

RAIL COACH FACTORY, KAPURTHALA

TECHNICAL SPECIFICATION FOR TRACTOR SHUNTER

SPECIFICATION NO. : RCF/MECH/M&P/2700/GM/06 (Rev.2)

1.0 IMPORTANT NOTE:-

- 1.1 Bidders are required to give clause wise comments on the technical specifications, confirming compliance/non-compliance with details of deviations if any, along with their effect on the performance. Back reference to be avoided. Offers are likely to be ignored in case of non-compliance of these instructions. The conditions in main specification over ride those mentioned in schedule-I in case any ambiguity.
- 1.2 The bidders should quote for sub-systems of makes as specified in these specifications. Other makes of sub system will not normally be acceptable. In case, for reasons to be indicated by the bidder, it becomes necessary for him to quote for makes other than those specified, the alternative makes may be accepted only on merit.
- 1.3 Tenderer must offer and quote the price of all concomitant accessories specified, as considered essential for commissioning and utilization of the machine. Offers received deficient of price of any of the concomitant accessories specified, are liable to be considered as incomplete.
- 1.4 Bidder shall be OEM or his authorized dealer.

2.0 DESCRIPTION & SCOPE OF SUPPLY:

Tractor Shunter for pushing/Pulling of railway coaches on rail track. The Scope of this specification covers design manufacture, supply and commissioning of Tractor Shunter at RCF, Kapurthala .

3.0 CAPABILITY:

Diesel Engine Operated Road Tractor Shunter four wheel drive shall be capable of Pushing /Pulling of Railway Coaches/Wagons on Rails in Railways sidings, Yards and Workshops. Diesel Tractor Shunter shall be capable of pushing 150 Tones (Min.) and pulling 80 Tones (Min.) on rails with gradient of 1 in 20 under severe working conditions, which involve uneven Road Surfaces.

- 3.1 All controls shall be operated from driving seat/Cabin.
- 3.2 It shall be capable of working at hot-humid and dusty atmospheric conditions prevailing at Rail Coach Factory,Kapurthala. Temperature variation will be from 0°C to +50°C and Humidity will be up to 98 %.

4.0 SPECIFICATIONS:

- 4.1 **CAPACITY:** The Diesel Tractor Shunter shall have sufficient capacity to pull 80 Ton (minimum) and to Push 150 Ton (minimum).
- 4.2 Trailing load consists of Coaches/Wagons on rails.
- 4.3 The Diesel Tractor shunter shall be provided with head lights, Tail lights, and Parking lights as per the requirements of Motor Vehicle rules.
- 4.4 All controls shall be located at convenient places within the easy reach of the operator.

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4.5 The Diesel Tractor Shunter shall consist of following accessories:

4.5.1 Exhaust Vertical Type.

4.5.2 Hand Brake for parking even on max. specified gradient 1 in 20.

4.5.3 Shock dampened front buffer push plate for impact resolution.

4.5.4 Rear & front dehitching device for pulling operation.

4.5.5 Robust and heavy duty guard of 50X50mm square tube is must at the level of rear mudguard .

4.6 Max. operator's visibility in all directions as per Motor Vehicle rules.

4.7 Double clutch should be provided.

5.0 INSTRUMENT PANEL:

5.1 Instrument panel shall include the following accessories:-

1. Engine Oil Pressure Gauge.

2. Water Temperature Gauge.

3. Engine hour-meter.

4. Fuel Gauge Indicator.

5. Ampere Meter.

5.2 The Diesel Tractor shunter shall be robust, sturdy, compact in design and it shall be capable of meeting heavy duty requirements in rough terrains and for round the clock utilization.

5.3 The Tractor shunter shall be compact in design and shall provide maximum maneuverability in limited space for shunting operations.

5.4 Grease Nipples and other lubrication points shall be easily accessible.

5.5 Wiring shall be done with distinctive color code.

5.6 It shall be provided with 12 Volt Battery, alternator, Voltage and current control regulators, Self Starter, Key Start and Horns etc.

6.0 CHASSIS:

The Chassis shall be fabricated out of Rolled steel section plates, adequately rigid in design. Cross members shall be provided for mounting of Engine Transmission, drive axle, Instrument controls, Steering, Buffer Plate etc. The Diesel tank shall be easily accessible for cleaning. The arrangement of three point rear hitch/lift and PTO should be removed.

7.0 BUFFER PLATE:

Buffer Plate arrangement with spring type shock absorber shall be rigidly fixed on chassis.

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8.0 ENGINE:

Diesel Engine shall be light in weight and compact. It shall be four stroke, water cooled developing approx. 55-65 BHP at 2200 RPM. It shall meet all the legal and statutory requirements under central Motor vehicle Act 1994 (amended) & Central Motor Vehicle Rules 1998 (amended).

8.1 TECHNICAL SPECIFICATION :

- a) HP : 55-65 BHP at 2200 rpm (approx.).
- b) No. of cylinder : 3 (Three) or 4 (Four).
- c) Fuel Tank capacity : 45 Ltrs approx.

