

RAIL COACH FACTORY, KAPURTHALA		
Specification No.	Description	Covering Page
Mech/M&P/3500/GM/9 Rev.- NIL	Portable Manual Arc Welding Sets	

Designation	Name	Signature	Date	Level
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Issue/ Rev	Changes	Date

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**1.0 IMPORTANT INSTRUCTIONS TO TENDERERS FOR FILLING TECHNICAL BID**

- 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 references to be avoided, offers are likely to be ignored in case of non-compliance of these instructions for furnishing the information.
- 1.2 Unless otherwise stated, latest alterations/ revisions of specifications/ standards/ drawings shall be applicable. In respect of safety standards and environmental standards relevant to the machine, the machine manufacturers shall ensure compliance with international (CE/ISO/DIN/JIS)/National standards (IS) (wherever applicable).
- 1.3 Tenderers should offer and quote for all the specified concomitant accessories, as these are considered essential for commissioning and utilization of the machine. Even if bidder does not recommend the purchase any of these accessories, the price must be quoted for comparison purposes and their recommendation/suggestion indicated in the offer.
- 1.4 Tenderers should also quote for optional accessories, spares and consumable spares as asked in the specifications.
- 1.5 In case, any item is required in sets, please specify nos./pieces per set. This is essential for proper technical evaluation of the offer. Offers received without this may be considered as incomplete and liable to be rejected.
- 1.6 The bidder should quote only for the specified make of sub-assemblies and equipment wherever specified. Makes of sub-systems other than the specified ones will normally not be acceptable. In case, some other make is quoted, specific reasons for the same including its features/advantages over specified makes must be brought out in the offer.
- 1.7 In case there is a contradiction in any information provided (some parametric values given in the specification and those given in the brochure or some other document enclosed by the tenderer), unless specifically mentioned in the deviation cum confirmation statement the values as given in the specification shall be taken as confirmed by the tenderer and offer evaluated accordingly.
- 1.8 The Purchaser may accept internationally accepted alternative specifications which ensure equal or higher quality than the specifications mentioned in the Technical Specification. However, the decision of the Purchaser in this regard shall be final.
- 1.9 Purchaser reserves the right to verify the details submitted by the bidder by actual site visits.
- 1.10 Other terms & condition of the contract will be as per Indian Railway Standard conditions of contract.
- 1.11 Tenderer not submitting the requisite information may note that his offer is liable to be ignored.

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## 2.0 PURPOSE

04nos. Portable Manual Metal Arc Welding Machine is required in Underframe Section of Rail Coach Factory, Kapurthala for repair Welding of components in areas where it is intricate to carry the complete welding set along with Transformer Unit.

## 3.0 DESCRIPTION AND SCOPE OF SUPPLY

- 3.1 The scope of supply covers design, manufacture, supply, installation and commissioning of Portable Welding Machine as per below specifications and major parameters given in the Schedule-I.
- 3.2 The supply shall also include all equipments and accessories which the manufacturer considers essential to make the equipment fully functional when installed and put into operation.
- 3.3 Other concomitant accessories/ equipment which the manufacturer considers essential to make the machine fully operational when installed and commissioned with requirement of utilities, etc if any, should be clearly indicated by tenderer in the offer.
- 3.4 The total value of the offer will be calculated on.
- The cost of the basic machine.
  - Cost of the concomitant accessories according to tenderer specification.
  - Cost of any other accessory treated as concomitant accessory.
  - Application duties and taxes, insurance, freight and installation and Commissioning charges.
- 3.5 Technical experts of the manufacturer during commissioning of machine will fully and adequately train the operators/ maintenance staff nominated by the consignee

## 4.0 ELIGIBILITY CRITERIA

- 4.1 The tenderer shall have established quality control system and organization to ensure adequate control at all stages of the manufacturing process.
- 4.2 The tenderer shall provide a performance statement giving a list of major supplies of same/similar equipments in last 5 years to Indian Railways giving details of the order no. and date and the quantity supplied and whether the supply was made within the delivery schedule. Such period shall be reckoned from the date of opening of tender. Tenderer should also provide the prove out test certificate of his supply/supplies. All above documents shall be uploaded along with the offer.
- 4.3 Only OEM of equipment or their authorized dealers can only participate in the tender.

