shunt brake - —300 mm Mechanism - AH Max. Torque – 76 Kg-m Set Torque – 11.93 Kg-m	1	1
3	5533309535	DC shunt brake - —160 mm Mechanism - MCT Max. Torque – 7.6 Kg-m Set Torque - 7.25 Kg-m	1	1
4	5533309532	DC shunt brake - —300 mm Mechanism - LT Max. Torque – 76 Kg-m Set Torque – 31.58 Kg-m	2	2

xiv) 50/15T X 27.5M (Equipment no. 405)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309531	DC shunt brake - —400 mm Mechanism - MH Max. Torque – 138 Kg-m Set Torque – 117.92 Kg-m	2	2



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2	5533309531	DC shunt brake - —400 mm Mechanism - AH Max. Torque – 138 Kg-m Set Torque – 106.16 Kg-m	1	1
3	5533309534	DC shunt brake - —200 mm Mechanism - MCT Max. Torque – 13.8 Kg-m Set Torque – 11.83 Kg-m	1	1
4	5533309532	DC shunt brake - —300 mm Mechanism - LT Max. Torque – 76 Kg-m Set Torque – 39.2 Kg-m	2	2

xv) 20/5T X 27.5M (Equipment no. 406 & 407)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - —300 mm Mechanism - MH Max. Torque – 76 Kg-m Set Torque – 74.10 Kg-m	1	2
2	5533309532	DC shunt brake - —300 mm Mechanism - Aux. Hoist Max. Torque – 76 Kg-m Set Torque – 39.80 Kg-m	1	2
3	5533309535	DC shunt brake - —160 mm Mechanism - MCT Max. Torque – 7.60 Kg-m Set Torque – 5.38 Kg-m	1	2
4	5533309533	DC shunt brake - —250 mm Mechanism - LT Max. Torque – 27.7 Kg-m Set Torque – 25.04 Kg-m	2	4

xvi) 20T (U/M) X 27.15M (Equipment no. 408, 409 & 410)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309531	DC shunt brake - —400 mm Mechanism - MH Max. Torque – 138 Kg-m Set Torque – 115.07 Kg-m	2	6
2	5533309535	DC shunt brake - —160 mm Mechanism - SLEW Max. Torque – 7.6 Kg-m Set Torque – 4.6 Kg-m	1	3



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3	5533309534	DC shunt brake - -200 mm Mechanism - MCT Max. Torque - 13 Kg-m Set Torque - 10.88 Kg-m	1	3
4	5533309533	DC shunt brake - -250 mm Mechanism - LT Max. Torque - 27.7 Kg-m Set Torque - 17.04 Kg-m	4	12

xvii) 30T (U/M) X 33.5M (Equipment no. 411 & 412)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309531	DC shunt brake - -400 mm Mechanism - MH Max. Torque - 138 Kg-m Set Torque - 117.92 Kg-m	2	4
2	5533309535	DC shunt brake - -160 mm Mechanism - SLEW Max. Torque - 7.6 Kg-m Set Torque - 4.6 Kg-m	1	2
3	5533309534	DC shunt brake - -200 mm Mechanism - MCT Max. Torque - 13.0 Kg-m Set Torque - 11.83 Kg-m	1	2
4	5533309533	DC shunt brake - -250 mm Mechanism - LT Max. Torque - 27.7 Kg-m Set Torque - 20.69 Kg-m	4	8

xviii) 50/15T X 33.5M (Equipment no. 413 & 414)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309531	DC shunt brake - -400 mm Mechanism - MH Max. Torque - 138 Kg-m Set Torque - 117.92 Kg-m	2	4
2	5533309531	DC shunt brake - -400 mm Mechanism - Aux. Hoist Max. Torque - 138 Kg-m Set Torque - 106.16 Kg-m	1	2
3	5533309534	DC shunt brake - -200 mm Mechanism - MCT Max. Torque - 13 Kg-m Set Torque - 11.83 Kg-m	1	2
4	5533309532	DC shunt brake - -300 mm	2	4



