

Technical specification for Lock Bolt Machines Of Enquiry Number 2770616E/OT-06

1.0 Scope: Supply and commissioning of Lock Bolting Machines complete with Hydraulic Power pack, installation tools suitable for 12 mm and 16mm, Hydraulic interconnecting hose sets along with all necessary accessories, commissioning spares etc. for fastening the Lock bolts with shock bar and collecting electrodes in Electrostatic Precipitators.

2.0 Application: The offered Lock Bolt machines are to be used for fixing the lock bolts supplied in line with the Lock bolts drawing attached for ½ inch(12mm) and 5/8 inch(16mm) sizes through swaging process in Electrostatic Precipitators.

4.0 Standards Applicable: The lock Bolt machine-Accessories and Materials should confirm to best quality and specifications to relevant DIN/ISO/ANSI standard or any other equivalent international standards.

5.0 Design Requirement: The offered Lock Bolt machines should include the following:

- a) Hydraulic Power Pack to develop required pressure on Installation Tool—One number per unit
- b) Suitable installation Tool for fixing 12mm & 16mm Lock Bolts-one set per unit.
- c) Suitable Nose assembly for 12mm and 16mm per unit
- d) Hydraulic Hose one set (For Pull and Return) 15 meter length per unit.
- e) Other components required for successful fastening of the lock bolts and ensuring perfect swaging process to meet the Tensile and shear values indicated in the drawing, not indicated in the specification, also should be part of supply by the vendor.
- f) The offered Lock Bolting Machines should be of proven and robust design and suitable for operations in Indian climatic conditions such as saline atmospheres, ambient temperatures up to 50 deg C.
- g) Installation Tool should be Robust and rugged design, to last a long working life in extreme conditions.
- h) Range of hydraulic power units to deliver the extreme high pull pressure required for secure, long lasting assembly at high speed with adequate Tank capacity and necessary pressure relief valves etc ensuring the safety of the operator as well as safe environment.
- i) Electrical Motor shall be of suitable capacity, 3 Phase,440V, 50Hz along with starter, complete with necessary electrical components for safe and successful performance of the offered Lock Bolt Machine.
- j) Choice of placing heads and nose equipment to suit the lock bolts indicated in the reference drawing 12mm and 16mm supplied by many vendors.
- k) Easy-to-change nose equipment and range of hydraulic hoses in different lengths enable the tool to be adapted to suit local assembly requirements
- l) The Powerig should be light weight portable hydraulic power installation Tool. Construction should be strong tubular frame makes for easy manual handling and provides protection for main components when used in rugged conditions. Power rig should also features a built in pressure gauge and large oil filter for the hydraulic system. The Powerig automatically starts when the installation Tool trigger is activated and stops when the installation Tool cycle is complete.
- m) All lubricants, consumables for successful commissioning of the offered lock bolt machines should be supplied by the vendor without any extra cost.

7.0 List of Spares required: Vendor to indicate list of mandatory spares required for 3 years trouble free operation.

8.0 Inspection: The offered Lock bolt machines will be inspected, Tested for performance at site. The vendor should furnish the Load test carried out at works for BHEL scrutiny. Nonperformance of the Lock bolt machines during inspection, Testing and commissioning, will be rejected.

9.0 Installation &Commissioning: Installation and commissioning will be at site under the supervision of competent Engineer from the vendor. Lock Bolt Machines will be tested at site in the presence of BHEL's Engineers as part of Load Test and Acceptance Test and Lock Bolt Machine will be taken over after successful completion of such tests,

10.0 Documents to be submitted along with offer without which offers will not be evaluated:

- a) Confirmation for the performance of the offered Lock bolt Machine for the lock bolts sizes indicated in the respective drawings.
- b) Catalogues, Drawings, Technical data, performance charts for the offered Lock Bolt machine.
- c) Quality Plan for the offered Lock Bolt Machine which should include major components viz Power Pack, Nose assembly, Hydraulic Hoses.
- d) Confirmation on adequacy of the list of spares indicated in the specification.
- e) List of items required for performance of the Lock Bolt machines trouble free for minimum 3 years and not listed in the specification.
- f) Reference list for the supply of similar Lock bolt machine earlier.
- g) Load Test chart carried out for similar sizes earlier.

11.0 Documents to be submitted after P.O by the successful vendor before despatch:

- a) Load Test certificate of the Lock Bolting Machines carried out at vendor works.
- b) Warranty certificates for the goods.
- c) Five sets of Catalogue of the Lock Bolting Machine supplied, O&M Manuals including all Data for the items needs to be attended/replaced Viz Hydraulic Oil, specification, quantity required, Lubrication Chart if any, during the regular maintenance, Part Lists of the supplied Lock Bolting Machine, Manuals for the bought out items are to be part of dispatch along with the Lock bolting machine.
- d) Gross and Net weight of the Lock Bolting Machines along with accessories in Kgs.
- e) Volume of the offered Lock Bolting Machine including the number of packages and respective weights & Volume along with shipping List.

