# Bharat Heavy Electricals Limited

**(**High Pressure Boiler Plant**)**
Tiruchirappalli – 620014, TAMIL NADU, INDIA
An ISO 9001 Company
CAPITAL PURCHASE / MATERIALS MANAGEMENT / MANUFACTURING


| **ENQUIRY** | Phone: +91 431 257 79 38<br>Fax : +91 431 252 07 19<br>Email : tvenkat@bheltry.co.in<br>Web : www.bhel.com |
|---|---|

| | **Enquiry Number:** | **Enquiry Date:** | **Due date for submission of quotation:** |
|---|---|---|---|
| | **2620700073** | **11.08.2007** | **26.09.2007** |
| You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order | | | |

| **Item** | **Description** | **Quantity** | **Delivery (Item required at BHEL on)** |
|---|---|---|---|
| 10 | Sliding Door for 4 MeV Linac (Travel Mechanism Assembly for sliding Door) as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in) | 1 No. | 28.02.2008 |

**BHEL commercial terms & conditions with Price Bid and Bank Guarantee formats along with technical specifications can be downloaded from BHEL web site http://www.bhel.com or from the Government tender website http://tenders.gov.in (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference "2620700073".**

| | |
|---|---|
| Tenders should reach us before 14:00 hours on the due date<br>Tenders will be opened at 14:30 hours on the due date<br>Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present | Yours faithfully,<br>For BHARAT HEAVY ELECTRICALS LIMITED<br><br>Manager / Capital Purchase / MM / Manufacturing |

# PART A

## SECTION-I: -QUALIFING CRITERIA

**The BIDDER/VENDOR (OEM) has to compulsorily meet the following requirements to get qualified for consideration of the technical offer for the** SUPPLY OF **Sliding door travel mechanism.**

| S. No. | PARTICULARS | VENDOR'S RESPONSE |
|---|---|---|
| **1.0** | Only those Bidder/vendor (OEM), who have supplied and commissioned at least ONE set of travel mechanism bogie type for class-2 crane with minimum crane self weight of 120 Tons and frequency converter drives or higher and such crane is presently working satisfactorily for more than one year after commissioning (on the date of opening of Tender), should quote.<br>However, if such crane has been supplied to BHEL, then it should be presently working satisfactorily for more than six months after its commissioning and acceptance (on the date of opening of Tender) in BHEL.<br>Performance certificate from the customers (minimum 1) regarding satisfactory performance of such Mechanism supplied to them in attached format should be enclosed along with technical offer. | |
| **2.0** | BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected. | |
| **3.0** | The bidding FIRM should have 'in-house' or 'self-owned' facility for FABRICATION and TESTING at 125 % of the rated capacity | |
| **4.0** | The vendor should have minimum 10 years experience in design, fabrication and supply of cranes. | |

## SECTION – II

The vendors are requested to provide the following details

| S. No. | PARTICULARS | VENDOR'S RESPONSE |
|---|---|---|
| **3.0** | Number of Years of Experience of the BIDDER/ VENDOR (OEM) in the field of design, manufacture, | |

| | | |
|---|---|---|
| | supply, erection & commissioning of cranes | |
| **4.0** | Number of cranes supplied, installed and commissioned till date | |
| **5.0** | Number of cranes supplied, installed and commissioned till date in the QUOTED MODEL | |
| **6.0** | Number of cranes supplied, installed and commissioned till date for the following category of CUSTOMERS<br>a) Power Utility Boiler Manufacturer<br>b) Equipment Supplier for Process Industries [Heavy Engineering Companies]<br>c) Research Establishments | |
| **7.0** | Details on SERVICE-AFTER-SALES Set-Up in India including the Addresses of Agents / Service Centre in India and Asia | |
| **8.0** | Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment. | |