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		Mechanism - LT Max. Torque – 76 Kg-m Set Torque – 39.25 Kg-m		
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xix) 20/5T X 33.5M (Equipment no. 415)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - –300 mm Mechanism - MH Max. Torque – 76 Kg-m Set Torque – 74.10 Kg-m	1	1
2	5533309532	DC shunt brake - –300 mm Mechanism - Aux. Hoist Max. Torque – 76 Kg-m Set Torque – 39.80 Kg-m	1	1
3	5533309535	DC shunt brake - –160 mm Mechanism - MCT Max. Torque – 7.60 Kg-m Set Torque – 5.38 Kg-m	1	1
4	5533309533	DC shunt brake - –250 mm Mechanism - LT Max. Torque – 27.7 Kg-m Set Torque – 27.22 Kg-m	2	2

xx) 20/5T X 43.05M (Equipment no. 416)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - –300 mm Mechanism - MH Max. Torque – 76 Kg-m Set Torque – 74.10 Kg-m	1	1
2	5533309532	DC shunt brake - –300 mm Mechanism - Aux. Hoist Max. Torque – 76 Kg-m Set Torque – 39.80 Kg-m	1	1
3	5533309535	DC shunt brake - –160 mm Mechanism - MCT Max. Torque – 7.60 Kg-m Set Torque – 5.38 Kg-m	1	1
4	5533309532	DC shunt brake - –300 mm Mechanism - LT Max. Torque – 76 Kg-m Set Torque – 34.84 Kg-m	2	2

xxi) 20/5T X 30.85M (Equipment no. 417)

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Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - -300 mm Mechanism - MH Max. Torque - 76 Kg-m Set Torque - 74.10 Kg-m	1	1
2	5533309532	DC shunt brake - -300 mm Mechanism - Aux. Hoist Max. Torque - 76 Kg-m Set Torque - 39.80 Kg-m	1	1
3	5533309535	DC shunt brake - -160 mm Mechanism - MCT Max. Torque - 7.60 Kg-m Set Torque - 5.38 Kg-m	1	1
4	5533309532	DC shunt brake - -300 mm Mechanism - LT Max. Torque - 76 Kg-m Set Torque - 31.58 Kg-m	2	2

xxii) 20/5T X 33.5M (Equipment no. 418 & 419)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - -300 mm Mechanism - MH Max. Torque - 76 Kg-m Set Torque - 74.10 Kg-m	1	2
2	5533309532	DC shunt brake - -300 mm Mechanism - Aux. Hoist Max. Torque - 76 Kg-m Set Torque - 39.80 Kg-m	1	2
3	5533309535	DC shunt brake - -160 mm Mechanism - MCT Max. Torque - 7.60 Kg-m Set Torque - 5.38 Kg-m	1	2
4	5533309532	DC shunt brake - -300 mm Mechanism - LT Max. Torque - 76 Kg-m Set Torque - 27.22 Kg-m	2	4

xxiii) 20/5T X 30.3M (Equipment no. 421 & 422)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - -300 mm Mechanism - MH Max. Torque - 76 Kg-m Set Torque - 74.10 Kg-m	1	2



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2	5533309532	DC shunt brake - —300 mm Mechanism - Aux. Hoist Max. Torque – 76 Kg-m Set Torque – 39.80 Kg-m	1	2
3	5533309535	DC shunt brake - —160 mm Mechanism - MCT Max. Torque – 7.60 Kg-m Set Torque – 5.10 Kg-m	1	2
4	5533309533	DC shunt brake - —250 mm Mechanism - LT Max. Torque – 27.7 Kg-m Set Torque – 26.13 Kg-m	2	4

xxiv) 20/5T X 18.5M (Equipment no. 424)

Sl. no.	Item code	Brake size in mm	Qty./ Crane	Total Qty.
1	5533309532	DC shunt brake - —300 mm Mechanism - MH Max. Torque – 76 Kg-m Set Torque – 74.10 Kg-m	1	1
2	5533309532	DC shunt brake - —300 mm Mechanism - Aux. Hoist Max. Torque – 76 Kg-m Set Torque – 39.80 Kg-m	1	1
3	5533309535	DC shunt brake - —160 mm Mechanism - MCT Max. Torque – 7.60 Kg-m Set Torque – 5.38 Kg-m	1	1
4	5533309533	DC shunt brake - —250 mm Mechanism - LT Max. Torque – 27.7 Kg-m Set Torque – 18.50 Kg-m	2	2

2.1.2 Brake Rectifier Panel: -

i) 20T (Under magnet) x 30.5M (Equipment no. 101 & 102)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309537	For Simultaneous operation of 2 nos. of DC brakes of dia.- 300mm for MH	1	2
2	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for SLEW	1	2
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	2
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	2	4