12.0 Deviation: Deviation if any, from technical specification should be clearly specified with relevant technical details for evaluation.

13.0 Guarantee: The offered lock bolts should be guaranteed by the vendor for any manufacturing defect, improper material used, Poor workmanship or non-performance of the Lock bolt machine and accessories for the period of 18 months from the date of supply. Any materials found defective or fails within the Guarantee period due to any of the above reason within the above period will have to be replaced by the vendor free of cost and any charges including To & Fro, transportation charges should be borne by the vendor.

14.0 Warranty: The offered Lock Bolting Machine should carry a Warranty for a period of 18 months from the date of supply. Rectification / Replacement required during the warranty period should be arranged by the vendor free of cost including To & Fro transport charges and other expenditures, Taxes etc payable on replacement items.

15.0 Packing and Despatch: All the components should be packed ensuring no damage during handling, loading, Unloading, Transit and storage. Each Package should be identified with necessary Tags and instructions for handling and storage.

16.0 Specification for hydraulic power rig: The hydraulic unit shall be robust, rugged and should be suitable for using in extreme weather conditions of Tem up to 50 Deg C and in dusty area.

Sl no	Parameter	Required range	Vendor to specify
1	Input Power supply to Main motor	3phase, 415 V,50 HZ AC	
2	Motor power of Hyd pump	2-3 KW	
3	Make & model	-	
4	Hydraulic pump pressure(pull pressure)	8000 psi or above	
5	Control voltage	24 V DC	
6	Hyd. Oil Tank capacity	10-20 leters	
7	Working Area temp	Up to 50 deg C	
8	Gross Wt of power rig(without oil)	Up to 60 KGs	

17.0 Specification for 12mm & 16 MM Hydralic installation tools: installation tools (hand held units) shall be supplied as per size and quantities given in BOM. The hand held units shall be compact and ergonomic design. Light weight one will be preferable.

Sl no	Parameter	Required range	Vendor to specify
1	Pull pressure	7500 psi or above	
2	Return pressure	3500 bar or above	
3	Weight	Max 6 KG	

18.0 Hydraulic hose with electrical cord: The hydraulic hose with power cord shall be supplied as sets with end connectors.

Sl no	Parameter	Required range	Vendor to specify
1	Operating pressure(for pull)	10000 Psi	
2	Burst pressure(for pull)	20000 Psi	
3	Length of Hose & power cord	Min 15 meters	
4	End connections	¼" BSP	
5	Operating pressure(for return)	6000 psi	
6	Burst pressure(for return)	10000 psi	

PRE-QUALIFICATION CRITERIA

- 1) Preferably the Bidder should be an OEM (Original equipment manufacturer) of the machine & installation tools. (Or) if the bidder is an Authorized Distributor/ channel partner of an OEM, then he has to submit an Authorization letter from OEM to that effect.
- 2) The vendor should have been supplied at least 4 sets of lock bolting machines to any customers during the last 7 years ending from 30/06/2017.
- 3) The vendor has to submit a “satisfactory working of the machine” certificate from any of their customers.

Requirement sheet against Enquiry Number 2770616E/OT-06

Sl no	Item description	UOM	Qty	Project Details	Quoted/Not Quoted
01	Supply and operation demonstration of Lock bolting/huck bolting M/c. comprising of Hydraulic power rig, starter panel, hydraulic oil, inter connecting hose with power card for pull & return operation(15 meters min length), Operating tools(gun) with nose assemblies for fixing of 12 mm and 16 mm lock bolts(1+1) etc complete set.	Set	4	R&D purpose at BHEL, Ranipet.	
02	Spare Installation tool to suit for 12mm & 16 mm bolts.	No	4		
03	Spare Nose assembly for 12mm bolt	No	4		
04	Spare Nose assembly for 16 mm bolts.	No	2		
05	Spare hydraulic hose set with end connection (15 mtrs length)	No	2		
06	Supply and operation demonstration of Lock bolting/huck bolting M/c. comprising of Hydraulic power rig, starter panel, hydraulic oil, inter connecting hose with power card for pull & return operation(15 meters min length), Operating tools(gun) with nose assemblies 12 mm and 16 mm.	Set	1	IB Valley, Project.	
07	Spare Installation tool to suit for 12mm & 16 mm bolts.	No	1		
08	Spare Nose assembly for 12mm bolt	No	1		
09	Spare Nose assembly for 16 mm bolts.	No	1		
10	Spare hydraulic hose set with end connection (15 mtrs length)	No	1		