
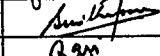
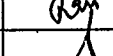
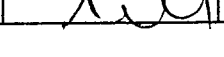


**RAIL COACH FACTORY, KAPURTHALA
MECHANICAL DESIGN DEPARTMENT**

**SCHEDULE OF TECHNICAL REQUIREMENT FOR CREEPING DEVICE OF
CARRIER VEHICLE OF MOBILE BRIDGE INSPECTION UNIT**

MDTS-167 REV-NIL

DATED:17.2.06

NAME	DESIGNATION	SIGNATURE	DATE	LEVEL
J.P.SINGH	SSE/DESIGN		17-2-06	PREPARED
SUNIL KAPOOR	ADE/D2		18-2-06	AGREED
RAVI KUMAR	DY.CME/D		20-2-06	REVIEWED
S.K.AGARWAL	CDE		22-2-06	APPROVED

REV NO	DETAILS OF CHANGES	DATE


PREPARED BY


AGREED BY

Specification for Creeping Device of Carrier Vehicle of Bridge Inspection Unit

1. General:

1.1 Scope:

- 1.1.1 This specification covers the requirement of design, manufacture, supply and commissioning of creeping device of carrier vehicle of Mobile Bridge Inspection Vehicle. It shall consist of two vertical hydraulic cylinders enabling movement of frame, four hydraulic motors to be driven by two hydraulic pump each for left and right, additional pump for functioning of bridge inspection unit, hydraulic brake, hydraulic tank, etc. The hydraulic pump will be operated by diesel engine unit of 30KW. Stand by hydraulic pump plus electric motor to be coupled with the 20 KVA genset (to be supplied by RCF).
- 1.1.2 The vehicle shall be capable to operate at an inching speed from 0 to 5 kmph (infinitely adjustable) while carrying out the inspection and maintenance work. The power equipment of inching operation shall be provided on carrier vehicle.
- 1.1.3 Tenderer shall offer complete hydraulic system for inching speed operation with integral hydraulic brake system.
- 1.1.4 The general layout of the bridge inspection unit carrier vehicle shall be in accordance with RCF Drg.No.MB90002 placed at Annexure-I.
- 1.1.5 The general layout of creep device on bridge inspection car unit shall be as per drawing no. MI004687.
- 1.1.6 The creeping device should be able to haul simultaneously power car (weight 60t) as well as carrier vehicle (weight 61t) which are being manufactured at RCF as per specification No. MP-0.08.00.60 (Rev 0.00). Stand by hydraulic pump plus electric motor to be coupled with the 20 KVA genset (to be supplied by RCF)

2. Contractual Terms

- 2.1 To facilitate the examination of tender offer, the tenderer is required to offer comments clause by clause of this specification either conforming the acceptance of the clause and elaborating each details, where necessary, or indicating deviations there from. A comprehensive specification of the creeping device offered shall also be submitted alongwith the above comments.
- 2.2 The tenderer will strictly adhere to the conditions of this specification. However, in the event of the tenderer being unable to conform to any part of the

requirements of this specification, it must be stated specifically what variation there from is desired by the tenderer.

2.3 Contractor's Responsibility

The contractor is to be entirely responsible for the execution of the contract strictly in accordance with the terms of this specification and the conditions of contract, notwithstanding any approval which RCF or the inspecting officer may have given:

- a) Of the detailed drawings prepared by the contractor
- b) Of his sub contractors for materials
- c) Of other parts of the work involved by the contractors
- d) Of the tests carried out either by the contractors or by the RCF or the inspecting officer

2.4 Design Development & approval of drawings

2.4.1 The contractor shall develop the design based on the details given in this specification and sound engineering practices. The design data shall be submitted in metric units with calculation. The submission of drawings/calculations will be completed by the supplier within 15 days of letter of award and the approval for these will be completed within 15 days of receipt of drgs/calculations. Following details shall be submitted to RCF for approval prior to manufacture.

2.4.1.1 Power equipment for creep/inching speed operation and hydraulic braking

- Rating of diesel engine set, hydraulic motors for creep speed operation.
- Calculation in support of adequacy of offered hydraulic pumps and motor.
- Details of creeping device on underframe and integral hydraulic brake system with supporting calculations for their adequacy
- Schematic diagram of hydraulic circuit for creep speed operation and hydraulic braking operation with working principle of each component, maintenance practices to be adopted for fail safe operation.
- Life rating calculations of all bearings
- Certification test for temperature rise in hydraulic equipment for rated output for continuous duration.
- Certification test in respect of hydraulic equipment.

2.5 Contractor shall prepare a full set of working drawings in standard sizes complete in all respects.

3. DESCRIPTIVE INSTRUCTIONS PAMPHLETS

3.1 The supplier shall supply at least three copies of descriptive instructions OEM pamphlets/manual/brochure pertaining to items like Diesel Engine, hydraulic

cylinder, hydraulic tank, hydraulic pumps and motors, bucket unit, hydraulic transmission and brake equipments etc. free of cost with each set of power equipment. The pamphlet shall include disassembly and assembly procedure with suitable illustration and diagram/drawing with exploded view alongwith general arrangement, brake arrangement and schematic, electrical wiring diagram and lubrication diagrams/charts.

4. SERVICE AND SPARE PARTS CATALOGUES

- 4.1 Three copies of operating, maintenance and service manual and spare parts catalogue shall be supplied free of charge per set of equipment by the supplier.
- 4.2 The Prime contractor shall prepare a draft maintenance schedule of major power equipments like diesel engine, controls, etc and submit to RCF within one month of clearance of prototype MBIU after inspection at manufacturer's place.
- 4.3 The prime contractor shall also supply three copies of User Manual containing details of various sub systems with illustrations and block diagrams.