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ii) 20T (Under magnet) x 30.5M (Equipment no. 103 & 104)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309537	For Simultaneous operation of 2 nos. of DC brakes of dia.- 300mm for MH	1	2
2	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for SLEW	1	2
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	2
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	2	4

iii) 25T x 24.5M (Equipment no. 105)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309536	For simultaneous operation of 2 nos. of DC brake of dia.- 400 mm for MH	1	1
2	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for MCT	1	1
3	5533309539	For Simultaneous operation of 2 nos. of DC brake of dia.- 200 mm for LT	1	1

iv) 25T (On hook) x 24.5M (Equipment no. 109)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309537	For Simultaneous operation of 2 nos. of DC brakes of dia.- 300mm for MH	1	1
2	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for SLEW	1	1
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	1
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	2	2

v) 20T (Under magnet) x 33.5M (Equipment no. 106)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309537	For Simultaneous operation of 2 nos. of DC brakes of dia.- 300mm for MH	1	1
2	5533309542	For operation of 1 no. of DC brake of dia.- 250 mm for AH	1	1
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	1
4	5533309537	For Simultaneous operation of 2 nos. of DC brake of dia.- 300 mm for LT	1	1

vi) 20T (Under magnet) x 33.5M (Equipment no. 107 & 108)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309537	For Simultaneous operation of 2 nos. of DC brakes of dia.-	1	2



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		300mm for MH		
2	5533309542	For operation of 1 no. of DC brake of dia.- 250 mm for AH	1	2
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	2
4	5533309537	For Simultaneous operation of 2 nos. of DC brake of dia.- 300 mm for LT	1	2

vii) 12T (Under magnet) x 24.5M (Equipment no. 110 & 111)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309537	For Simultaneous operation of 2 nos. of DC brakes of dia.- 300mm for MH	1	2
2	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for SLEW	1	2
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	2
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	2	4

viii) 20T (Under magnet) x 24.5M (Equipment no. 112,113 & 114)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309537	For Simultaneous operation of 2 nos. of DC brakes of dia.- 300mm for MH	1	3
2	5533309543	For operation of 1 no. of DC brake of dia.- 160 mm for SLEW	1	3
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	3
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	2	6

ix) 20T (Under magnet) x 24.5M (Equipment no. 115)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309537	For Simultaneous operation of 2 nos. of DC brakes of dia.- 300mm for MH	1	1
2	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for SLEW	1	1
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	1
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	2	2

x) 20/5T x 24.5M (Equipment no. 116)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for MH	1	1
2	5533309542	For operation of 1 no. of DC brake of dia.- 250 mm for AH	1	1
3	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for MCT	1	1



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4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	1	1
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xi) 30T (U/M) X 21.5M (Equipment no. 401)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309536	For Simultaneous operation of 2 nos. of DC brakes of dia.- 400mm for MH	1	1
2	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for SLEW	1	1
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	1
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	2	2

xii) 30T (U/M) X 27.5M (Equipment no. 402 & 403)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309536	For Simultaneous operation of 2 nos. of DC brakes of dia.- 400mm for MH	1	2
2	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for SLEW	1	2
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	2
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	2	4

xiii) 30/10T X 27.5M (Equipment no. 404)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309537	For Simultaneous operation of 2 nos. of DC brakes of dia.- 300mm for MH	1	1
2	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for AH	1	1
3	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for MCT	1	1
4	5533309537	For Simultaneous operation of 2 nos. of DC brake of dia.- 300 mm for LT	1	1

xiv) 50/15T X 27.5M (Equipment no. 405)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309536	For Simultaneous operation of 2 nos. of DC brakes of dia.- 400mm for MH	1	1
2	5533309540	For operation of 1 no. of DC brake of dia.- 400 mm for AH	1	1
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	1
4	5533309537	For Simultaneous operation of 2 nos. of DC brake of dia.- 300 mm for LT	1	1



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xv) 20/5T X 27.5M (Equipment no. 406 & 407)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309541	For operation of 1 no. of DC brakes of dia.- 300mm for MH	1	2
2	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for AH	1	2
3	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for MCT	1	2
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	1	2

xvi) 20T (U/M) X 27.15M (Equipment no. 408, 409 & 410)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309536	For Simultaneous operation of 2 nos. of DC brakes of dia.- 400mm for MH	1	3
2	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for SLEW	1	3
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	3
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	2	6

xvii) 30T (U/M) X 33.5M (Equipment no. 411 & 412)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309536	For Simultaneous operation of 2 nos. of DC brakes of dia.- 400mm for MH	1	2
2	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for SLEW	1	2
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	2
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	2	4

xviii) 50/15T X 33.5M (Equipment no. 413 & 414)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309536	For Simultaneous operation of 2 nos. of DC brakes of dia.- 400mm for MH	1	2
2	5533309540	For operation of 1 no. of DC brake of dia.- 400 mm for AH	1	2
3	5533309543	For operation of 1 no. of DC brake of dia.- 200 mm for MCT	1	2
4	5533309537	For Simultaneous operation of 2 nos. of DC brake of dia.- 300 mm for LT	1	2