## SECTION – III

Bidder / Vendor (OEM) to note the following

| S.No. | REQUIREMENTS | VENDOR'S RESPONSE |
|---|---|---|
| **9.0** | The BIDDER / VENDOR shall submit the offer in TWO PARTS - Technical **[with PART A & PART B]** & Commercial and Price Bid. | |
| **10.0** | The Offer shall contain a comparative statement of Technical Specifications given by BHEL and the Offer Details submitted by the Bidder, against each clause. Where details are required, a mere 'CONFIRMED' or 'COMPLIES' or 'YES' or 'NO-DEVIATION' or similar words in the technical comparative statement may lead to disqualification of the Technical Offer. | |
| **11.0** | The Technical Offer shall be supported by Product Catalogue and Data Sheets in ORIGINAL and complete technical details of 'Bought-Out-Items' with copies of Product Catalogue and Selection Criteria | |
| **12.0** | The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation | |
| **13.0** | BIDDER has to indicate the Country of Origin for the supply of equipment. | |

# PERFORMANCE CERTIFICATE

(On Customer's Letter Head)

1. Supplier of the Equipment :

2. Make & Model of the Equipment :

3. Month & Year of Commissioning :

4. Application :

5.
   a) Crane Type:

   b) Crane Capacity (Metric Tonnes):

   c) Crane span :

   d) Mechanism class :

6. Performance of the Equipment : Best in the market /
   (Strike off whichever is not applicable) Satisfactory /
   Good /
   Average /
   Not Satisfactory

7. Any other remarks:

Date:

Signature & Seal of the Authority
Issuing the Performance Certificate

**PART B:**

**TECHNICAL SPECIFICATIONS OF TRAVEL MECHANISM ASSEMBLY FOR SLIDING DOOR**

This system is intended to close and open the door of X-ray room.

The specification includes drive system for travel mechanism and wheel bogies.

**SCOPE OF SUPPLY**

1. **Travel mechanism assembly consisting of Drive bogie with motor, gearbox, Brake unit and floating shaft – 1no.**
2. **Idler bogie --- 2 nos.**
3. **Drive bogie only with flange coupling on one wheel with out mechanism --- 1 no.**
4. **Electrical control panels, Main Switch and accessories for complete wiring - 1 set.**

| S.No. | PARTICULARS AND BHEL SPECIFICATION | | BIDDER'S OFFER (with Technical Details) |
|---|---|---|---|
| 1.0 | **Design, manufacture, supply, commissioning and prove-out of travel mechanism assembly.** | | |
| 2.0 | **Door travel mechanism components (Bogie & mechanism) shall be** Suitable for Sliding door with self weight of 120 Tons | i)As per BHEL sketch M&S:PD:07:128<br>ii)As per BHEL sketch M&S:PD:07:129<br>iii)As per BHEL sketch M&S:PD:07:130<br>iv)As per BHEL sketch M&S:PD:07:131 | |
| 3.0 | **Weight of Sliding door** | 120 Ton | |
| 4.0 | **DUTY CLASS** | Class II | |
| 5.0 | **SPEED** | Operating /Working speed [Maximum] | |
| 5.1 | Travel (LT) | 6 Mtrs /min | |

| | | | |
|---|---|---|---|
| 6.0 | **CONTROL** | Pendant operation | |
| 6.1 | Type of control | Master control | |
| 6.2 | Control voltage | 110V AC | |
| 6.3 | Input power supply | 415 ±10% Volts , 50Hz,3 phase –AC | |
| 6.4 | Duty class | Indoor Service | |
| 7.0 | Mechanism Group Classification | M4 | |
| 8.0 | **DESIGN STANDARD** | 1S-807 & 3177 / 1999 | |
| 9.0 | **Runway Rail size** | | |
| 10.0 | Travel (LT) | CR 100 | |
| 11.0 | **Wheel size** | | |
| 11.1 | Travel (LT) | Dia. 500 mm | |
| 11.2 | Wheel arrangement for travel | Bogie type | |
| 11.3 | Number of wheels | 8 wheels (4 Bogies ) | |
| 12.0 | **Gearbox detail** | | |
| 12.1 | Size | VR 750 | |
| 12.2 | | | |
| 13.0 | **Motor detail** | | |
| 13.1 | Capacity | 22kw Frame size – 225 S | |
| 13.2 | Duty class | 40% CDF | |
| 13.3 | No. of starts / hour | 150 | |
| 14.0 | **CONTROL FEATURES** | | |
| 14.1 | Control system | Frequency converter type for motion | |
| 14.2 | Operation | Through pendant control | |
| 15.0 | **Special electrical controls** | | |
| 15.1 | **Long travel** | Control panel shall be designed such that the travel shall work in two speeds, 3 M/Min and 6 M/Min. | |
| 16.0 | **TRAVEL BOGIE STRUCTURAL FABRICATON** | | |
| 16.1 | Raw Material | Only steel plates, tested and certified for quality by | |