## 5.0 GENERAL FEATURES

- 5.1 The equipments shall be manufactured to ISO, IEC and EN Conformity Standards.
- 5.2 The equipments shall be an energy efficient IGBT Inverter based equipment built with 8<sup>th</sup> Generation Technology.
- 5.3 The equipments shall be supplied along with welding and earth return cables of Copper conductors of specified length and cross-section (as in 6.1), welding electrode holder, earth clamp, connections and cables set.
- 5.4 The equipments shall be designed to operate on 1Ph- 230V supply including power generators.
- 5.5 The equipments shall not fail due to over or under input supply voltage, within the specified voltage range as mentioned in Schedule-I.
- 5.6 The Transformer of the machine shall be Ferrite Core Copper Foil Flat wounded with Class H insulation.
- 5.7 The equipments shall deliver 35% ED (Duty Cycle) @ 140 amps work capacity ensuring enough welding power to complete the welding task with all electrode types i.e. Basic, Rutile, Cellulose etc.

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- 5.8 The machines shall have provision to be used for TIG welding application by connecting a TIG Torch to it. The machine shall have in-built MMA / TIG selection switch for selection of process.
- 5.9 The equipments shall have welding current regulator for regulating the welding current rate steplessly by an adjusting control knob with gradual scale in the front panel.
- 5.10 The equipments shall have separate LED indicator for machine which shall lit when machine is ready for welding.
- 5.11 The equipments shall have Overheat protection with LED indicator. The light shall lit when thermostat has tripped due to overheating. In case of overheating or overloading the power source shall shut down to disable welding.
- 5.12 The equipments shall be designed such that it can be used with extra-long cables, upto 50m from the power supply.
- 5.13 The equipments shall have Inverter power source technology features throughout the range, ensuring smooth and regulated welding output and excellent energy efficiency.
- 5.14 The equipments shall follow arc control logics for reliable ignition regardless of mains voltage fluctuations, improving weld quality and positively reducing rework costs.
- 5.15 The equipments shall have a perfect balance of lightweight, portable construction, and tough enough to survive the rigors of everyday site welding work.
- 5.16 The equipments shall be lightweight complying with max. Weight parameter mentioned in Schedule-I.
- 5.17 The equipments shall be compact and durable with simple and easy control, easy to use at the Workshop or work-site.
- 5.18 The machines have a durable casing, made of corrosion resistant & weather proof glass fiber, with a shoulder strap and well protected control knobs.
- 5.19 The equipments shall comply with all the safety features as mentioned in Schedule-I.
- 5.20 The equipments shall be capable of working in normal Indian Railways workshop environment with maximum ambient temperature up to 50°C and maximum relative humidity up to 98%.
- 5.21 The equipments shall not fail in high humidity and in dusty atmosphere. All the knobs, switches & indicators shall be shielded from dust and metal particles. The machine protection shall comply with **Contamination Class 3**.
- 5.22 The equipments shall Conform with following IEC and EN standards :
- EN 60974-1 -Safety requirements for arc welding equipment
  - IEC 60974-1 -Part 1 Welding Power Source
  - EN 501199 -Electromagnetic Compatibility (EMC)
  - IEC/EN 60974-7 -Welding Power Source – Part 7: Welding Torches
  - IEC / EN 60974-10 -Welding Power Source – Part 10: Electromagnetic Compatibility (EMC) Requirements

**6.0 CONCOMITANT ACCESSORIES**

- 6.1 The following concomitant Accessories shall be supplied along with each equipment or in addition to the quantity already part of the machine:
- (i) Input Supply Cable with plug(3 core flexible copper cable 2.5mm<sup>2</sup>, 15m) - 01 no.
  - (ii) Earth return cable with clamp (25 mm<sup>2</sup>, 3 m) - 01 no.
  - (iii) Welding cable with fully insulated electrode holder (25 mm<sup>2</sup>, 3 m) - 01 no.
  - (iv) Carrying Strap - 01 no.
  - (v) Service Sheet and Troubleshooting Guide -04 nos.
  - (vi) User Manual (safety manual in specific) -04 nos.
- 6.2 In addition to above, the tenderer shall supply a list of concomitant accessories, which will be supplied along with the machine. The cost of each listed concomitant accessory should be quoted separately. Wherever for any reason the cost of any concomitant

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accessory is included in the basic price of the machine the same should be specifically mentioned.