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xix) 20/5T X 33.5M (Equipment no. 415)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for MH	1	1
2	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for AH	1	1
3	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for MCT	1	1
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	1	1

xx) 20/5T X 43.05M (Equipment no. 416)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for MH	1	1
2	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for AH	1	1
3	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for MCT	1	1
4	5533309537	For Simultaneous operation of 2 nos. of DC brake of dia.- 300 mm for LT	1	1

xxi) 20/5T X 30.85M (Equipment no. 417)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for MH	1	1
2	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for AH	1	1
3	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for MCT	1	1
4	5533309537	For Simultaneous operation of 2 nos. of DC brake of dia.- 300 mm for LT	1	1

xxii) 20/5T X 33.5M (Equipment no. 418 & 419)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for AH	1	2
2	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for AH	1	2
3	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for MCT	1	2
4	5533309537	For Simultaneous operation of 2 nos. of DC brake of dia.- 300 mm for LT	1	2

xxiii) 20/5T X 30.3M (Equipment no. 421 & 422)

Sl.	Item code	Description	Qty./	Total
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no.			Crane	Qty.
1	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for MH	1	2
2	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for AH	1	2
3	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for MCT	1	2
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	1	2

xxiv) 20/5T X 18.5M (Equipment no. 424)

Sl. no.	Item code	Description	Qty./ Crane	Total Qty.
1	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for MH	1	1
2	5533309541	For operation of 1 no. of DC brake of dia.- 300 mm for AH	1	1
3	5533309544	For operation of 1 no. of DC brake of dia.- 160 mm for MCT	1	1
4	5533309538	For Simultaneous operation of 2 nos. of DC brake of dia.- 250 mm for LT	1	1

2.1.3 Spares:-

2.1.3.1 Commissioning Spares per crane

A. List of commissioning Spares per crane:

Sl. no.	Item description	Qty.
1	Power Contactor	1 no. of each type & size
2	Power Contactor contacts, fixed & moving	1 no. of each type & size
3	Power Contactor Coil	1 no. of each type & size
4	Auxiliary contactor	1 no. of each type & size
5	Auxiliary Contactor Contacts, fixed & moving	1 no. of each type & size
6	Auxiliary Contactor Coil	1 no. of each type & size
7	Power fuses	5% of each rating for each type & size
8	Control fuses	10% of each total quantity for each type & size
10	Indicating lamp with holder	1 no. each type & size

B. Total quantity for brake coil for the package:

Sl. no.	Item description	Qty.
1	Brake coil size dia. – 160 mm	32
2	Brake coil size dia. – 200 mm	26



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3	Brake coil size dia. – 250 mm	29
4	Brake coil size dia. – 300 mm	29
5	Brake coil size dia. – 400 mm	12

2.1.3.2 Essential Spares – Item wise prices for these spares are to be furnished.

Supply of these spares is not included in the scope of supply. The prices shall be valid for a period of 1 year.

List of essential Spares for two years of operation per crane:

Sl. no.	Item description	Qty.	% of total equipment
1	Power Contactors	1 no. of each rating	-
2	Fixed and moving contacts for Contactor of each type	Minimum 1 set for each	25%
3	Contact set for auxiliary contactors	Minimum 1 set for each	25%
4	Coils for Power Contactors	Minimum 2 nos. for each type	50%
5	Coils for Auxiliary Contactors	Minimum 1 no. for each type	25%
6	Timers	Minimum 2 nos.	15%
7	Auxiliary Contactor	Minimum 1 no. of each type	25%
Sl. no.	Item description	Qty.	% of total equipment
8	Indicating lamp with holder	Minimum 2 nos.	25%
9	Fuses		
	a) Power circuit fuses	Minimum 1no of each rating	100%
	b) Power circuit fuse base	Minimum 1 no. of each type	25%
	c) Control fuse	Minimum 4 nos. of each rating	25%
	d) Control fuse base	Minimum 1 no. of each type	25%
10	Coils for brake of each type		100%
11	Brake lining with rivets	6 pairs for each type & size	

2.1.3.2 List of Insurance spares – Item wise price for the following insurance spares are to be submitted. Prices shall be valid for a period of one year. However insurance spares are not included in scope of supply. Order of these items shall be placed by purchaser separately.

