

ANNEXURE

Technical Specification of Double ended CTRB Mounting Machine**1. Description:**

Double End Cartridge Tapered Roller Bearing Mounting Machine for Class E & Class K as per specification given below.

2. Purpose:

The above said Double End Cartridge Tapered Roller Bearing Mounting Machine is a special purpose machine designed for mounting the CTRBs (Cartridge Tapered Roller Bearing) by telescopic sleeve method on both axle journals of a Class E & Class K wheel set simultaneously.

3. Scope of supply:

3.1 The scope of supply will include design, manufacture, supply, installation, erection, Testing and commissioning of Semi-Automatic Double End Hydraulic Telescopic type CTRB Bearing Mounting Machine, with adjustable-center height consisting of two mounting units to carry out mounting of same Cartridge Tapered Roller Bearings (CTRBs) class E/class K on journals of the wheel set simultaneously with the provisions of individual operation command. The scope of supply shall also include all standard accessories to make the equipment fully operational when installed and connected to power source.

3.2 The scope of supply shall also include all standard accessories to make the equipment fully operational when installed and connected to power source.

4.0 Job Requirement and capability:

4.1 Mounting of CTRBs, as per requirement on both sides of axle journals of wheel set simultaneously with individual operation / command for each side.

4.2 The backing ring along with the CTRB bearing is firmly seated against the fillet, the bearing pressure shall be required seating pressure 50 ± 5 ton indicating on pressure gauge and this load should be held for 5 seconds.

4.3 Provision of smooth lifting of wheel set above rail level by supporting hydraulic guide jack system for holding of wheel set for mounting both side bearing so that CTRB mounting will be made on different diameters on wheel sets.

4.4 Hydraulic Jack System will be attached with the machine frame.

4.5 Accurate alignment (The Center line of Telescopic pilot assembly sleeve of one side will Co-inside with the center line of the Telescopic pilot assembly sleeve of the other side) of Telescopic pilot assembly sleeve of both side. The alignment will be measured and proved at the time of commissioning.

4.6 The machine will be fixed on the ground with suitable foundation to absorb or withstand the forces developed during the mounting process.

4.7 To ensure that the bearings are properly seated, the machine will be equipped with relief valves along with pressure regulator valve and timers so that the specific pressure can be maintained for a specific period.

4.8 The machine will be supplied with Pressure transducer, calibrated load display in both Kg/cm² and in tons for both side cylinders and a Pressure gauge in system line.

4.9 All the machine elements and components will be designed in such a manner that they will withstand all the forces developed during mounting process without any deformation in long run of the machine.

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5. Concomitant accessories, Spares, Maintenance tool kit & Technical literatures:-

5.1 The machine will be accompanied with all concomitant accessories to make the machine fully functional at site when installed which will, be supplied along with the machine. 5.2 One set of spares furnished below will be supplied along with the machine:

Sl. No.	Description	Quantity
1	Piston seals for Hydraulic cylinders (Consisting 1 Set for Each Cylinder)	02 set
2	Pressure Relief Valves	02 Nos
3	Solenoid Coils	02 Nos
4	Pressure Gauges in Kg/cm ²	01 Nos
5	Hydraulic Filters	02 nos
6	One set of maintenance tool kit for the machine will be supplied along with the machine	01 set

6. Basic Design Features.

6.1 Hydraulic Power Pack

6.2 This is the main hydraulic power source of the machine to develop the required force for mounting the CTRBS on both axle journals of a wheel set simultaneously.

6.3 The oil tank capacity will be 200 -250 liters and will be suitable to develop the required force for mounting the CTRBS on both axle journals of a wheel set simultaneously.

6.4 Double acting Hydraulic cylinders will be provided on both sides horizontally. The cylinders will be designed in such a manner that they will develop the specified force required for mounting the CTRBS on both axle journals of a wheel set simultaneously. The piston strokes of the cylinder shall be of 450 mm (minimum).

6.5 Positive displacement hydraulic pumps and gear pumps will be provided for the high pressure oil circuit. The Hydraulic system will be provided with an air breather, oil level gauge. Filters will be provided to prevent entry of dust and foreign particles.

6.6 Seamless tubes will be used in the hydraulic circuit with the only exception that the mounting cylinder will be connected with the high pressure flexible rubber hoses to enable its movement.

6.7 All the oil seals, piston packing used in the hydraulic circuit will be of good quality.

6.8 Electric motor of adequate capacity will be provided and suitably located in the power pack.

6.9 Telescopic pilot assembly sleeve will be strong and robust to absorb the forces developed during mounting of CTRBS without any type of deformations. These will be hardened and finished chrome plated to prevent the corrosion.

6.10 Two individual rigid pendant push buttons type control units will be provided to operate the machine.

7. Electric Motor

Electric motor 10-12HP(ABB, SEIMIENS), 3Phase, 50Hz, 1440-2000 RPM capacity will be located in the power pack of the machine.

8. Pressure:

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Pressure Gauge will be in the range of 0-500 Kg/cm²

9. Control panel.

All the operations will be controlled by one control panel type control unit will be provided to operate the machine.

Single Phase Preventer (current sensing type) shall be provided for motor protection.

10 Data Monitoring.

* User can input data namely 1. Bearing No 2. Wheel no. 3. Ticket No 4. Date and Time. (Date and Time will be displayed automatically)

* Display will show mounting force(Ton)

* Display will show mounting Displacement(mm)

* Display will show online Load vs Displacement graph

* After conducting the test operator can save the test results in pen drive.

11. Safety

The machine design will always ensure complete safety of the operator and the machine. Suitable interlocks against faulty operational sequence, sudden power failure, fluctuation in power supply voltage beyond permissible range and malfunctions in the hydraulic system shall be provided.

12. Warranty .

Minimum 24 months from date of commissioning.

13. Leading Parameters

S. No. Major Parameters

Values

1. Mounting pressure range

200-250 kg/cm²

2. Capacity of mounting / installing force

70 Ton (minimum)

S.No. Other Parameters

Values

1. Hydraulic Cylinder:

Horizontal double acting

a) Types

450mm \pm 5mm

b) Ram Stroke

Approx. 70 Ton (For Bearing Installation)

c) Capacity

2. Piston Speed:

650-700 mm/min (in idle condition)

a) Ram Speed

100-120 mm/min

b) Speed of Installing(bearing)

3. Hydraulic Power Pack:

Electrically Operated

a) Hydraulic Pump

Radial Plunger Pump

b) Pump Type

200-250 Kg/Cm²

c) Working Pressure

4. Electric Motor:

Electric Motor:

a) Capacity

10-12 HP (Minimum) ABB/ Siemens/ BCH

b) Control Panel

Of Siemens/BCH/Schneider or L&T

c) Oil Tank capacity


200-250 liters

5. The Hydraulic Power Pack unit should consist of

Solenoid DC valve, Non Return valves, Safety valve, Pressure relief valves, Unloading valve, Pressure gauge, Suction strainer, Air breather, Return line filter, Drain plug, etc.

6. Power Supply parameters

Three phase five wire system AC 415 \pm 10%, 50Hz \pm 3%


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