

RAIL COACH FACTORY, KAPURTHALA		
Specification No.	Description	Covering Page
Mech/M&P/3500/GM/32 Rev.- NIL	Airless Spray Painting Machine	

Designation	Name	Signature	Date	Level
JE/M&P	S.K Juneja			Prepared
Dy.CPE-I	Anil Kumar			Agreed & Reviewed
CPE	Vineet Singhal			Approved

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 Bidder is advised to visit the site to comprehensively understand the requirement of Railways.
- 1.11 Tenderer not submitting the requisite information may note that his offer is liable to be ignored.
- 1.12 Other terms & condition of the contract will be as per Indian Railway Standard conditions of contract.

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## 2.0 PURPOSE

Four nos. Airless Spray Painting Machines are required in Material Handling Section of Rail Coach Factory, Kapurthala for spray painting on Coach Shells.

## 3.0 DESCRIPTION AND SCOPE OF SUPPLY

- 3.1 The specification covers design, manufacturing, supply, commissioning and proving out of Airless Spray Painting Machine as per below specifications and major parameters given in the Schedule-I. For basic design features of machine, please refer clause 7.0 and its sub clauses.
- 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.
- i. The cost of the basic machine.
  - ii. Cost of the concomitant accessories according to tenderer specification.
  - iii. Cost of any other accessory treated as concomitant accessory.
  - iv. 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 including repairs of electronic gadgets, sub-assemblies and Printed Circuit Boards up to component level.

## 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 equipment should be compact and portable.
- 5.2 The Airless Spray Painting equipment shall be capable of spraying all types of paints fillers, bitumen, coating material, lacquer, polyurethane paints and alike viscous

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materials on Railway coaches, components and sub-assemblies made of low alloy high tensile steel, chrome steel, mild steel and stainless steel.

- 5.3** It shall work on pneumatic pressure. It shall be compact unit with Airless Spray gun & Light Weight high pressure hose Pipe as per main parameter sr no 7 & 8 of Schedule-I and shall be easily portable on wheels.
- 5.4** The equipment should conform to the main characteristics listed in Schedule-I and machine features in para-6 of this specification.
- 5.5** The machine should be capable of operating in severe workshop conditions of dust temperature between 0°C to 50°C and for relative humidity of up to 98%.
- 5.6** It should be designed for high reliability and ease of maintenance. Any special feature facilitating ease of maintenance shall be explained.

## 6.0 SAFETY

- 6.1** The equipment shall incorporate safety devices for protection of the operator under normal operating conditions.
- 6.2** It shall be intrinsically safe to be used in hazardous area.
- 6.3** Details of safety features must be explained in the offer.
- 6.4** Hydraulic cylinder should have safety pins to prevent the threads from opening up under high pressure.

## 7.0 MACHINE FEATURES

- 7.1** The Airless spray painting equipment including airless pump shall be mounted on a Trolley with a handle and on solid wheels for easy maneuverability and provided with two outlets for different types of application of machine.
- 7.2** The equipment shall be suitable for spraying the atomized materials under high pressure with least possible pollution effect, minimum bounce back and little over spray. It shall be able to produce a strong coating thickness with high performance characteristics.

### 7.3 Pump Features:

- 7.3.1** Hydraulic pump packing should provide good sealing and compatible with all types of paint coatings and solvents used for cleaning. Packing should be a combination of PTFE and leather for best chemical resistance and sealing.
- 7.3.2** Hydraulic pump should consist of a wet cup to fill with compatible liquid to prevent paint from drying on piston rod and wearing the packing.
- 7.3.3** Pump packing should be cartridge type and placed in a cartridge which does not require the entire pump to be taken into a workshop for repacking if required.
- 7.3.4** Hydraulic pump should have an outlet filter built in the pump system.
- 7.3.5** Hydraulic pump should have 2 outlets to enable two guns to be connected when two persons need to paint at the same time.
- 7.3.6** Hydraulic Pump second gun opening should be plugged with an insert to prevent collection of paint in the 2nd outlet when not being used.
- 7.3.7** Hydraulic pump piston and cylinder must be made of rust proof material like Nickel or hard chrome steel with plasma coating for max. life.

