

Annexure-1

NIT No.:-10/WEX/MCR/HYD. PRESS/2-303/2011-12/Dt.02.03.2012

**Name of work:-Retrofitting of new hydraulic power pack on 63 Ton Hydraulic Press,
Plan No.1/2-303**

SCOPE OF SUPPLY AND WORK:

1.0 Purpose of Hydraulic Power Pack: - To replace the Russian power pack for operating the Hydraulic Press 63 Ton capacity.

2.0 Specification of existing Press :-

2.1 Press Capacity	:	63Ton
2.2 Rated force of returned stroke	:	25Ton
2.3 Ejector Capacity (UP)	:	12.5 Ton
(DOWN)	:	3.3 Ton
2.4 Radial Piston Pump Capacity-		
Operating Pressure	:	350 Kg / Cm ²
Maximum Pressure	:	450 Kg / Cm ² (OR MORE)
Discharge	:	10 to 12 LPM
2.5 Gear Pump Capacity-		
Operating Pressure	:	50Kg / Cm ²
Maximum Pressure	:	100 Kg / Cm ² (OR MORE)
Discharge	:	4 to 5 LPM

3.0 Description of movement of Ram & Ejector :-

- 3.1 Up ward movement of Ram.
- 3.2 Down ward movement of Ram
- 3.3 Holding of Ram at any position
- 3.4 Ejector upward motion
- 3.5 Ejector downward motion
- 3.6 Holding of ejector at any position.

4.0 RAM Movements:-

- 4.1 For Ram Movement, Radial Piston Pump is to be used to fill the Ram Cylinder and to maintain a pressure of 350 Kg/cm² in the system.
- 4.2 Up and down movement of the ram is through the 24V DC Solenoid operated 3 position 4-port direction control valve
- 4.3 Pilot operated twin check valve is to be used to hold the Ram at any position.

5.0 Ejector Movement:-

- 5.1 For Ejector Movement, Gear Pump is to be used to fill the ejector Cylinder and to maintain a pressure of 50 Kg/cm² in the system.
- 5.2 Up and down movement of the ejector is through the 24V DC Solenoid operated 3 position 4-port direction control valve
- 5.3 Pilot operated twin check valve is to be used to hold the Ejector at any position

6.0 Scope of supply :-

Power pack shall be designed to meet all the functional requirements of the press as per para 2 & 3. Existing hydraulic diagram no.WEX/DEG/502 is enclosed for REFERENCE and to show the position of Ram and Ejector cylinder. In the power pack supplied by the vendor, two SEPERATE hydraulic circuits (i.e. the circuit of radial piston pump and gear pump) are to be designed for the Ram and ejector cylinder so that both the cylinders can be operated independently.

Sl.No.	Item Description	Make	Qty
6.01	Radial Piston Pump :- Operating Pressure : 350Kg/Cm ² Maximum Pressure : 450Kg/Cm ² Discharge : 10 – 12 LPM	Parker/ Rexroth/ Vickers / Hawe / Yuken only.	01
6.02	Gear Pump Capacity- Operating Pressure : 50 Kg /Cm ² Maximum Pressure : 100Kg/Cm ² Discharge : 4 to 5 LPM	Parker/ Rexroth/ Vickers / Hawe / Yuken only.	01
6.03	3 Phase AC induction motors of make suitable for Radial Piston Pump	Siemens/ABB/Bharat Bijlee	01
6.04	3 Phase AC induction motors of make suitable for Gear Pump	Siemens/ABB/Bharat Bijlee	01
6.05	Oil tank capacity shall be 250 Ltr.	Of repute make	01
6.06	Oil tank should be fitted with air breather, oil level indicator, temperature gauge, oil drain valve and suction strainers .	Of repute make	01
6.07	Solenoid operated 3 position 4-port direction control valve.	Parker/ Rexroth/ Vickers / Hawe / Yuken only.	02
6.08	Pressure relief valve set at 350 Kg / Cm ² (For Ram Cylinder)	Parker/ Rexroth/ Vickers / Hawe / Yuken only.	01

6.09	Pressure relief valve set at 50Kg / Cm ² (Ejector Cylinder)	Parker/ Rexroth/ Vickers / Hawe / Yuken only	01
6.10	Pilot operated twin check valve (For point no 3.3 and 3.6)	Parker/ Rexroth/ Vickers / Hawe / Yuken only	02
6.11	Non return valve(For Ram and ejector)	Parker/ Rexroth/ Vickers / Hawe / Yuken only	02
6.12	Delivery line filter of 25 micron (with regenerative type wire mesh filter insert) along with bypass valve & visual clog indicator is to be fitted in Ejector Cylinder circuit.	EPE/HYDAC/Bhagwati/ Mahle only	01
6.13	Suitable Pressure gauges of 4” Dial Size with isolator are to be fitted on both the lines i.e. Ram movement and Ejector movement to check the pressure.	(Wika/Hydro technique/Mass only)	02