| | | | |
|---|---|---|---|
| | | reputed inspection authorities, shall be used. | |
| 16.2 | Welded Joints | No joint is permitted for main frames. | |
| 16.3 | Welding Electrodes | E 7018 Electrode only shall be used. | |
| 17.0 | Wheel Assembly | The Wheel Assembly for Travel shall be of LIVE AXLE SYSTEM with L-type bearings as per enclosed BHEL Drawing No. **3-M-02R-0011993** for the wheel Assembly. Dimensions shall be strictly followed as per the drawing. | |
| 18.0 | Machining Operation | All mechanical mating surfaces and wheel seating areas are to be machined to the required finish and protected. | |
| 19.0 | Surface Cleaning | Bogies shall be cleaned properly, after completion of all operations but prior to painting. | |
| 20.0 | Painting | The structural parts are to be painted as follows:<br>a. One coat primer with 25m of DFT (Dry Film Thickness) and 48 hours of compulsory curing after painting.<br>b. Two coats of Enamel Paint (As per IS 5 – 2004 Color ISC 592 International Orange) each with a DFT of 25m and intermittent curing of 16 hours. | |
| 21.0 | **MECHANICAL ELEMENTS** | | |
| 21.1 | Gears | Gears in all the Stages shall be helical / spur in design and to be of machined and hardened. | |
| 21.2 | Gear Box Casing | Shall be of fabricated type and stress relived by thermal heat-treatment process, prior to machining. | |
| 21.3 | Type of Coupling | Only GEARED COUPLING to be used<br>a. Between Electric Motor and Gear Box<br>b. Between Gear Box and Wheels | |
| 22.4 | Wheels | The Wheels shall be of forged and Wheel Tread hardened to 300/350 BHN. | |