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- 7.3.8 Hydraulic pump should be provided with safety dump valve to release pressure from the pump.
- 7.3.9 Inlet port of hydraulic pump should be large to allow thick materials to be sucked with minimum suction loss.
- 7.3.10 Hydraulic pump cylinder and lubrication system must be covered with bellow.

#### 7.4 Air Motor Features:

- 7.4.1. De-Ice control system should be inbuilt on the air motor.
- 7.4.2. Air motor cover should be made of corrosion resistant material.
- 7.4.3. Air motor and hydraulic parts should be separated by a chamber filed with liquid to clean and lubricate the piston. Ratio pump shall work only during actual spray operation.
- 7.4.4. Air motor should have inbuilt pressure reducing valve to adjust air pressure.
- 7.4.5. Air motor and Hydraulic pump should be connected with a quick disconnect coupling which is easy to operate and does not needs tools to operate.
- 7.4.6. Air motor shall operate on compressed air. Piston operation shall be controlled by a hard wearing pneumatic control system. Air pressure shall be adjusted by pressure reducing valve. Normally compressed air available on shop floor is 6.5 to 7.0 kg/cm<sup>2</sup> pressure.
- 7.4.7. Hydraulic part piston shall be driven by air motor. Double action reciprocating movement of piston shall develop requisite pressure on the spray material and ensure a continuous flow. Suction and exhaust valves made of special material shall cut in and cut out the flow.

#### 7.5 Hose Features:

- 7.5.1 Air and fluid hoses shall be safe to withstand with the pump pressures. The maximum length of the hose, which can be used between the pump and the spray gun without any drop in the delivery pressure, shall be indicated.
- 7.5.2 The inner layer of the hoses shall be resistant to spraying materials.

#### 7.6 Spray Gun Features:

- 7.6.1. Gun should be provided with inbuilt filter.
- 7.6.2. Gun swivel should be pressure rated and mentioned on the swivel.
- 7.6.3. The spray gun shall be provided with a trigger lock to prevent accidental triggering and a trigger guard to protect the nozzle.
- 7.6.4. The spray gun shall be supplied alongwith turn tip cleaner for easy maintenance.
- 7.6.5. Tip guard should hand tight and capable of withstanding high pressure. The pressure rating of the tip guard should be mentioned on the tip.
- 7.6.6. Whip hose should be flexible and able to withstand high pump pressure and create less fatigue to the operator while operation.
- 7.6.7. Spray Gun should have grooves to increase the grip. It should be light weighted, weighing not more than 850 grams.
- 7.6.8. The material of the packings and periodicity of their adjustment shall be indicated. The gun tips shall be of Tungsten carbide while the gun body shall be of stainless steel.
- 7.6.9. The gun shall be designed for a point deposition efficiency of at least 80% on flat

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surfaces.

- 7.6.10. Arrangement for cleaning the clogged tip shall form a part of the offer and shall be fully explained.
- 7.6.11. It shall be able to handle materials with pot life close to 30 minutes.
- 7.6.12. Working pressure of spray gun should not be less than 7250 psi (500 bar).
- 7.6.13. The operation of spray gun should be four finger to reduce the fatigue of operator.

## 7.7 Valve Features:

- 7.7.1. Pressure reducing regulator valve should be provided for adjusting air pressure.
- 7.7.2. Inlet ball seats should be reversible and made of Tungsten Carbide to increase life.
- 7.7.3. Inlet bass should be 1½ inch of high density to able to shut correctly and prevent backflow of material.
- 7.7.4. Inlet valve should be provided with shims to increase the height for heavy viscosity material.
- 7.7.5. Inlet valve should be quickly knocked down with large threads to allow easy and quick access to the intake valve for maintenance.
- 7.7.6. Inlet valve shall be provided with an area to put a pad lock to lock the pump and prevent unwanted usage of the sprayer.
- 7.7.7. Suction Filter features:
- i) Suction Filter element should be made of Stainless Steel of mesh size 60.
  - ii) Filter element screen should have marking of the mesh size on the filter to confirm the mesh size.
- 7.7.8. Suction Filter should be able to open from both side for ease of cleaning and flushing.

