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BIHARAT HEAVY ELECTRICALS LIMITED
UNIT : JHANSI
(WORKS ENGG. & SERVICES DEPTT.)

EQUIPMENT : 3 MT DIESEL FORKLIFT TRUCK
DEPARTMENT : CDC & FABRICATION & LOCO
SPEC. NO. : 10570
ITEM NO. : MH - 1/40/6260, 6261 & 6262
QUANTITY : 03 NOS.

DIESEL OPERATED FORKLIFT TRUCK OF 3 MT CAPACITY

A Single Drive forklift truck with Simplex Clear View Mast of 3 Tonne capacity at 500 mm load center operated through Diesel Engine is required for transporting material from outside/inside of the store to shop floor.

The Diesel Engine used is to be of Simpsons/Perkins make only delivering maximum torque for rated capacity. The Diesel Engine is to be 4 cylinders, 4 stroke and provided with direct injection system, gear type oil pump for lubrication, water pump and radiator for cooling. The drive wheels to be quickly dismantled permitting the wheel removal with out exposing the bearing. The front & rear wheels are to be fitted with standard non-skid cushion rubber tyres. The frame is to be rugged in construction and designed for maximum strength for assigned duty.

It is to be neatly laid out and provided with hydraulic system for smooth lift, lowering, tilt, power steering and other auxiliary functions. A relief valve is to be provided in the hydraulic circuit for protection against excessive pressure due to excessive loading. The forklift truck is to be provided with auto torque converter. All the gears need for power transmission to run in continuous oil bath and power shift selector lever to be floor mounted. The forklift is to be equipped with a neutral start switch. All steering connections are to be equipped with high-pressure hydraulic fittings.

The fork attachment is to be of welded steel construction with quick adjustment facility. The fork attachment to be supplied complete with load back rest. An adjustable and comfortable cushioned seat for Driver is to be provided. Seat is to be fitted with safety brake switch, which will apply automatically on vacation. An overhead guard is also to be provided.

Contd...2

9

A battery of suitable rating is to be provided for starting of Engine by means of self-start operation, horn used for warning and head and taillights. An alternator for battery charging is to be provided along with Amp. Meter to monitor charging.

The forklift is to be provided with heavy duty, self-adjusting and self-energising hydraulic type brakes mounted on axle housing inside the wheel. Oil seals & sleeves are to be provided so as to prevent entry of grease in the brake area. In addition to the above a hand brake is also to be provided for parking.

The bidders to also quote for optional accessories like oxy-catalyst muffler and spark arrestor separately.

The truck is to be suitable to carry full load upto 25% Gradient. All under carriage fittings and steering connections are to be treated against corrosion. The forklift truck is to be supplied complete with tool kit, canopy and all other accessories needed for successful operation / commissioning.

SPECIFICATIONS:

1. Capacity when used with for attachment at 500 mm load center	: 3000 Kgs
2. Capacity when used with for attachment at 900 mm load center	: 1000 Kgs
3. Overall height with mast full lowered	: 2400 mm
4. Maximum telescopic fork height	: 3500 mm
5. Over all height raised	: 3900 mm
6. Free fork height	: 105 mm
7. Length of forks	: 1000 mm
8. Width of forks	: 150 mm
9. Center distance of forks	: Adjustable between 300 mm to 1100 mm
10. Wheel base	: 1600 mm
11. Width of truck	: 1115 mm
12. Over all length of truck	: 3500 mm
13. Minimum outside turning radius	: 2400 mm
14. Tilt	: 6°
	: 12°
15. Max. Speed of truck in Forward/Reverse	: 17 Kms/hr.
	: 24 Mtrs/Minutes
16. Lifting	: 24 mtrs/Minutes
17. Lowering	: 24 mtrs/Minutes

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8

18. Max. Gradient - At full load
At no load

: 25%
: 25%

19. Type of Transmission

: Auto Torque Converter

MISCELLANEOUS:

1. The offer should be complete with dimensioned outline general arrangement drawing with complete details of Engine, Power transmission system, hydraulic system with circuit diagram and write up explaining special features.
2. List of standard accessories supplied.
3. List of optional accessories offered with item wise prices.
4. Recommended spares for 2 years normal working to be quoted with item wise prices.
5. Optional equipment to be quoted extra for Environmental protection.
6. A list of customers to whom similar/identical equipments have been supplied in last 3 years with their names and addresses.

The equipment shall be tested/inspected by BHEL Engineers at suppliers works as per test chart in accordance to IS for all accuracies & performance before dispatch. Equipment shall be guaranteed for its satisfactory performance for a period of 12 months from the date of commissioning along with guarantee certificate. Four copies of test & guarantee certificates of equipment as well as major bought out items, operation & maintenance manuals, foundation/general arrangement & other drawings. Schematic circuit diagrams, spares parts catalogues with make must be supplied before dispatch of the equipment.