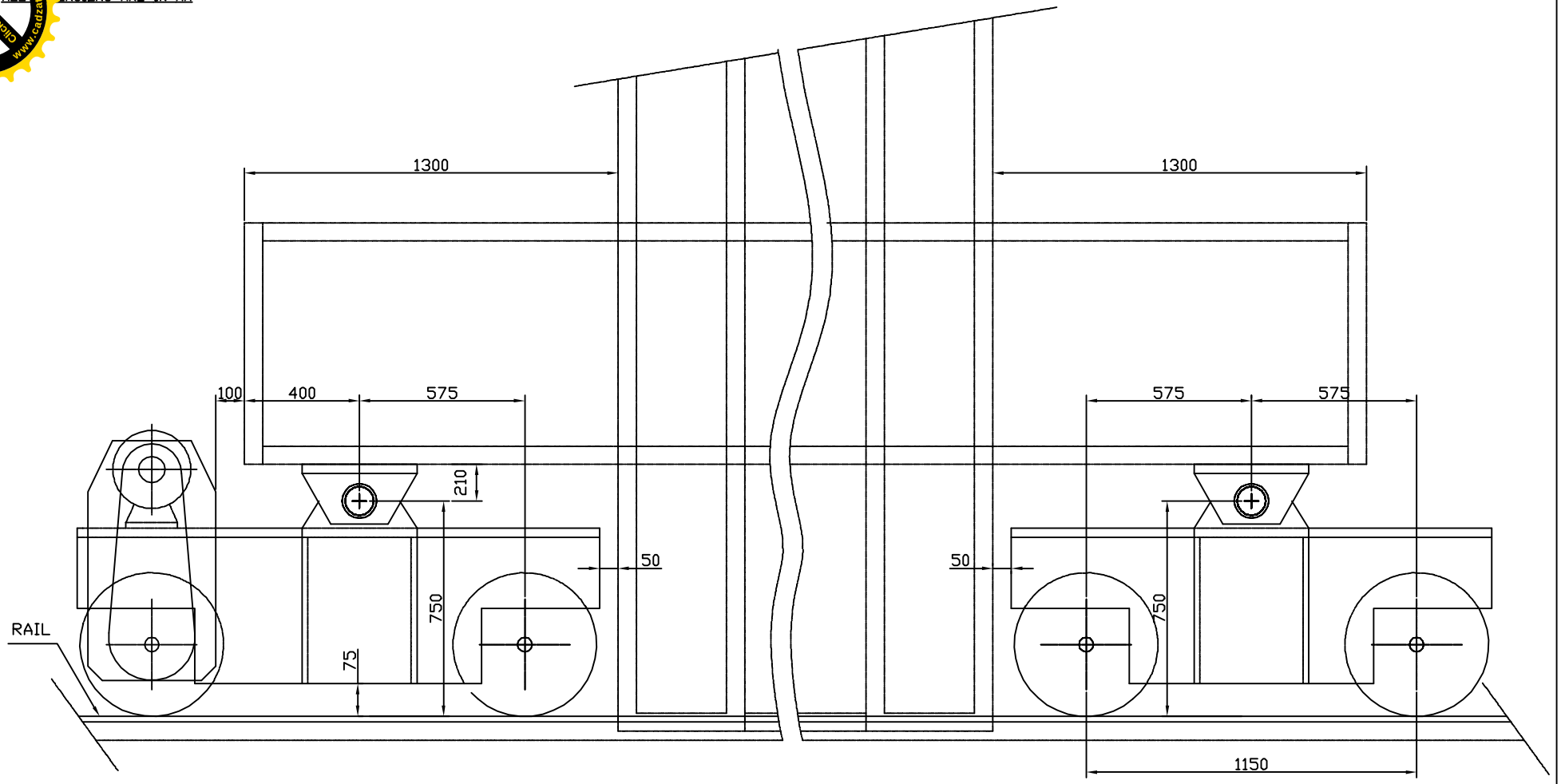
| | | | |
|---|---|---|---|
| 23.0 | **ELECTRICAL ELEMENTS** | | |
| 23.1 | Operational Controls | The travel mechanism shall be provided with Pendant Push Button Control (Master Control) | |
| 23.2 | Control Voltage | 110 VOLT A.C | |
| 23.3 | Type of Brakes | Travel - Thruster Brake | |
| 23.4 | Protection | All Panels and Motors shall be IP 54 protection | |
| 23.5 | Electric Motors | Electric Motors shall be as per IS-325 and IS-1231. | |
| 23.6 | Electric Contactors | Panels shall have only SIMENS Contactors and shall be suitable for AC3 Duty Class. | |
| 23.7 | Contactors Rating | The rating of all Contactors shall be at least 50% higher than the respective electric motor full load current, at the specified duty cycle. | |
| 23.8 | Electrical Design | All Electrical Elements shall be so selected, that they withstand 25% overloading , at any time of operation. | |
| 23.9 | Controller Steps | 2-Step Control shall be provided for Travel. | |
| 23.10 | Frequency Converter | The VVVF Drive shall be provided with suitable DBR. | |
| 23.11 | Cables | All cables, lugs etc., required for wiring shall be supplied by vendor | |
| 24.0 | **SELECTION OF COMPONENTS** | The make of components or Bought-Out-items shall be strictly as per the list given below. | |
| 24.1 | Electric Motors | GEC / BHARAT BIJLEE / SIEMENS / KEC | |
| 24.2 | Thruster brake Unit | ELECTROMAG / SPEED-O-CONTROL / OMEGA | |
| 24.3. | Contactors | Only SIEMENS make | |
| 24.4 | Over-Load-Relay | SIEMENS (THERMAL TYPE) | |
| 24.5 | HRC Fuses | ENGLISH ELECTRIC / L & T / SIEMENS | |
| 24.6 | Switch fuse unit | ENGLISH ELECTRIC / SIEMENS /GEC | |
| 24.7 | Moulded case C.B | SIEMENS / L&T | |