## 7.8 Machine Additional Features:

- 7.8.1. Data Track control system should be provided with machine. The system should provide the following information:
- Shut off pump when barrel is empty.
  - Pump diagnostic.
  - Material usage.
- 7.8.2. It should have an integrated air control that prevents any damage to the Air Regulator, Gauge and Filter.
- 7.8.3. The equipment shall be cart mounted with direct fluid supply from a container.

## 8.0 CONCOMITANT ACCESSORIES

8.1 The following concomitant Accessories shall be supplied along with the machine:

a)	Every basic machine consisting of air motor, airless spray gun, fluid hoses, air controls and filters etc.	
b)	Airless high pressure spray gun with necessary accessories like gun swivel, nozzle tips of 0.013, 0.015 and 0.017 inch dia and guard	01 set
c)	Fluid tank of min. 25 ltr. Capacity	01 no.
d)	Air controls and filters	01 no.
e)	Dual Hose feed pipe of 30mtr. Length	01 set.(2nos.)

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- 8.2 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 accessory is included in the basic price of the machine the same should be specifically mentioned.
- 8.3 Any other accessory, which in the opinion of the tenderer can contribute to higher performance, should be indicated and quoted separately.
- 8.4 A maintenance tool kit containing hand tools is required to cover all the fasteners of all sub-assemblies of the equipment.

## 9.0 SPARES & CONSUMABLES

- 9.1 The tenderer should furnish details of spares covered under warranty.
- 9.2 List of important spare parts and accessories with their part number and costing.
- 9.3 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.
- 9.4 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.
- 9.5 List of recommended consumables for two years shall be quoted separately.
- 9.6 The quantities should relate to, in case of non-perishable spares, to two years normal maintenance and in case of perishable spares to the duration of its shelf life or two years whichever is less. Shelf life should be indicated with the quotation for spares.
- 9.7 Useful life estimated/expected for each equipment and its sub assembly should be indicated by the tenderers.
- 9.8 Two year maintenance spares to be supplied alongwith the machine consisting of

i)	Pump Repair Kit	02 sets
ii)	Motor Repair Kit	01 set
iii)	Gun Repair Kit	02 sets
iv)	Hose pipe 30 mtr	01 no.
v)	Gun Swivel	02 nos.
vi)	Turn tip with nozzle	02 nos.
vii)	Nozzle tips set of 0.013, 0.015 & 0.017 inch dia	03 sets.

## 10.0 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.

## 11.0 INSPECTION OF EQUIPMENT & TESTING AT MANUFACTURERS WORKS

- 11.1 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.

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11.2 A functional test must be carried out at the manufacturer's works. Reliability of the equipment shall be demonstrated to the satisfaction of the appointed inspector or inspecting agency.

11.3 A sample inspection chart for inspecting the equipment should be supplied along with the bid.

## 12.0 INSTALLATION COMMISSIONING AND PROVING TESTS

12.1 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.

12.2 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.

12.3 The successful tenderer shall have to commission the Spray Painting Equipment within 30 days from the date of receipt of equipment at RCF, Kapurthala.

12.4 The successful tenderer shall have to prove out the Performance of Spray Painting Equipment on at least 10 (Ten) coaches shells on different applications.

12.5 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. 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.

## 13.0 TECHNICAL LITERATURE

13.1 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.

13.2 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, 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.

## 14.0 SPECIAL FEATURES

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



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**15.0 MAKE**

- 15.1 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.
- 15.2 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 authorised 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 authorisation certificate from OEM.
- 15.3 The supplier shall furnish the complete details of Model No. Make & Manufacturer's details/ address, Country and authorization details of Dealership.
- 15.4 The firm shall provide the calibration certificate of National / International Traceability along with validity of at least two years.