- 6.14 Hydraulic power unit will terminate at four points (two for ram cylinder and two for ejector cylinder) having female threads. These points will be connected to the existing pressure ports of the ram and ejector cylinder through Ermetto couplings and seamless steel tubes. All Piping, Nipples, Fittings and Flanges for connecting Power Pack to press shall be in scope of supply. Seamless steel pipes(as per DIN 2391) and Ermetto joints (as per DIN 2353) are to be used for all the hydraulic fittings and for connecting the power pack to the press. The details of the four ports at which the Hydraulic power unit will terminate are as follows
- (i) Two ports having 1¼” BSPP FEMALE Thread (for ram)
 - (ii) Two ports having ½” BSPP FEMALE Thread (for ejector)

The above ports will be connected to the existing pressure ports of the ram and ejector cylinder and following items are required for this which will be in scope of supply.

Sl. No.	ITEMS	Make	QTY. (Nos.)
6.15	Male stud coupling of 1¼ ” BSPP at stud end and fitted with nut and ferrule at other end for tube outer dia 30 mm as per DIN 2353	Hyloc/Parker/Hydrol ine/Gates/ JJ Hydraulics	10
6.16	Elbow coupling fitted with nut and ferrule at both ends for tube outer dia 30 mm as per DIN 2353		10

6.17	Straight coupling fitted with nut and ferrule at both ends for tube outer dia 30 mm as per DIN 2353		10
6.18	Seamless steel precision tube of Outer Dia 30 mm and length 5000 mm as per DIN 2391	Hyloc/Parker/Hydrol ine/Gates/JJ Hydraulics	05
6.19	Male stud coupling of 1/2" BSPP at stud end fitted with nut and ferrule at other end for tube outer dia 18 mm as per DIN 2353		10
6.20	Elbow coupling fitted with nut and ferrule at both ends for tube outer dia 18 mm as per DIN 2353		10
6.21	Straight coupling fitted with nut and ferrule at both ends for tube outer dia 18 mm as per DIN 2353		10
6.22	Seamless steel precision tube of Outer Dia 18 mm and length 5000 mm as per DIN 2391		5

- 6.23 Power pack shall be capable of maintaining $\pm 5\%$ of set pressure.
- 6.24 All hydraulic elements shall be mounted on top of tank & with sufficient space between them for easy maintenance.
- 6.25 Selection of suitable size/ rating /type of hydraulic elements and other components fitted on power pack shall be responsibility of supplier.
- 6.26 Hydraulic circuit diagram using the symbols as per ISO1219-1 shall be supplied along with offer for suitability of study.
- 6.27 Electrical control system of the power pack shall be supplied by the party.
- 6.28 Any other item not covered here but required at the time of erection and Commissioning shall be supplied by the party. Consumables like jute, cotton, kerosene oil etc. shall be provided by BHEL FOC.
- 6.29 First filling of oil (preferably of IOC) tank shall be done by the party.

7.0 Scope of work:-

- 7.1 Party shall erect the Power pack, connect the power pack to the press & commission at BHEL works.
- 7.2 Electrical connections of power pack and its interfacing with the existing electrical control system of machine shall be done by the party.

8.0 Acceptance :-

- 8.1 Party shall demonstrate operation of all parts of the system supplied.
- 8.2 No oil leakage shall be there in the system.
- 8.3 Acceptance shall be at BHEL, Hardwar after successful commissioning and testing of the supplied system for all operation of the system for which the same was procured.

9.0 Documentation :- Party shall supply **3** sets of operation & maintenance manual consisting of hydraulic & electrical circuit diagram. Documents shall also consist of complete spare parts list including bought out items..

10.0 Spares :- Following spares are to be supplied by the vendor:-

- 10.1 Gear Pump - 01 No.
- 10.2 Radial Piston Pump - 01 No.
- 10.3 Filter inserts(delivery line)- 10 Nos.
- 10.4 Directional Control Valves of each type- 02 Nos. each
- 10.5 All types of pressure gauges- 01 No. each
- 10.6 Ferrule of all sizes – 10Nos. each.

11.0 Delivery:-

- 11.1 **Material** : 80 days from the date of confirmed work order.
- 11.2**Work** : 20 days from date of release of machine for work.