| | | | |
|---|---|---|---|
| 24.8 | Pneumatic Time Delay | Only BCH make | |
| 24.9 | Push - Buttons | SIEMENS /L&T/AIRON | |
| 24.10 | Connectors | Only ELMAX make | |
| 24.11 | Couplings | WMI / FENNER / ALFEX | |
| 24.12 | Bearings | SKF / NBC / ZKL | |
| 24.13 | Cables | Reputed Makes & ISI Approved | |
| 24.14 | VVVF Drives | ABB / SIEMENS / L&T | |
| 25.0 | **DOCUMENTS / DETAILS for APPROVAL** | The following documents and details are to be submitted for BHEL approval, prior to taking up the manufacture. | |
| 25.1 | Drawings and Documents | a. GA Drawing of the mechanisms.<br>b. Drawings of bogies and connections.<br>c. Sub-Assembly Drawing for Wheels & Gear Boxes<br>d. Calculation for Selection of Electric Motors, Gear Reducers, Brake, Couplings, etc.<br>g. Calculations for bogie and their connections. | |
| 26.0 | **INSPECTION** | The following Schedule of Stage Inspections is to be strictly adhered to, prior to dispatch from the Supplier's works. | |
| 26.1 | STAGE-I | a. Verification of Test Certificate for Raw Materials used for bogies, Gear box Casings, etc.<br>b. Random Testing on the Welds, by physical examination.<br>c. Bogie Frame Fabrication before setting the Mechanisms | |
| 26.2 | STAGE-II | a. Bogies with Wheel Assembly and Alignment checking.<br>b. Bogie with bracket and pin, Wheel Alignment, Mechanical Assemblies and Total Alignment.<br>c. Free running of the Mechanisms | |

| | | | |
|---|---|---|---|
| 27.0 | **ERECTION & COMMISSIONING** | | |
| 27.1 | Mechanical Erection | Erection of the travel mechanism will be done by BHEL. | |
| 27.2 | Mechanism Commissioning | Commissioning of the travel mechanism, Performance Prove – Out and smooth Functioning of the mechanism (at BHEL Works) shall be the RESPONSIBILITY of the supplier. | |
| 28.0 | Documentation - Drawings & Details<br><br>Shall supply 3 sets and on CD | a. Mechanism Assembly Drawing<br>b. Total Wiring Schematics<br>c. Detailed Wiring Diagrams for Sub-Systems / Panels<br>d. VVVF Drive's Logic Circuits<br>e. Wheel Assembly Drawings<br>f. Gear Box Assembly Drawings<br>g. Coupling Drawing and Details<br>h. specifications/ Ratings of All Bought-Out-Items<br>i. Warranty / Guarantee Card for all Bought-out-Items. | |
| 29.0 | **PERFORMANCE GUARANTEE** | The Performance of the Trvel assembly, mechanism, electrical items and/or the Components / Sub-Assemblies / Bought-out-Items shall be guaranteed for a minimum period of twelve months from the date of performance acceptance at BHEL works. | |