**16.0 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.

**17.0 SERVICING FACILITIES**

- 17.1 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 service / maintenance manual. Firm should provide list of equipment available for providing calibrations and routine maintenance support as per manufacturer.
- 17.2 Supplier will undertake for service repairs & replacement of any needed part as & when needed.
- 17.3 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.
- 17.4 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.
- 17.5 The contractor shall give a comprehensive spare part list with OEM details and price for all the sub systems.
- 17.6 The tenderer/contractor shall provide list of spares, consumables required for maintenance for 5 years after completion of warranty period as per annexure A.
- 17.7 Tenderer shall provide expected life for the components of the system and provide the maintenance schedule required for 5 years for as per annexure -B

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- 17.8 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.
- 17.9 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.

**18.0 SCHEDULE OF ANNUAL MAINTENANCE CONTRACT (AMC) FOR PERIOD OF 5 YEARS AFTER COMPLETION OF WARRANTY PERIOD**

- 18.1 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.
- 18.2 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.
- 18.3 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.
- 18.4 The firm shall ensure that the machine is in proper working condition, to the full capacity, after repair and maintenance.
- 18.5 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.
- 18.6 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.
- 18.7 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.
- 18.8 Besides attending the breakdown calls, the firm shall attend to the corrective and preventive maintenance of the machines once in a month.
- 18.9 The AMC is valid for five years from the date of completion of the warranty period. No freight is admissible.
- 18.10 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.
- 18.11 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.

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18.12 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.

19.0 **WARRANTY**

19.1 As per IRS conditions or as quoted by the tenderer whichever is later.

19.2 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.

20.0 **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.

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

Following documents must be submitted by the bidder 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. Details 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	Characterstics	Value
1.	Fluid Air pressure Ratio	Minimum 50:1 to 60:1
2.	Maximum Fluid Outlet Pressure	330-385 bar
3.	Maximum air Inlet Pressure	100 psi
4.	Max Fluid out	40-50 Litres per minute
5.	Fluid output @ 60 cycles	13 to 15 Litres per minute
6.	Max. out put per cycle	210-280 CC
7.	Paint fluid hose pipe	30 meter light weight ¼ inch npt pipe with min. 3300 psi rating and weighing approx. 3 kg. Rating must be engraved on hose pipe.
8.	Spray Gun	Four finger operation to reduce the fatigue of operator, built in filter, light weight with safety lock, working pressure not less than 7250 psi (500 bar) with gun swivel.

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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.		

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- 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 Bidder is advised to visit the site to comprehensively understand the requirement of Railways.
- 1.11 Tenderer not submitting the requisite information may note that his offer is liable to be ignored.
- 1.12 Other terms & condition of the contract will be as per Indian Railway Standard conditions of contract.

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## 2.0 PURPOSE

Four nos. Airless Spray Painting Machines are required in Material Handling Section of Rail Coach Factory, Kapurthala for spray painting on Coach Shells.

## 3.0 DESCRIPTION AND SCOPE OF SUPPLY

- 3.1 The specification covers design, manufacturing, supply, commissioning and proving out of Airless Spray Painting Machine as per below specifications and major parameters given in the Schedule-I. For basic design features of machine, please refer clause 7.0 and its sub clauses.
- 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 including repairs of electronic gadgets, sub-assemblies and Printed Circuit Boards up to component level.

## 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 equipment should be compact and portable.
- 5.2 The Airless Spray Painting equipment shall be capable of spraying all types of paints fillers, bitumen, coating material, lacquer, polyurethane paints and alike viscous



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materials on Railway coaches, components and sub-assemblies made of low alloy high tensile steel, chrome steel, mild steel and stainless steel.