5. SPARE PARTS

- 5.1 The supplier shall submit a list of spare parts and special tools both indigenous and imported, indicating the name and address of the manufactures as detailed below :

List -A Catalogue of unit spares, indigenous and imported, of the principal assemblies of the creep device such as the diesel engine, hydraulic cylinder, pumps, motors, brake equipment, etc. with price.

List- B Recommended maintenance spares for two years initial requirements. The tenderer shall submit the list of such spare parts giving their detail description, source of supply, part number of the supplier and price of each part.

- 5.2 The supplier shall be responsible for ensuring subsequent availability of spare Parts for efficient working of the respective equipments.
- 5.3 The supplier shall also submit time bound plan/proposal for indigenous availability of imported components.

6. TRAINING

- 6.1 To ensure that the creeping device remains in proper state of repair and gives the expected. Performance after its normal maintenance and periodical overhauls, adequate number of Indian Railway personal both from user railways and design office will be trained in various aspects of the design, manufacture and maintenance of major equipments Like engine, hydraulic controls, transmission

controls, electrical system, etc. by the prime contractor for minimum five working days at RCF or any other suitable location on IR.

7. QUALITY ASSURANCE PLAN

- 7.1 The product shall be supplied as per standard international practices. The above shall apply to contractor as well as sub contractors.
- 7.2 The tenderer whose bid is accepted shall be required to submit a copy of ISO certification of his company.

8. STAGE INSPECTION

- 8.1 The firm shall provide the necessary metallurgy certificates.

9. INSPECTION AND ACCEPTANCE TESTS OF CREEP DEVICE FOR PROTOTYPE MBIU

- 9.1 The creep, hydraulic power pack and the emergency hydraulic power system are to be coupled with the MBIU, hence the units will be delivered, fitted and then tested at RCF.

10. PERFORMANCE TEST

It will be the responsibility of the supplier to ensure the matching of the creep device/other equipments with the MBIU already delivered at RCF and satisfy the railways regarding its safety and workability.

11. MAKER'S CERTIFICATE

- 11.1 Copies of Maker's certificate guaranteeing the performance of the Power car as well as Bucket & Platform unit shall be submitted in duplicate alongwith the delivery of each MBIU.
- 11.2 Test certificates of major vendor items shall also be supplied alongwith each MBIU.

12. WARRANTY

- 12.1 The supplier shall at his expense, replace any part of the equipment failing or proving unsatisfactory in service and attributed to defective/faulty design, defective material or bad workmanship within a period of 24 months from the date of its commissioning. The period of warranty would stand extended by the duration for which the MBIU remains inoperative. Further, any design modification made in the equipment as a result of any defect/fault/shortcoming in

the original design, the period of 24 months would commence from the date the modified equipment is put into service.

13. Power and control equipment for MBIU drive pump and creep/inching mechanism consisting of :

- One diesel engine set of 30 KW
- Hydraulic pump of 22 CuM 200 bar with cabling and mounting arrangement
- Two hydraulic pump of 40 cum 200 bar for driving of wheels (flanged wheel) of creeping device.
- Hydraulic tank of 300 ltr capacity
- Hydraulic creeps speed control and brake control system with joystick control to be provided in bucket as well as on platform of carrier vehicle for inching and braking operation.
- The power shall be transmitted through hydraulic motor on four wheels each of dia 500mm and width 150mm.
- The DA set shall be of proven design and reputed make capable of generating of generating 30 KW to drive hydraulic pumps.
- The hydraulic brake should be of proven design, integral with hydraulic motor for braking both the vehicles during creep speed operation.
- Standby by hydraulic pump plus electric motor to be coupled with the 20 KVA genset (RCF supply).

14. Braking during creep speed operation:

- 14.1 The normal braking arrangement provided for application during traction operation shall not be used for braking during creep speed operation. The braking of vehicle during creep speed operation shall be carried out by hydraulic brake system, which shall be the integral part of the creeping device of carrier vehicle.
- 14.2 A suitable fail safe hydraulic system shall be provided for controlling inching operation of vehicle so that the speed does not exceed the maximum permissible limit of 5 km/hr (infinitely adjustable).
- 14.3 The control shall be operated through joystick and shall be provided in the bucket as well as on and platform unit to be mounted on carrier vehicle.
- 14.4 The braking during inching operation shall be non-jerk type and have smooth stop features without shock.
- 14.5 Joystick control for brake operation shall be fitted with safety catch to retain the brake in OFF position and shall be fitted with indicators to show the direction for OFF and ON position.

- 14.6 Supplier shall submit details of brake system indicating brake valves, brake schematic diagram and with write up of working principal, literature on brake equipment, calculation of brake power, braking distance and get the brake system approved from RCF before manufacture.
- 14.7 The supplier shall also submit the emergency braking distance alongwith calculation during creep/inching speed from 0 to 5 km/hr (infinitely adjustable) to RCF for approval.
- 14.8 Tenderer shall submit testing procedure for individual brake equipment and for complete brake system.
- 14.9 Stand by/emergency brakes to operate in case of failure of any component in the main brake system shall be provided.

15. Controls for Inching Speed operation:

- 15.1 The control shall be capable of driving MBIU at a creep speed of 0 to 5 km/hr (infinitely adjustable). The hydrostatic creep speed drive with activation via control system in the workman bucket and platform shall be provided. The operation of control shall be provided through joystick.
- 15.2 One additional set up control shall also be provided on an extendable chord of 8m and shall be meant for supervisor overseeing the work from the convenient location.
- 15.3 The control panel shall be well illuminated with spotlight.

16. Delivery:

Earlier delivery preferably within 45 days from placement of purchase order.