ALL DIMENSIONS ARE IN MM

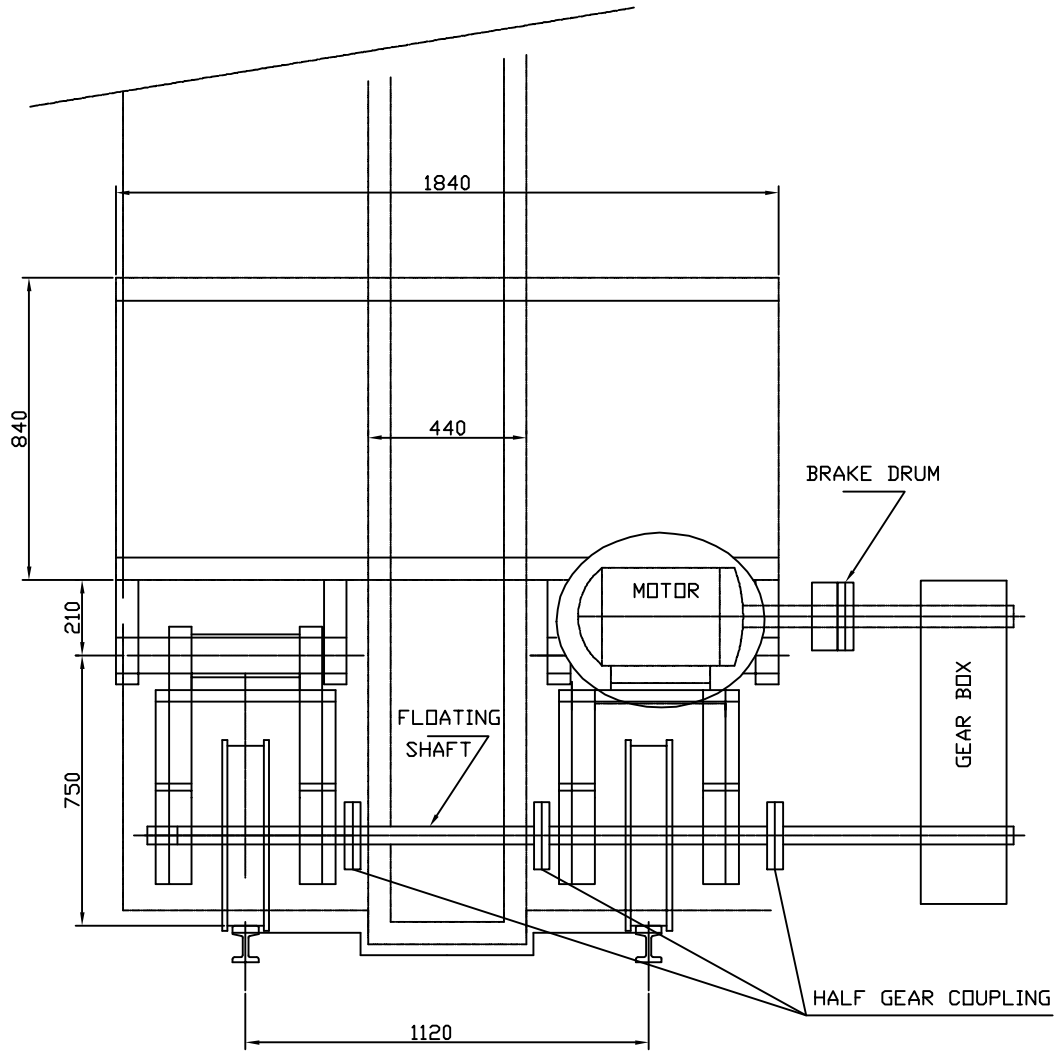





| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | DRAWN | GGR | | | | | |
| | DATE | 09/08/07 | | | | | |
| | MACHINE: – | | | TYPE: – | | | |
| | TITLE: SLIDING DOOR (NDTL–1D) | | | M&S: PD: 07: 128 | | | REV. |