- 5.3** It shall work on pneumatic pressure. It shall be compact unit with Airless Spray gun & Light Weight high pressure hose Pipe as per main parameter sr no 7 & 8 of Schedule-I and shall be easily portable on wheels.
- 5.4** The equipment should conform to the main characteristics listed in Schedule-I and machine features in para-6 of this specification.
- 5.5** The machine should be capable of operating in severe workshop conditions of dust temperature between 0<sup>o</sup>C to 50<sup>o</sup>C and for relative humidity of up to 98%.
- 5.6** It should be designed for high reliability and ease of maintenance. Any special feature facilitating ease of maintenance shall be explained.

## 6.0 SAFETY

- 6.1** The equipment shall incorporate safety devices for protection of the operator under normal operating conditions.
- 6.2** It shall be intrinsically safe to be used in hazardous area.
- 6.3** Details of safety features must be explained in the offer.
- 6.4** Hydraulic cylinder should have safety pins to prevent the threads from opening up under high pressure.

## 7.0 MACHINE FEATURES

- 7.1** The Airless spray painting equipment including airless pump shall be mounted on a Trolley with a handle and on solid wheels for easy maneuverability and provided with two outlets for different types of application of machine.
- 7.2** The equipment shall be suitable for spraying the atomized materials under high pressure with least possible pollution effect, minimum bounce back and little over spray. It shall be able to produce a strong coating thickness with high performance characteristics.

### 7.3 Pump Features:

- 7.3.1** Hydraulic pump packing should provide good sealing and compatible with all types of paint coatings and solvents used for cleaning. Packing should be a combination of PTFE and leather for best chemical resistance and sealing.
- 7.3.2** Hydraulic pump should consist of a wet cup to fill with compatible liquid to prevent paint from drying on piston rod and wearing the packing.
- 7.3.3** Pump packing should be cartridge type and placed in a cartridge which does not require the entire pump to be taken into a workshop for repacking if required.
- 7.3.4** Hydraulic pump should have an outlet filter built in the pump system.
- 7.3.5** Hydraulic pump should have 2 outlets to enable two guns to be connected when two persons need to paint at the same time.
- 7.3.6** Hydraulic Pump second gun opening should be plugged with an insert to prevent collection of paint in the 2nd outlet when not being used.
- 7.3.7** Hydraulic pump piston and cylinder must be made of rust proof material like Nickel or hard chrome steel with plasma coating for max. life.

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- 7.3.8 Hydraulic pump should be provided with safety dump valve to release pressure from the pump.
- 7.3.9 Inlet port of hydraulic pump should be large to allow thick materials to be sucked with minimum suction loss.
- 7.3.10 Hydraulic pump cylinder and lubrication system must be covered with bellow.

#### 7.4 Air Motor Features:

- 7.4.1. De-Ice control system should be inbuilt on the air motor.
- 7.4.2. Air motor cover should be made of corrosion resistant material.
- 7.4.3. Air motor and hydraulic parts should be separated by a chamber filed with liquid to clean and lubricate the piston. Ratio pump shall work only during actual spray operation.
- 7.4.4. Air motor should have inbuilt pressure reducing valve to adjust air pressure.
- 7.4.5. Air motor and Hydraulic pump should be connected with a quick disconnect coupling which is easy to operate and does not needs tools to operate.
- 7.4.6. Air motor shall operate on compressed air. Piston operation shall be controlled by a hard wearing pneumatic control system. Air pressure shall be adjusted by pressure reducing valve. Normally compressed air available on shop floor is 6.5 to 7.0 kg/cm<sup>2</sup> pressure.
- 7.4.7. Hydraulic part piston shall be driven by air motor. Double action reciprocating movement of piston shall develop requisite pressure on the spray material and ensure a continuous flow. Suction and exhaust valves made of special material shall cut in and cut out the flow.

#### 7.5 Hose Features:

- 7.5.1 Air and fluid hoses shall be safe to withstand with the pump pressures. The maximum length of the hose, which can be used between the pump and the spray gun without any drop in the delivery pressure, shall be indicated.
- 7.5.2 The inner layer of the hoses shall be resistant to spraying materials.