- 6.3 Any other accessory, which in the opinion of the tenderer can contribute to higher performance, should be indicated and quoted separately.
- 6.4 A maintenance tool kit containing hand tools is required to cover all the fasteners of all sub-assemblies of the equipment.

## 7.0 SPARES & CONSUMABLES

- 7.1 The tenderer should furnish details of spares covered under warranty.
- 7.2 List of important spare parts and accessories with their part number and costing.
- 7.3 The tenderer should be furnishing the price list of spare parts required for two years normal maintenance of the equipment. Sources of supply of spares used other than that of manufacturer should be furnished by the tenderer.
- 7.4 List of recommended spares for normal maintenance after expiry of warranty period to till useful life of the equipment and these spares should be readily available in the market with your authorised stockists.
- 7.5 List of recommended consumables for two years shall be quoted separately.
- 7.6 Useful life estimated/expected for each equipment and its sub assembly should be indicated by the tenderers.

## 8.0 OPTIONAL ACCESSORIES

Any other accessory, which is in the opinion of the tenderer can contribute to higher production rates, should be indicated and quoted separately mentioning prices of each accessory.

## 9.0 INSPECTION OF EQUIPMENT & TESTING AT MANUFACTURERS WORK

- 9.1 Manufacturers must have suitable facilities at their works for carrying out various performance tests on the equipment. The tenderer should clearly confirm that all the facilities exists and shall be made available to the inspecting authority.
- 9.2 A test report from NABL certified LAB should be submitted in respect of accuracies and other detection measurement parameters given in specification. Such a certificate will be provided before installation of the system at Site. Inspecting agency will verify all above parameters indicated in the specification before granting commissioning certificate.
- 9.3 Any precaution & extra care intended in the use of the equipment should be explicitly informed.

## 10.0 INSTALLATION, COMMISSIONING AND PROVING TESTS

- 10.1 The contractor or his agent would be required to carry out a joint check at the consignee's end, along with the consignee, before unpacking is done, to avoid subsequent complaints regarding short shipment/transit damages. It is necessary that this joint inspection be done immediately on receipt of the machine by consignee to avoid commissioning delays due to shortages/transit damages.
- 10.2 Installation of the machine would be done under the supervision / direction of firm engineers. The contractor shall arrange commissioning of machine after installation is done. Adequate number of teams of technical experts will be made available so that the commissioning delays are eliminated. Such personnel will be required to be present as soon as the machine has been received.
- 10.3 The contractor or his agent shall commission the machine within 15 days from the date of receipt of machine.
- 10.4 The machine performance shall be demonstrated to the full satisfaction of consignee at the consignee's works.

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- 10.5 If an assembly/sub-assembly requires to be taken back to the manufacturer's premises for repairs/replacement either before commissioning or during warranty, the manufacturer or his agent would be required to submit a Bank Guarantee.
- 10.6 In case the entire machine has to be taken back, a Bank Guarantee would have to be submitted. The Bank Guarantee should be of adequate value so as to cover the cost of the assembly/sub-assembly/paid up cost of the machine.

**11.0 TECHNICAL LITERATURE**

- 11.1 One copy of the printed illustrative catalogue showing technical features of the machine and its elements must be enclosed with each copy of the bid.
- 11.2 The successful tenderer will have to furnish, for each machine 4 copies of spare parts catalogue giving the part list number of each component with exploded views and assembly drawings of major assemblies, maintenance manual, safety manual, trouble shooting guide, operational manual of the machine and all electrical circuit diagrams to the consignee directly within 3 months of the placement of order. The bidders should provide a list of literature, they will supply along with the machine. The technical literature shall be provided for complete machine including imported and indigenously purchased components/sub-assemblies.

**12.0 SPECIAL FEATURES**

Special features incorporated in the equipment, if any, shall be indicated separately by the tenderer, clearly indicating advantages of the features.