Firm should furnish item wise price for the insurance spares as follows.

Sl. No.	Description	Qty.
1	Brake size of dia. – 160 mm.	1 no.
2	Brake size of dia. – 200 mm.	1 no.



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3	Brake size of dia. – 250 mm.	1 no.
4	Brake size of dia. – 300 mm.	1 no.
5	Brake size of dia. – 400 mm.	1 no.
6	Brake rectifier panel for single operation of 1 no. of DC brake, dia. - 160 mm.	1 no.
7	Brake rectifier panel for single operation of 1 no. of DC brake, dia. - 200 mm.	1 no.
8	Brake rectifier panel for single operation of 1 no. of DC brake, dia. - 250 mm.	1 no.
9	Brake rectifier panel for single operation of 1 no. of DC brake, dia. - 300 mm.	1 no.
10	Brake rectifier panel for single operation of 1 no. of DC brake, dia. - 400 mm.	1 no.
11	Brake rectifier panel for simultaneous operation of 2 nos. of DC brake, dia. - 200 mm.	1 no.
12	Brake rectifier panel for simultaneous operation of 2 nos. of DC brake, dia. - 250 mm.	1 no.
13	Brake rectifier panel for simultaneous operation of 2 nos. of DC brake, dia. - 300 mm.	1 no.
14	Brake rectifier panel for simultaneous operation of 2 nos. of DC brake, dia. - 400 mm.	1 no.

3.0 Eligibility criteria:-

The firm must have supplied DC electromagnetic brakes for hoisting application in cranes in Steel plants in the last 5 years. The tenderer must submit reference list for the same indicating crane capacity, purchase order no with date, customers name and year of installation of brakes on the cranes.

4.0 Testing: -

Each brake shall be subjected to a static load test for 10 min. by applying 125 percent of the rated torque.

5.0 Drgs. and documents: -

- i) Within two weeks of order placement 10 copies of the following drgs. are to be furnished for approval by our customer / their consultant :-
 - a) G. A. drg. of brake.
 - b) G. A. drg. Rectifier panel.
 - c) Schematic drg. & B.O.M. of rectifier panel. Getting approval of the drgs. Shall be the responsibility of the tenderer.
- ii) Firm will supply 10 sets of the approved drgs. as distribution copy.



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- iii) Soft copy of the drgs. & data sheet prepared in AutoCAD package on CD.
- iv) The first sheet of each drg. Shall have nameplate, which shall be supplied to the successful tenderer.

6.0 Technical information along with the offer: -

The following information must be furnished along with the offer failing which the offer may be ignored.

- a) Point-wise confirmation of the above specification.
- b) Brake overall and installation dimensions.
- c) Resistance box & Rectifier panel overall and installation dimensions.
- d) Coil consumption in Watts and pick up and drop-out times in secs, rated current and voltage.
- e) Maximum and minimum torque rating of the brake of intermittent (25%, 40%, and 60% CDF) and continuous duty operation.
- f) Adjustment range of Braking Torque in terms of percentage of Max. Braking Torque.
- g) Weight of the Brakes and Resistance Boxes & Rectifier Panel.
- h) Schematic diagram with B. O. M. of rectifier panel.
- i) List of commissioning spares, two years operational spares and insurance spares with item wise price.



ISO 9001 Company

Heavy Engineering Corporation Limited
(A Govt. of India Enterprise)
Heavy Machine Building Plant
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Schedule III:
Price Format

SI No.	Description	Qty	Unit Rate in Rs. (FOR HMBP)	Total price (For HMBP)
[A]	Brakes			
1	Dia 400	27		
2	Dia 300	74		
3	Dia 250	94		
4	Dia 200	28		
5	Dia 160	29		
	SUB Total [A]	252		
[B]	Brake rectifier Panel			
1	For dia 400 simultaneous operation of 2 brakes	12		
2	For dia 300 simultaneous operation of 2 brakes	26		
3	For dia 250 simultaneous operation of 2 brakes	49		
4	For dia 200 simultaneous operation of 2 brakes	1		
5	For dia 400 single operation of 1 brakes	3		
6	For dia 300 single operation of 1 brakes	22		
7	For dia 250 single operation of 1 brakes	1		
8	For dia 200 singal operation of 1 brakes	22		
8	For dia 160 singal operation of 1 brakes	30		
	SUB Total [B]	166		
	Total [A+B]			
[C]	Commissioning Spares			
	Grand Total [A+B+C]			



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Taxes & Duties:-