#### 7.6 Spray Gun Features:

- 7.6.1. Gun should be provided with inbuilt filter.
- 7.6.2. Gun swivel should be pressure rated and mentioned on the swivel.
- 7.6.3. The spray gun shall be provided with a trigger lock to prevent accidental triggering and a trigger guard to protect the nozzle.
- 7.6.4. The spray gun shall be supplied alongwith turn tip cleaner for easy maintenance.
- 7.6.5. Tip guard should hand tight and capable of withstanding high pressure. The pressure rating of the tip guard should be mentioned on the tip.
- 7.6.6. Whip hose should be flexible and able to withstand high pump pressure and create less fatigue to the operator while operation.
- 7.6.7. Spray Gun should have grooves to increase the grip. It should be light weighted, weighing not more than 850 grams.
- 7.6.8. The material of the packings and periodicity of their adjustment shall be indicated. The gun tips shall be of Tungsten carbide while the gun body shall be of stainless steel.
- 7.6.9. The gun shall be designed for a point deposition efficiency of at least 80% on flat

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surfaces.

- 7.6.10. Arrangement for cleaning the clogged tip shall form a part of the offer and shall be fully explained.
- 7.6.11. It shall be able to handle materials with pot life close to 30 minutes.
- 7.6.12. Working pressure of spray gun should not be less than 7250 psi (500 bar).
- 7.6.13. The operation of spray gun should be four finger to reduce the fatigue of operator.

## 7.7 Valve Features:

- 7.7.1. Pressure reducing regulator valve should be provided for adjusting air pressure.
- 7.7.2. Inlet ball seats should be reversible and made of Tungsten Carbide to increase life.
- 7.7.3. Inlet bass should be 1½ inch of high density to able to shut correctly and prevent backflow of material.
- 7.7.4. Inlet valve should be provided with shims to increase the height for heavy viscosity material.
- 7.7.5. Inlet valve should be quickly knocked down with large threads to allow easy and quick access to the intake valve for maintenance.
- 7.7.6. Inlet valve shall be provided with an area to put a pad lock to lock the pump and prevent unwanted usage of the sprayer.
- 7.7.7. Suction Filter features:
- i) Suction Filter element should be made of Stainless Steel of mesh size 60.
  - ii) Filter element screen should have marking of the mesh size on the filter to confirm the mesh size.
- 7.7.8. Suction Filter should be able to open from both side for ease of cleaning and flushing.

## 7.8 Machine Additional Features:

- 7.8.1. Data Track control system should be provided with machine. The system should provide the following information:
- Shut off pump when barrel is empty.
  - Pump diagnostic.
  - Material usage.
- 7.8.2. It should have an integrated air control that prevents any damage to the Air Regulator, Gauge and Filter.
- 7.8.3. The equipment shall be cart mounted with direct fluid supply from a container.

## 8.0 CONCOMITANT ACCESSORIES

8.1 The following concomitant Accessories shall be supplied along with the machine:

a)	Every basic machine consisting of air motor, airless spray gun, fluid hoses, air controls and filters etc.	
b)	Airless high pressure spray gun with necessary accessories like gun swivel, nozzle tips of 0.013, 0.015 and 0.017 inch dia and guard	01 set
c)	Fluid tank of min. 25 ltr. Capacity	01 no.
d)	Air controls and filters	01 no.
e)	Dual Hose feed pipe of 30mtr. Length	01 set.(2nos.)

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- 8.2 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 accessory is included in the basic price of the machine the same should be specifically mentioned.
- 8.3 Any other accessory, which in the opinion of the tenderer can contribute to higher performance, should be indicated and quoted separately.
- 8.4 A maintenance tool kit containing hand tools is required to cover all the fasteners of all sub-assemblies of the equipment.