**13.0 MAKE**

- 13.1 The supplier shall clearly mention whether the system quoted is Indian make or imported. If Indian make, the tender should be accompanied by duly sanctioned factory license & relevant documents & also produce records of installation & satisfactory after sales service performance of their equipment from at least one govt. Institution of similar or large size for duration at least 3 Years duration.
- 13.2 If imported item, the OEM firm should be registered for operations in India for a minimum period of last 3 years. In case this is not so, the dealer should be authorized regional supplier & service provide for the late 3 years. He should also produce installation & satisfactory after sales service record of duration at least last 3 years from at least one govt. Institution for a system of similar or larger size. Further the tender should be accompanied by authorization certificate from OEM.
- 13.3 The supplier shall furnish the complete details of Model No. Make & Manufacturer's details/ address, Country and authorization details of Dealership.

**14.0 DEVIATIONS:**

The tenderer should clearly certify that the machine offered fully meets the specification various design features incorporated in the machine to fulfil different technical performance requirements should be fully explained in the offer. However, minor deviations from this specification, which do not affect or in any way interfere with the stipulated performance standards, or would result in improved safety/reliability or would reduce recurring maintenance/operating cost of the machine, can be considered for acceptance.

**15.0 SERVICING FACILITIES**

- 15.1 Service facility in Punjab, Address and contract details including phone and fax no. to be provided. The facility should have the necessary equipments recommended by the manufacture to carry out preventive maintenance test as per guideline provided in the

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- service / maintenance manual. Firm should provide list of equipment available for providing calibrations and routine maintenance support as per manufacturer.
- 15.2 Supplier will undertake for service repairs & replacement of any needed part as & when needed.
- 15.3 Maintenance contract to be quoted after the expiry of maintenance period quoted above with details of scheduled visits, part covered under contract & cost of parts not covered as well.
- 15.4 The tenderer shall clearly spell out in the offer about the facility available with him or his agent/dealer for providing adequate after sales service in Punjab during warranty period.
- 15.5 The contractor shall give a comprehensive spare part list with OEM details and price for all the sub systems.
- 15.6 The tenderer/contractor shall provide list of spares, consumables required for maintenance for 5 years after completion of warranty period as per annexure A.
- 15.7 Tenderer shall provide expected life for the components of the system and provide the maintenance schedule required for 10years for as per annexure -
- 15.8 Total up time of the system should be at least 90%. Up time shall be counted in following manner:-
- A) Total breakdown of less than 8 hours shall be ignored for the purpose of this calculation.
  - B) Penalty may be imposed if the down time is more than 10% without any valid reasons. The levy of token penalty as deemed fit based on the merit of the case may also be considered.
- 15.9 Tenderer shall provide the service charges /per day/per man for deputing service engineer on the machine on requirement separately for Indian and Foreign engineer.
- 16.0 **WARRANTY**
- 16.1 As per IRS conditions or as quoted by the tenderer whichever is later.
- 16.2 Warranty period for part or machine shall be extended after completion of warranty period by the duration under which the part or machine remains under breakdown during warranty.
- 17.0 **SCHEDULE OF ANNUAL MAINTENANCE CONTRACT (AMC) FOR PERIOD OF 5 YEARS AFTER COMPLETION OF WARRANTY PERIOD**
- 17.1 Tenderer shall provide proposal for 5 year Annual Preventive Maintenance schedule to be executed after completion of warranty period in the format as per annexure-B.
- 17.2 The firm shall maintain the machine in good working condition during the contract period and shall correct the fault or failures, repair or replace the worn or defective parts/equipment during the normal working hours of shop where the equipment has been installed. Unserviceable parts/equipment need to be replaced at no extra cost with brand new parts/equivalent or superior specification.
- 17.3 The firm shall respond by deputing service personal to oral / telephonic/ or other modes of intimation for repair and maintenance of the said machines within 2 hours.
- 17.4 The firm shall ensure that the machine is in proper working condition, to the full capacity, after repair and maintenance.
- 17.5 To have a timely supply of spares during AMC, the contractor shall furnish a total list of spares which should contain list of spares that shall be arranged by the firm, both chargeable, duly mentioning the charge against each item, and spares which shall be non-chargeable, and list of spares to be held by RCF.
- 17.6 The contractor shall clearly list-out the list of consumables required for day-to-day operation of the machine. It shall be the scope of RCF to arrange the consumables once the completion certificate is issued for the retrofitted machine.

