

SPECIFICATION FOR TESTING TROLLEY FOR LHB COACHES
Specification No. Mech/M&P/2700/GM/07

IMPORTANT NOTE:

- (i) 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 references to be avoided, offers are likely to be ignored in case of non-compliance of these instructions for furnishing the information.
- (ii) The bidders should quote for sub-systems of makes as specified in these specifications. Other makes of sub-systems 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.
- (iii) Tenderers must offer and quote the price of all the 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.

1.0 PREFACE:

This specification covers the requirements of design, manufacture, testing and supply of Testing Trolley for LHB coaches being manufactured at RCF.

2.0 SCOPE

This specification covers the requirements of design, manufacture, testing and supply of Testing Trolley for LHB design EOG AC coaches being manufactured at RCF.

3.0 TESTING OF LHB COACHES - REQUIREMENTS

The test panel shall be required for testing of the following systems of the completely furnished coach:

a) 415 V distribution network testing:

Pre cooling sockets are provided on the end walls of the LHB coaches for connecting the coach to local mains supply at 415 V. The functional testing of all equipments working at 415V supply system i.e RMPU, Pantry equipment, Battery chargers etc. are tested by connecting the coach to local mains

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supply. The test panel shall have provision of 415 V supply for functional testing of coach equipments.

b) 750 V feeder network testing:

Power is generated in the power car and is transmitted to all coaches through 750V, 3 phase 4 wire feeders in the rake. All coaches are electrically interconnected with the help of intervehicular couplers provided on the end walls of the coach which comprise of an IVC-Plug and IVC-Socket on each end wall. For testing of individual coach, power at 750V is required to be fed through these couplers from the testing bench. Hence the test bench shall have provision of 750 V power supply arrangement through a step up transformer of adequate capacity which shall be in the scope of supply of RCF. The test bench shall be equipped with an IVC plug and IVC socket similar to those provided in the coaches for making proper interface with the coach which shall also be in the scope of supply of RCF.

Accordingly the testing panel trolley shall comprise of the following requirements:

- I. Provision for installation of 60 KVA step up 415/750V ,Y-Y transformer with housing on the platform of the trolley.
- II. Input power plug arrangement for connecting the 415 V local mains supply to the 60 KVA transformer.
- III. Interface fitment requirements for fixing IVC plug and IVC Socket on the test bench to connect them with the transformer output supply at 750V.
- IV. Provision of protection equipment i.e MCCB of adequate rating i.e 100A, 415 V on input side and 125A , 1000V on the output side, of reputed make i.e M/s Seimens/ABB/Schneider/L&T.
- V. A pre cooling plug with cable harness to connect the testing trolley with input 415 V power supply.
- VI. A pre cooling socket in parallel with the input supply for extending the supply at 415V through 415 V bus of adequate rating through a pre-cooling socket.
- VII. To energise the IVC plug and socket from the same output supply of the transformer a common 3 phase bus of adequate rating shall be provided.

4.0 SCOPE OF SUPPLY

The testing trolley shall comprise of a light weight movable trolley fabricated with the help of MS square tubes of min. size 25x50 mm and CRCA sheet thickness of 2.0 mm (min). The trolley shall be provided with the equipments/switchgear as per the scope of supply mentioned below:

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S.No	Description	Drg./Spec.	Qty.	Scope of supply
1.	60KVA transformer	RDSO/PE/SPEC/AC/0080 (Latest)	1 No	RCF
2.	Intervehicular coupler – Plug With harness length 6 m 4x50sq.mm	Drg. No LW71300 (Latest)	1 No	RCF
3.	Intervehicular coupler – Socket	Drg. No LW71301 (Latest)	2 No	RCF
4.	i) Pre cooling plug With cable harness length 25m , 4x 25 sq.mm cable ii) Pre cooling socket for extension of 415 V supply	125A, 415 V plug to part no. 1945436/PV4125-6 of M/s GARO or equivalent of M/s Hensel/Shyller/Palazzolli/Mennekes/Schneider/Walther	1 No each	RCF
5.	Input MCCB 100A , 415 V	M/s Seimens/ABB/Schneider/L&T	1 No	FIRM
6.	Output MCCB 125A, 1000 V	M/s Seimens/ABB/Schneider/L&T	2 Nos	FIRM
7.	Indicators: High intensity LED based indicators -Input R,Y,B	M/s Seimens/Schneider	3 Nos	FIRM
8.	Indication for out voltage: Voltmeter 0-1000V range with voltmeter selector roatry switch	M/s AE/Salzer	3 Nos	FIRM
9.	Input contactor 4 pole , 100A, 415V with aux. Contacts 1 NO/1NC	M/s Seimens/ABB/Schneider/L&T	1 Nos	FIRM
10.	Push button – Green -‘ON’	M/s Seimens/ABB/Schneider/L&T	1 No	FIRM
11.	Push button – Red -‘OFF’	M/s Seimens/ABB/Schneider/L&T	1 No	FIRM