9.0 POWER TRANSMISSION:

Gear drive arrangement shall be provided to achieve twelve speeds in forward (Fully synchromesh) and three speeds in reverse with high/medium/low selector lever. The front wheel drive propeller shaft should be covered. The front and rear axle should have epicyclic reduction for optimization of traction. The max. travel speed shall be 26 Km/hr. approximate. The gears shall of alloy steel, hardened and shall be standard make.

10.0 STEERING:

Steering shall be power steering. It shall be easy & smooth with Turning Radius of 5000 mm. It shall ensure road contact of all wheels on uneven Roads.

11.0 BRAKES:

Heavy duty mechanical/Hydraulic type of brakes capable of stopping the Diesel Shunter within 5 mtr. from Maximum travel speed. The actuation of brakes on rear wheels shall be of foot operated.

12.0 HOLDING STRUCTURE - The holding structure for the front buffer arrangement should be made from 25 x100 mm steel plates . The dimensions and layout may vary according to the model of the tractor offered by the firm. It should be Robust and heavy duty and capable to withstand the pushing and pulling load capacity. The sketch provided for holding structure is for reference only. The Holding structure should be fixed to tractor at three points (Front, middle and rear) shown as reference in ""Annex. A"".

13.0 WHEELS:

All wheels shall be fitted with pneumatic Rubber tyres, mounted on grease packed anti friction bearings.

14.0 ACCESSORIES:

- a) Front dampened buffer plate.
- b) Rear Wheel Weights.
- c) Front and rear hook/dehitching (made from forged steel) for pulling from front and rear alongwith auxiliary hooks for convenient hanging of other side of sling.
- d) Electric Horn.
- e) Hand/Foot Throttle.
- f) Adjustable Driver seat.
- g) Two front lamps and two tail lamps.
- h) Tachometer - cum-hour meter.
- i) Water Temp. Gauge.
- j) Oil Pressure Gauge.
- k) Tool Kit.

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- l) Heavy duty Hooter and Flasher unit.
- m) Tool box size 3'x 1.5'x1.5 between rear mudguards.
- n) Two Pair of high intensity head lights one at front and other at rear side above the buffer plate level.
- o) Safety steel hood with canvas canopy.

15.0 INFORMATION TO BE FURNISHED

The tenderer shall furnish the following information along with the offer:-

- 15.1 Detailed drawings indicating different dimensions and layout of the Diesel Shunter and its auxiliaries.
- 15.2 Detailed literature explaining the procedure of different operations of the Diesel Shunter.
- 15.3 The drawing indicating maximum moving dimensions of the Tractor Shunter.
- 15.4 Any other information in the form of technical literature/operation manual etc. which shall highlight the special features of the Diesel Shunter.

16.0 COMMISSIONING AND PROVING TESTS

The tenderer shall arrange commissioning and testing of equipment at Site i.e.at Rail Coach Factory, Kapurthala.

17.0 OPERATION & INSTRUCTION MANUAL & SERVICE/TROUBLES SHOOTING GUIDE

The supplier shall furnish 4 copies each of the relevant operating manual, maintenance manual, instructions, trouble shooting guide, and spare part catalogue etc. All technical documents shall be in Hindi or English languages.

18.0 INSPECTION & TESTING OF EQUIPMENT AT MANUFACTURER'S WORKS

- 18.1 A load test must be carried out at the manufacturer's works. Rigidity of the plant must be demonstrated to the satisfaction of appointed inspector or inspecting agency.
- 18.2 Manufacturer must have suitable facilities at their works for carrying out various performance tests on the plant. The tenderer should clearly confirm that all the facilities exist and shall be made available to the inspecting authority.
- 18.3 A sample inspection chart for inspecting the plant should be supplied along-with the bid. The inspection charts should indicate all the tests that are carried out during the plant manufacture.

19.0 TRAINING:

The firm shall have to depute their representative for commissioning of equipment and training of operators at Site i.e. at Rail Coach Factory, Kapurthala. After sale service shall be provided by the firms. It shall be free of cost during warranty period.

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20.0 WARRANTY:

It shall be valid for 12 months from the date of commissioning against manufacturing defects, bad workmanship and quality of material used to manufacture the products.

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SCHEDULE-I

LEADING PARAMETERS FOR TRACTOR SHUNTER :

- a) Engine Power : 55-65 HP.
- b) Hauling capacity : Pushing 150 Tones (Min.) and pulling 80 Tones (Min.) on rails with gradient of 1 in 20 and with rolling resistance of 10 kg/T.
- c) Turning Radius : 5000 mm (approx.)
- d) Height up to Steering : 1800 mm (approx.)
- e) Overall length. : 3600 mm (approx.)
- f) Overall Width. : 2000 mm (approx.)
- g) Fuel Tank Cap. : 45 Ltrs (Approx).
- h) Rear Tow Hook Height : 710 mm (approx.)
- i) Buffer Plate: Size : 2000 x 440 mm Height to suit push B.G./DEMU Coaches/Wagons etc.
- j) Buffer Plate Center : 1100 mm+/-30mm height of Coach buffer.
- k) Ground clearance : 330 mm (approx.)
- l) Front Tow Hook Height : 750 mm (approx.)
- m) Type Of Drive : Should be four wheel drive.
- n) Tyre size minimum : Front 11.2"x24" OR 12.4"x20"
Rear 16.9"x28" OR 16.9"x30"

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