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- 17.7 The tenderer/contractor shall provide suitable standby when repairs exceeds 2 hours. When any equipment is taken for repair to the tenderer/contractor's premises suitable standby equipment should be provided.
- 17.8 Besides attending the breakdown calls, the firm shall attend to the corrective and preventive maintenance of the machines once in a month.
- 17.9 The AMC is valid for five years from the date of completion of the warranty period . No freight is admissible.
- 17.10 During the AMC period, whatever equipment is defective shall be handed over to RCF. During completion of the AMC period the machines should be handed over in full working condition to its full capacity.
- 17.11 The firm should maintain a register duly indicating the nature of defects and repair attended and got signed by RCF authority. Preventive maintenance schedule should be made. The schedule should be made in such a way that more than one machine should not be attended on the same day. A copy of the schedule should be given to RCF at the beginning of the AMC and the schedule should be strictly followed and on carrying out the preventive maintenance the same should be entered in the register and got signed by RCF authority.
- 17.12 AMC charges shall be paid quarterly as one quarter of the total AMC charges applicable for that year on submission of bills duly certified by the engineers in charge with regard to the satisfactory execution of AMC during the period for which the bill is claimed. Duties & taxes as applicable at the time of payment shall be deducted at source.

**18.0 PAYMENT TERMS**

80 % on receipt of machine and balance 20% after successful commissioning of machine and submission of Bank guarantee equivalent to 10% of P.O value valid up to the warranty period of the machine.

**19.0 DOCUMENTS TO BE UPLOADED FOR TECHNICAL EVALUATION**

Following documents must be submitted by the tenderer along with the offer:

1. Clause wise comments on technical specification
2. Documentary evidence of previous supplies to other Railways
3. Authorisation certificate of OEM in case of Authorised dealer
4. Detailed list of spares covered under warranty.
5. Details asked as per Annexure A and Annexure-B.
6. Details of deviations from specification if any as per Annexure-C

Tenderer not submitting the above information may note that his offer is liable to be ignored.



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**SCHEDULE-I**

**MAJOR PARAMETERS**

S.No.	Description	Requirement
a.	Connection Voltage (V)	1-Ph, 220-240
b.	Frequency range (Hz)	50-60
c.	Weight (Kg)	5.0 (without connection cable) max. 6.0 (with connection cable) max.
d.	Rated power at max. current	35 % ED (Duty Cycle) MMA- 140 A/7.5 kVA 100 % ED (Duty Cycle) MMA- 100 A/5.1 kVA
e.	Supply Current	35 % ED <sub>max.</sub> - 27 A 100 % ED <sub>eff</sub> -16 A
f.	Current Range	5-150 A
g.	OCV	70-95 V
h.	Power Factor at max. current	0.60
i.	Efficiency at max. current	80%
j.	Fuse, delayed	16 A
k.	Stick Electrode Ø mm	1.5-3.25
l.	Machine Dimensions (LxWxH) mm	(350x150x280) max.
m.	Safety Features	<ul style="list-style-type: none"> <li>• Overheating protection with LED indicator</li> <li>• Electronic Over voltage &amp; Under Voltage protection in the Control Card.</li> <li>• Thermal Protection (PTC) installed in the cooling profiles of the Primary Rectifier, IGBT &amp; Secondary Fast Recovery Rectifier</li> <li>• Thermal Protection (PTC) installed in the Main Transformer to prevent overloading.</li> </ul>

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### **ANNEXURE-A**

Tenderer shall provide list of spares, consumables required for maintenance for 5 years after completion of warranty period as below:

S.N.	ITEM	PART NO.	SERVICE LIFE	PRICE

### **ANNEXURE -B**

Tenderer shall provide proposal for 5 year Annual Preventive Maintenance schedule to be executed after completion of warranty period in the format as below:

S.N.	YEAR	AMC CHARGES
1.	IST YEAR	
2.	IIND YEAR	
3.	IIIRD YEAR	
4.	IVTH YEAR	
5.	VTH YEAR	

### **ANNEXURE -C**

DEVIATION STATEMENT ( IF ANY)

S.N.	Specification Clause No.	Deviation ( If Any)
1.		
2.		
3.		
4.		
5.		