12.0 Late Delivery:-

Penalty at the rate of 0.5% per week of total work order value subjected to maximum 5% shall be imposed on the vendor in case of delay in delivery. Penalty shall not be imposed for the reasons attributed to BHEL.

13.0 Vendor's obligation:

Party shall bring all tools, Pipe bending equipment and testing equipment with them during commissioning of supplied system.

14. BHEL'S Obligations:

- 14.1 PLC interfacing and wiring shall be done by BHEL
- 14.2 Electricity, water, welding sets, Gas cutting equipment, general purpose welding rods and holders shall be provided free of cost. Party shall meet any special welding requirement themselves.

14.3 All machining facility required for the purpose of fitting, subject to the extent available in BHEL, shall be provided free of cost.

15. Defects Liability Period- Performance Bank Guarantee

15.1 Vendor shall submit performance bank guarantee of 10% of total work order value for the entire guarantee period of one year from the date of successful commissioning of the power pack.

15.2 Vendor shall attend the problems in power packs free of cost during the guarantee period.

15.3 Vendor shall replace/repair any defective part/item free of cost during the guarantee period.

16 Payment Terms:-

16.1 **No advance payment shall be made to the vendor.**

16.2 First payment of 80% of total work order value shall be payable against the bank guarantee of equal amount after dispatch of hydraulic power pack to BHEL, Hardwar.

16.3 Second payment of 10% of total work order value along with 100% Taxes and Duties will be made after successful commissioning and job prove out of both the power pack at BHEL, Hardwar.

16.4 Final payment of 10% of total work order value will be made after post commissioning successful working of power pack for one month at BHEL Haridwar. It shall be released after submission of performance bank guarantee of 10% of total work order value as per para 15.

16.5 All the payments shall be made through e-payment after submission of following documents along with first bill-

- i- E-payment form duly filled.(form will be provided by BHEL)
- ii- Bar chart of the machine showing the milestones
- iii- Income tax exemption letter(if applicable)

17.0 Offer:-

17.1 The offer should be submitted in the following manner.

17.2 **Techno-commercial bid containing technical details and commercial terms & conditions in separate sealed envelope**

17.3 Price bid in separate sealed envelope.

17.4 Price bid shall be opened for only techno-commercially accepted offers

17.5 Point-wise compliance of this scope of work is to be given by vendors while submitting their offer.

18. Earnest Money Deposit (EMD):

- 18.1 Vendors have to deposit Rs.20,000 as the EMD. EMD may be deposited in cash, through pay order in favor of BHEL, Hardwar or through demand draft in favour of BHEL .
- 18.2 EMD shall be converted to security deposit if the work is awarded
- 18.3 EMD of the unsuccessful bidders shall be returned back normally within 15 days of acceptance of award of work by successful bidder.
- 18.4 EMD shall not carry any interest.
- 18.5 Offers received without EMD shall be rejected.

19 Security Deposit:-

- 19.1 Successful vendor shall deposit security.
- 19.2 The rate of security deposit will be as below:

For work Up to ` 10 Lakhs : 10% of work order value
Above ` 10 Lakhs upto ` 50 Lakhs : ` 1 Lakh + 7.5% amount exceeding ` 10 Lakhs
Above ` 50 Lakhs: ` 4 Lakhs + 5% amount exceeding ` 50 Lakhs

- 19.3 The security deposit should be submitted before the start of work in the following forms:
 - i) Cash (As permissible under the Income Tax Act)
 - ii) Pay Order, Demand Draft in favour of BHEL, Hardwar
 - iii) Local cheques of Scheduled Banks, subject to realization.
 - iv) securities available from post offices such as NSC, kisan vikas patra etc.(certificates should be held in the name of contractor furnishing the security and duly pledged in favour of BHEL and discharged on the back.
 - v) Fixed deposit receipt issued by scheduled banks / public financial institutions as defined in the companies act. The FDR should be in the name of the contractor, A/C BHEL, duly discharged on the back.
- 19.4 Security Deposit shall not carry any interest.
- 19.5 EMD of successful tenderer can be converted and adjusted against the Security Deposit.
- 19.6 100% of the Security Deposit amount shall be refunded to the vendor after post commissioning successful running of the machine for one month.

20.0 Vendors are strongly advised to visit BHEL, Hardwar and study machine documents in detail on any working day between 8 am to 4 pm before submitting their offer. (SUNDAY IS HOLIDAY)

**AJAY KUMAR
SE (WEX-MCR)**