This BOM mentioned above is for broad guidance only and the firm shall be wholly responsible for provision of any other switchgear / indicating

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instruments i.e voltmeters /ammeters or any other accessories to ensure that testing trolley complies to the requirements to conduct the above tests in coaches. If required the testing procedures may be seen by the firm's representative at RCF for any technical clarifications before quoting.

5.0 CONSTRUCTIONAL REQUIREMENTS – LHB COACHES

- 5.1 The testing trolley shall be provided with 4 nos. heavy duty hard rubber wheels of minimum diameter 200 mm with 360° rotation for ease of movement inside the workshop area. The wheel shall be of reputed make and prior approval shall be taken before fitment in the trolley. The trolley shall have handles at suitable height on both front and rear side to facilitate to and fro movement by testing personnel.
- 5.2 Mounting arrangement for the equipments which are in the scope of supply of RCF shall be provided as per their respective drawings mentioned above. Cable reel with manual rolling arrangement shall be provided with the trolley for rolling over input connecting cable of minimum 25 metres length. Also space shall be provided on the trolley to keep IVC plug in position and wrap up the associated harness of min. 6m length.
- 5.3 All the equipments shall be fitted on the trolley to ensure ease in routine maintenance / replacement / checking.
- 5.4 All the switchgear and protective devices shall be housed in a single control box fabricated with MS sheet of min 2.0 mm thickness and shall be mounted on the trolley alongwith the other equipments.
- 5.5 The fabrication of the trolley shall be free from sharp edges and burrs and manufactured employing good engineering practices.
- 5.6 The internal wiring shall be done with Halogen free electron beam irradiated Radox cables of M/s LAPP KABEL or PTFE cables of reputed makes only. The size of cables shall be adequate to carry the rated full load current of step down transformer.
- 5.7 All cables shall be adequately secured with cables ties and laid in fire retardant PVC alleys of M/s L&T make only.
- 5.8 The outgoing/incoming terminal connections shall be brought out to adequately rated and robust terminal blocks. All cables leading to a terminal block shall be properly secured/clamped before termination. It shall be ensured that not more than two wires are terminated at one point.
- 5.9 Ring/tubular copper crimping sockets of M/s Ascon / M/s Billets and of adequate rating shall be used with suitable palm size to prevent loose connections.
- 5.10 All cut-outs wherein cables enter/exit, control panel shall be provided with V-grooved Neoprene/EPDM grommets for protection against sharp edges.

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- 5.11 Proper arrangement for providing earthing to all the equipments provided in the testing panel shall be provided to prevent electric shock to the user. External earthing leads shall be provided with the test panel and shall be in the scope of supply of the firm.
- 5.12 All steel items shall be powder coated to thickness of 50-60 microns to Siemens Grey shade no. 6102/08038 of M/s Nerolac Paints or 877 of M/s Berger Paints, after giving requisite surface treatment.

6.0 GENERAL REQUIREMENTS

- 6.1 General and safety requirements shall be governed by IS: 13947 (Pt.I) – 1993 and IS: 8623-1993.
- 6.2 Manufacturer’s name plate indicating name and address sr. no. of the panel, specification no., month and year of manufacturer and weight shall be fixed on inside of front door of the panel.
- 6.3 Only reputed makes of switchgear i.e M/s ABB, M/s Schneider, M/s Seimens , shall be used. For any deviation prior approval from Dy.CEE/P shall be taken.
- 6.4 All fasteners used shall be zinc electroplated and passivated according to IS: 1573-86 and conforming to IS: 1364-92.
- 6.5 All the components/equipment/material including paint shall be fire retardant.
- 6.6 The equipment shall be under warranty for a period of one year from the date of supply for any manufacturing defects.

