

## Specification For Double End CTRB UIC-130 LHB Bearing Mounting Machine

### 1. Purpose:-

The above said Double End CTRB UIC-130 LHB Bearing Mounting Machine is a special purpose machine designed for mounting the CTRB UIC-130 LHB Bearing by telescopic sleeve method on both axle journals of a UIC-130 LHB wheel set simultaneously.

### 2. Scope of supply:-

- 2.1 The scope of supply should include design, manufacture, supply, installation, erection, Testing and commissioning of Semi-Automatic Double End Hydraulic Telescopic type CTRB UIC-130 LHB Bearing Mounting Machine, with adjustable center height consisting of two mounting units to carry out mounting of Cartridge Tapered Roller Bearings CTRB UIC-130 LHB on journals of the wheel set simultaneously with the provisions of individual operation command.
- 2.2 The scope of supply should also include all standard accessories to make the equipment fully operational when installed and connected to power source.

### 3.0 Job Requirement and capability:-

- 3.1 Mounting of CTRB UIC-130 LHB as per requirement on both sides of axle journals of wheel set simultaneously with individual operation / command for each side.
- 3.2 The backing ring along with the CTRB bearing is firmly seated against the fillet, the bearing pressure should be required seating pressure  $30 \pm 2$  ton SKF/NBC &  $40 \pm 2$  Timken indicating on pressure gauge and this load should be held for 5 seconds.
- 3.3 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 should be made on different diameters on wheel sets.
- 3.4 Hydraulic Jack System should be attached with the machine frame.
- 3.5 Accurate alignment (The Center line of Telescopic pilot assembly sleeve of one side should be 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 should be measured and proved at the time of commissioning.
- 3.6 The machine should be fixed on the ground with suitable foundation to absorb or withstand the forces developed during the mounting process.
- 3.7 To ensure that the bearings are properly seated, the machine should be equipped with relief valves along with pressure regulator valve and timers so that the specific pressure can be maintained for a specific period.
- 3.8 The machine should be supplied with Pressure transducer, calibrated load display in both Kg/cm<sup>2</sup> and in tons for both side cylinders and a Pressure gauge in system line.
- 3.9 All the machine elements and components should be designed in such a manner that they should be withstand all the forces developed during mounting process without any deformation in long run of the machine.

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

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

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S. No.	Description	Quantity
1	Piston seals for Hydraulic cylinders	04 Sets
2	Pressure Relief Valves	02 Nos.
3	Solenoid Coils	02 Nos.
4	Load / Pressure Gauges in Kg/cm <sup>2</sup> and in Tons on ram dia.	06 Nos.
5	Hydraulic Filters	04 Nos.
6	Seal kit for lifting cylinder	02 Sets.
7	One set of maintenance tool kit for the machine will be supplied along with the machine.	01 Set.

#### 5. Basic Design Features.

##### 5.1 Hydraulic Power Pack

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

5.3 The oil tank capacity should be 200 liters and should be suitable to develop the required force for mounting the CTRB LHB on both axle journals of a wheel set simultaneously.

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

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

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

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

5.8 Electric motor of adequate capacity should be provided and suitably located in the power pack.

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

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

#### 6. Electric Motor

Electric motor 10HP, 3Phase, 50Hz, 1440 RPM capacity should be located in the power pack of the machine.

#### 7. Pressure:

Pressure Gauge should be in the range of 0 – 1000 Kg/cm<sup>2</sup>

#### 8. Control panel.

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

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

#### 9. Data Recorder for CTRB Mounting

##### Scope of Work

10" Touch HMI Based Data Recorder for Bearing Puller

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- Display should be show mounting force (Ton)
- Display should be show mounting Displacement (mm)
- Display should be show online Load vs Displacement graph
- After conducting the test operator can save the test results in pen drive.

#### 10. Safety

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

#### Leading Parameter

S.No.	Parameters	Values
1.	Hydraulic Cylinder: a) Types b) Ram Stroke c) Capacity	Horizontal double acting 450mm $\pm$ 5mm Approx.70 Ton (For Bearing Installation)
2.	Piston Speed: a) Ram Speed b) Speed of Installing( bearing)	650 -700 mm/min(in idle condition) 100-120 mm/min
3.	Hydraulic Power Pack: a) Hydraulic Pump b) Pump Type	Electrically Operated Radial Plunger Pump
4.	Electric Motor : a) Capacity b) Control Panel c) Oil Tank capacity	Electric Motor : 10 HP (Minimum) Of Siemens/BCH /Schneider or L&T 200 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%
7.	Capacity of the lifting jack for wheel sets	2.5 Ton
8.	Specification of PC	Industrial PC with Wireless & Bluetooth ability, DVD drive
9.	Printer	Laser Printing Paper size-A4

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