## 9.0 SPARES & CONSUMABLES

- 9.1 The tenderer should furnish details of spares covered under warranty.
- 9.2 List of important spare parts and accessories with their part number and costing.
- 9.3 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.
- 9.4 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.
- 9.5 List of recommended consumables for two years shall be quoted separately.
- 9.6 The quantities should relate to, in case of non-perishable spares, to two years normal maintenance and in case of perishable spares to the duration of its shelf life or two years whichever is less. Shelf life should be indicated with the quotation for spares.
- 9.7 Useful life estimated/expected for each equipment and its sub assembly should be indicated by the tenderers.
- 9.8 Two year maintenance spares to be supplied alongwith the machine consisting of

i)	Pump Repair Kit	02 sets
ii)	Motor Repair Kit	01 set
iii)	Gun Repair Kit	02 sets
iv)	Hose pipe 30 mtr	01 no.
v)	Gun Swivel	02 nos.
vi)	Turn tip with nozzle	02 nos.
vii)	Nozzle tips set of 0.013, 0.015 & 0.017 inch dia	03 sets.

## 10.0 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.

## 11.0 INSPECTION OF EQUIPMENT & TESTING AT MANUFACTURERS WORKS

- 11.1 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.

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11.2 A functional test must be carried out at the manufacturer's works. Reliability of the equipment shall be demonstrated to the satisfaction of the appointed inspector or inspecting agency.

11.3 A sample inspection chart for inspecting the equipment should be supplied along with the bid.

## 12.0 INSTALLATION COMMISSIONING AND PROVING TESTS

12.1 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.

12.2 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.

12.3 The successful tenderer shall have to commission the Spray Painting Equipment within 30 days from the date of receipt of equipment at RCF, Kapurthala.

12.4 The successful tenderer shall have to prove out the Performance of Spray Painting Equipment on at least 10 (Ten) coaches shells on different applications.

12.5 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. 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.

## 13.0 TECHNICAL LITERATURE

13.1 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.

13.2 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, 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.

## 14.0 SPECIAL FEATURES

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

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**15.0 MAKE**

- 15.1 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.
- 15.2 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 authorised 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 authorisation certificate from OEM.
- 15.3 The supplier shall furnish the complete details of Model No. Make & Manufacturer's details/ address, Country and authorization details of Dealership.
- 15.4 The firm shall provide the calibration certificate of National / International Traceability along with validity of at least two years.

**16.0 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.

**17.0 SERVICING FACILITIES**

- 17.1 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 service / maintenance manual. Firm should provide list of equipment available for providing calibrations and routine maintenance support as per manufacturer.
- 17.2 Supplier will undertake for service repairs & replacement of any needed part as & when needed.
- 17.3 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.
- 17.4 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.
- 17.5 The contractor shall give a comprehensive spare part list with OEM details and price for all the sub systems.
- 17.6 The tenderer/contractor shall provide list of spares, consumables required for maintenance for 5 years after completion of warranty period as per annexure A.
- 17.7 Tenderer shall provide expected life for the components of the system and provide the maintenance schedule required for 5 years for as per annexure -B

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- 17.8 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.
- 17.9 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.

**18.0 SCHEDULE OF ANNUAL MAINTENANCE CONTRACT (AMC) FOR PERIOD OF 5 YEARS AFTER COMPLETION OF WARRANTY PERIOD**

- 18.1 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.
- 18.2 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.
- 18.3 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.
- 18.4 The firm shall ensure that the machine is in proper working condition, to the full capacity, after repair and maintenance.
- 18.5 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.
- 18.6 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.
- 18.7 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.
- 18.8 Besides attending the breakdown calls, the firm shall attend to the corrective and preventive maintenance of the machines once in a month.
- 18.9 The AMC is valid for five years from the date of completion of the warranty period. No freight is admissible.
- 18.10 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.
- 18.11 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.

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18.12 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.

19.0 **WARRANTY**

19.1 As per IRS conditions or as quoted by the tenderer whichever is later.

19.2 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.

20.0 **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.