ALL DIMENSIONS ARE IN MM

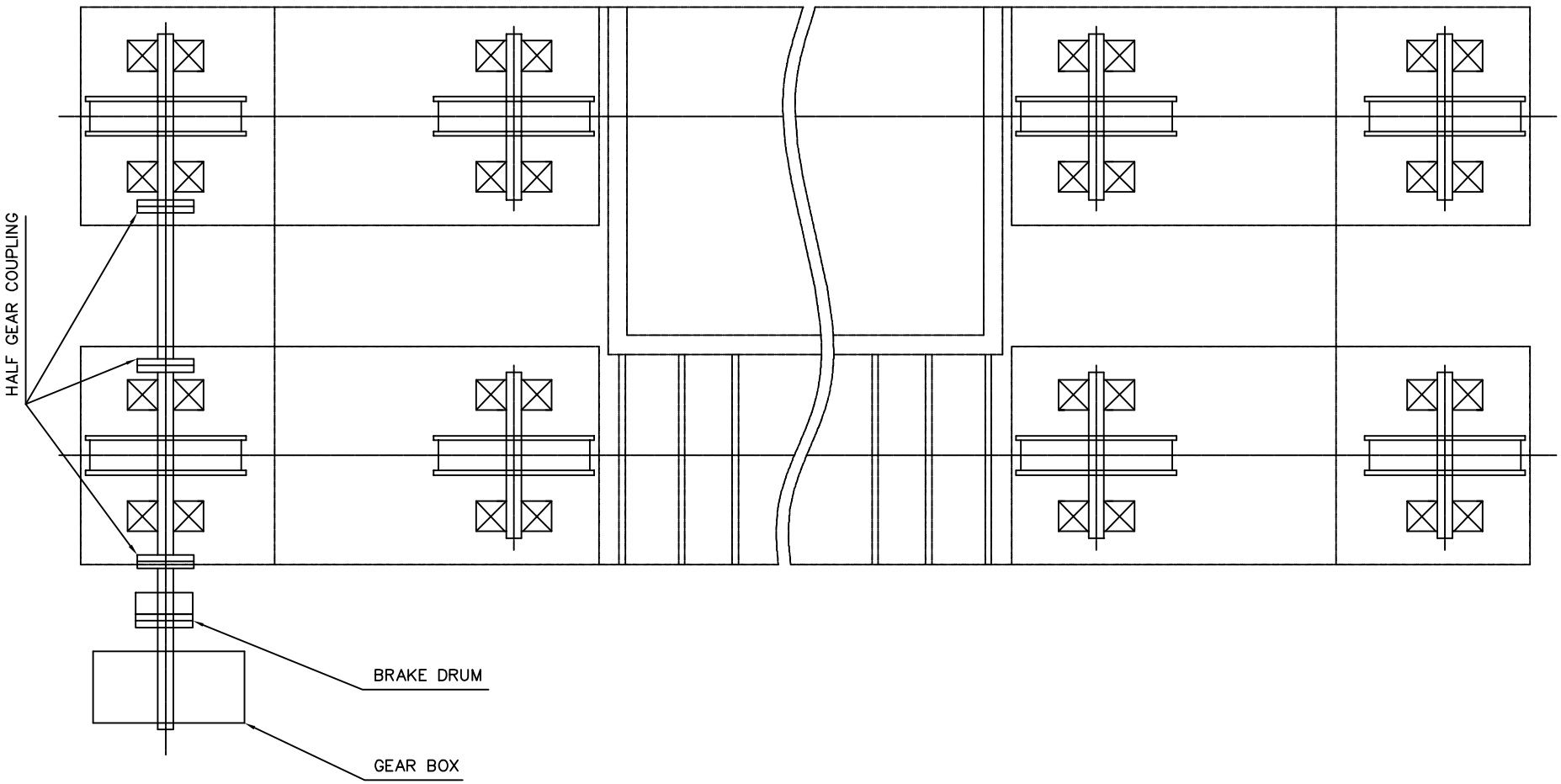




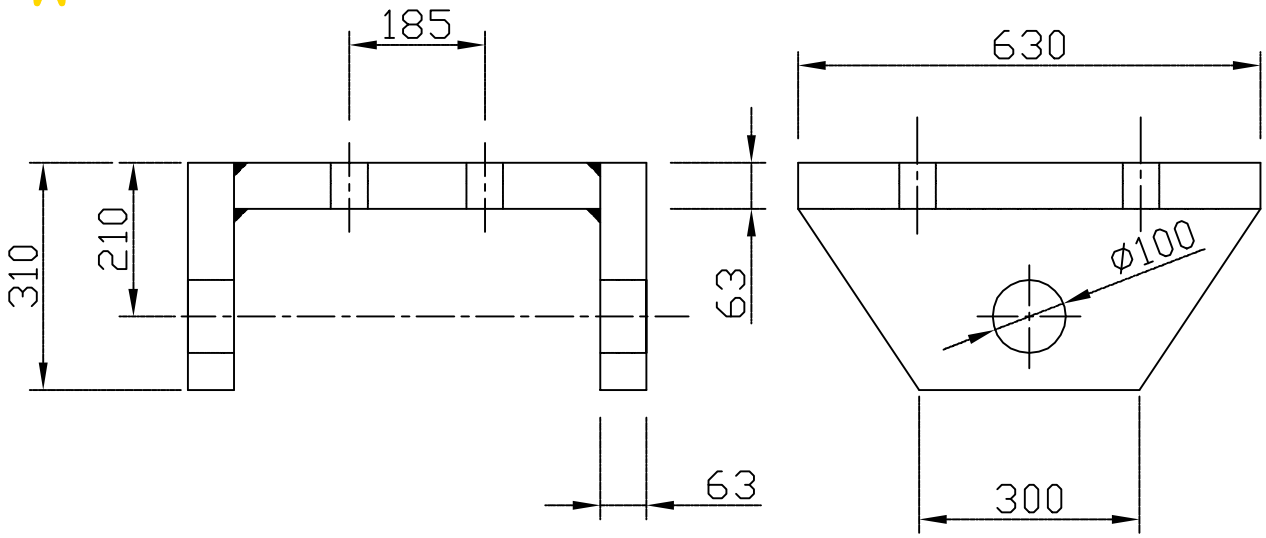

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | DRAWN | GGR | | | | | |
| | DATE | 09/08/07 | | | | | |
| | MACHINE: – | | | TYPE: – | | | |
| | TITLE: MECH. ASSY. DETAIL (NDTL–1D) | | | M&S: PD: 07: 129 | | | REV. |

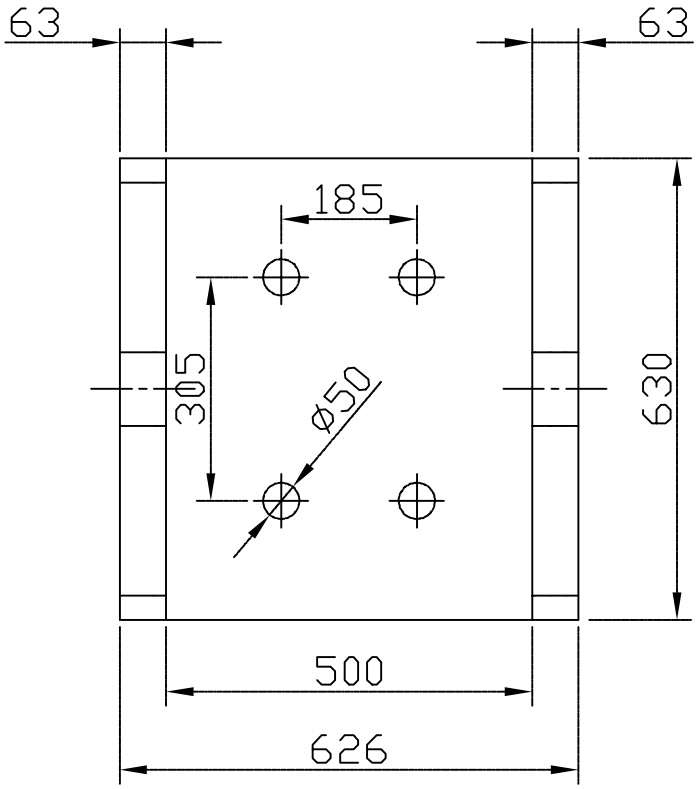
ALL DIMENSIONS ARE IN MM






| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | DRAWN | GGR | | | | | |
| | DATE | 09/08/07 | | | | | |
| | MACHINE: – | | TYPE: – | | | | |
| | TITLE: KEY PLAN (NDTL–1D) | | M&S: PD: 07: 130 | | | | REV. |




| | | |
|---|---|---|
| T.T.B | DATE: 09/08/07 | |
| TITLE: BRACKET | | M&S: PD: 07: 131 |