7.0 DEVIATION

Normally no deviation shall be accepted, however for superior feature if any deviation from the above stipulations shall be brought out clearly giving advantages of the proposed deviation and approval shall be taken from CWE/Fur or CPE before supply of material to RCF.

8.0 INSPECTION:

The firm shall submit the detailed drawings indicating overall general arrangement and schematic diagram, protection scheme alongwith complete bill of material for scrutiny / approval to DY CEE/P / RCF before starting the manufacture of the first unit. Inspection for compliance to the requirement of this specification shall be carried out by representative of Dy.CEE/EP/RCF on the finished product at firm’s premises.

9.0 PROVEN DESIGN & SYSTEM CAPABILITY :

The system offered must be of proven design incorporating latest features. The bidder shall provide sufficient evidence that he is a reputed / Proven

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manufacturer and has experience in manufacturing & supply of similar system. He is required to enclose along with the offer, his performance of last five years mentioning purchaser's name & address for this purpose. In case a sole distributor is submitting the bid on behalf of the proven manufacturer, an authorization signed by the proven manufacturer should be submitted.

10.0 ELECTRICAL / ELECTRONICS:

- 10.1 Total power requirement shall be indicated by the bidder.
- 10.2 The bidder shall indicate the total connected load of the system.
- 10.3 The bidder shall indicate the electrical energy consumption (in kwh) of the total system when full system is in operation.
- 10.4 In case the total connected load exceeds 200 KVA capacity, a separate air circuit breaker for isolation shall be provided with suitable protections system like over current, under voltage, and under frequency protection system for isolating the system as a whole.
- 10.5 The system shall incorporate electrical safety as per relevant IE rules (latest). It should be certified by authorized Electrical Inspector.

11.0 OPTIONAL ACCESSORIES:

In case bidder desires to suggest any accessories to achieve higher performance and/ or better quality levels, the same shall be clearly explained and quoted separately as Optional accessories. The purchaser has the discretion to order or not to order.

12.0 GENERAL CONDITIONS:

The machine should be capable of operating in severe workshop condition of dust temperature between 0°C to 50°C and humidity up to 98%. The system should be capable of working under these conditions continuously on two shift basis.

13.0 SPARES:

- 13.1 The tenderer should furnish details of spares covered under warranty.
- 13.2 The tenderer should also furnish the price list of spare parts required for two years normal maintenance of the equipment.

14.0 COMMISSIONING AND PROVING OUT:

- 14.1 The successful bidder shall have to commission the Testing Trolley for LHB coaches within one month from the date of receipt at RCF, Kapurthala.
- 14.2 The successful bidder will get a general arrangement drawing approved from consignee before supply of the equipment. The GA drawing should indicate the general arrangement of sub-assemblies and functioning of the system.

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15.0 TECHNICAL LITERATURE:

- 15.1 One copy of the printed illustrative catalogue showing features of the Testing Trolley for LHB coaches.
- 15.2 The successful bidder will have to furnish for 2 copies (1 hard & 1 Soft) of the spare parts catalogue giving the part List number of each component with exploded views and assembly drawings, maintenance manual, trouble-shooting guide, operational manual of the Testing Trolley for LHB coaches and all electrical circuit diagrams.

16.0 AMC

- 16.1 Tenderers are required to quote separately for a comprehensive Annual Maintenance Contract for the machine supplied against this specification, which will be inclusive of all spares, material and labour costs. The duties and taxes as applicable should be indicated separately.
- 16.2 AMC agreement for each installation will be signed between the consignee and the tenderer if opted for by the consignee.
- 16.3 The duration of AMC shall be 3 years from the date of expiry of warranty.
- 16.4 The tenderer must confirm willingness to offer AMC services at all consignee locations without any preconditions.

17.0 WARRANTY:

As per IRS terms and conditions of the contract

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