Not with standing anything, the details in this specification, if anything else is required for it's functioning, the same shall be specifically brought out & indicated. The Tenderer is to submit complete details of the equipment in the first instance. Offers without complete details are liable to be rejected.

For general requirement: Refer Annexure I & II

Issue Date	Drafted by			Approved by		
01	27.10.01	S.K.	SKG	HPS	AJS	MPS
		<i>[Signature]</i> 27.10.01	<i>[Signature]</i> 26/10/01	<i>[Signature]</i> 30/10	<i>[Signature]</i> 30/10/01	<i>[Signature]</i> 31/10/01
			<i>[Signature]</i> 17/11/04			

7

ANNEXURE - I (General Conditions for Machines/Equipments)

ELECTRIC SUPPLY & CONTROLS :

All electricals to be suitably tropicalised and designed to work on 415 Volts, 3 Phase, 4 Wire, 50 Cycles A. C. supply provided in the circuit. Suitable step down transformers must be included in the offer to provide the low voltage system. All switches, relays, controls etc. are to be grouped conveniently. Electric motors to conform to BSS:2613/relevant Indian Standards and shall have 'B' class insulation and of a reputable make like M/s SIEMENS, CROMPTON, KIRLOSKAR, AEI, GEC, NGEF etc. Starters to be incorporated.

SPARES :

Recommended spares are to be quoted for two years normal working with itemwise price, details and relevant catalogues should be supplied, wherever applicable.

LUBRICATION :

Automatic Centralised Lubrication system with suitable lubricating points should be provided. Details with types and quantities of lubricants are to be furnished including their source of supply. Lubrication points are to be displayed on the body of the machine/equipment.

PAINTING :

Equipment/machine is to be painted with two coats of primer and two coats of finished paint. Colour of the finished coat shall be advised later on. All bright steel components to be coated with rust-preventive grease before dispatch.

DETAILS TO BE INCLUDED IN THE OFFER :

1. General arrangement drg., foundation drg., weight etc.
2. Technical details, relevant catalogues, circuit diagram etc.
3. Details of motor, starters, pump, hydraulics, pneumatics, controls etc. like : type, make, model, rating etc.
4. Types and details of various parts subject to wear & tear, such as bearings, gears etc. should be indicated together.

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5. Requirement of power water, air steam etc. with details like quantity and pressure.
6. List of standard accessories to be supplied with the equipment/machine.
7. List of optional accessories with itemwise price and details
8. List of customers to whom similar/identical equipments have been supplied. Size/capacity of equipment, date of supply and customers full address are also to be indicated.

MISCELLANEOUS :

1. Entire machine/equipment to be completely tested and inspected and four copies of the test/inspection & guarantee certificates to be supplied with the equipment/machine. BHEL reserves the right to inspect and witness all tests. In the event of inspection/test not witnessed by PHLL, a written approval should be obtained before commencement of dispatch.
2. It is to be guaranteed for 12 months from date of commissioning or 18 months from date of supply, whichever is later. Any parts of unit of the machine/equipment as a whole found damaged or defective during this period have to be replaced free of cost. Free after sales services is to be provided during guarantee period.
3. Four copies of technical/descriptive catalogues, operating and service manuals, diagrams etc. have to be supplied with the machine/equipment.
4. Notwithstanding anything the details in this specification if anything else is required for its efficient functioning, the same shall be specifically brought out and included in the offer.

IMPORTANT NOTE :

1. Complete unit including motors etc. shall be of adequate capacity for the duties, it is required to perform.
2. All components/materials/controls used shall be in Metric system conforming to relevant Indian/International Standards.
3. Installation/Commissioning charges with duration, wherever applicable, shall be quoted separately.

5

ANNEXURE-II (General Condition of supply of spares & Maintenance Manual).

Following details are required alongwith offer :

1. Complete spare parts list of the machine. This list must include all manufactured as well as boughtout items of supplier.
2. Cross-sectional drawing for all sub assemblies to be submitted.
3. Hydraulic/Pneumatic circuit diagram alongwith sequence of function to be described.
4. Electric circuit diagram to be supplied alongwith its working description in relation with hydraulic/pneumatic circuit.
5. Details of all rubber 'O' rings, oil seals, wiper seals, hoses, solenoid valve etc. to be given. Dimensional details of all rubber parts and hoses with material specification to be given.
6. Party to ensure that spares for the offered machine shall be available with them for another next ten years.
7. All electric motors shall be of 'B' class insulation TEFC and Siemens/Kirloskar/GEC make or as specified.
8. All contactors and relays shall be of Siemens make.
9. Main isolator shall be E.E. make with EE make HRC fuses.
10. All Hydraulics shall be of Vickers Sperry/Rexroth make only.
11. Pneumatic Timer shall be of BCH make.
12. All bearing should be of SKF/NBC/FAG make only.
13. All fasteners shall to be of Unbrako/GKW/TVS make high tensile steel.
14. All Pneumatics shall be of Festo/Nucon/Dancal make only.
15. All gear boxes shall be of Elicon/Ridicon/Shanti make only.

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