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

Following documents must be submitted by the bidder 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. Details 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	Characterstics	Value
1.	Fluid Air pressure Ratio	Minimum 50:1 to 60:1
2.	Maximum Fluid Outlet Pressure	330-385 bar
3.	Maximum air Inlet Pressure	100 psi
4.	Max Fluid out	40-50 Litres per minute
5.	Fluid output @ 60 cycles	13 to 15 Litres per minute
6.	Max. out put per cycle	210-280 CC
7.	Paint fluid hose pipe	30 meter light weight ¼ inch npt pipe with min. 3300 psi rating and weighing approx. 3 kg. Rating must be engraved on hose pipe.
8.	Spray Gun	Four finger operation to reduce the fatigue of operator, built in filter, light weight with safety lock, working pressure not less than 7250 psi (500 bar) with gun swivel.

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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.		

Prepared by  
JE/M&P

Agreed by  
Dy.CPE-I

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Designation	Name	Signature	Date	Level
JE/M&P	S.K Juneja			Prepared
Dy.CPE-I	Anil Kumar			Agreed & Reviewed
CPE	Vineet Singhal			Approved

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 Bidder is advised to visit the site to comprehensively understand the requirement of Railways.
- 1.11 Tenderer not submitting the requisite information may note that his offer is liable to be ignored.
- 1.12 Other terms & condition of the contract will be as per Indian Railway Standard conditions of contract.

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## 2.0 PURPOSE

Four nos. Airless Spray Painting Machines are required in Material Handling Section of Rail Coach Factory, Kapurthala for spray painting on Coach Shells.

## 3.0 DESCRIPTION AND SCOPE OF SUPPLY

- 3.1 The specification covers design, manufacturing, supply, commissioning and proving out of Airless Spray Painting Machine as per below specifications and major parameters given in the Schedule-I. For basic design features of machine, please refer clause 7.0 and its sub clauses.
- 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 including repairs of electronic gadgets, sub-assemblies and Printed Circuit Boards up to component level.

## 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 equipment should be compact and portable.
- 5.2 The Airless Spray Painting equipment shall be capable of spraying all types of paints fillers, bitumen, coating material, lacquer, polyurethane paints and alike viscous

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materials on Railway coaches, components and sub-assemblies made of low alloy high tensile steel, chrome steel, mild steel and stainless steel.

- 5.3** It shall work on pneumatic pressure. It shall be compact unit with Airless Spray gun & Light Weight high pressure hose Pipe as per main parameter sr no 7 & 8 of Schedule-I and shall be easily portable on wheels.
- 5.4** The equipment should conform to the main characteristics listed in Schedule-I and machine features in para-6 of this specification.
- 5.5** The machine should be capable of operating in severe workshop conditions of dust temperature between 0<sup>o</sup>C to 50<sup>o</sup>C and for relative humidity of up to 98%.
- 5.6** It should be designed for high reliability and ease of maintenance. Any special feature facilitating ease of maintenance shall be explained.

## 6.0 SAFETY

- 6.1** The equipment shall incorporate safety devices for protection of the operator under normal operating conditions.
- 6.2** It shall be intrinsically safe to be used in hazardous area.
- 6.3** Details of safety features must be explained in the offer.
- 6.4** Hydraulic cylinder should have safety pins to prevent the threads from opening up under high pressure.

## 7.0 MACHINE FEATURES

- 7.1** The Airless spray painting equipment including airless pump shall be mounted on a Trolley with a handle and on solid wheels for easy maneuverability and provided with two outlets for different types of application of machine.
- 7.2** The equipment shall be suitable for spraying the atomized materials under high pressure with least possible pollution effect, minimum bounce back and little over spray. It shall be able to produce a strong coating thickness with high performance characteristics.

### 7.3 Pump Features:

- 7.3.1** Hydraulic pump packing should provide good sealing and compatible with all types of paint coatings and solvents used for cleaning. Packing should be a combination of PTFE and leather for best chemical resistance and sealing.
- 7.3.2** Hydraulic pump should consist of a wet cup to fill with compatible liquid to prevent paint from drying on piston rod and wearing the packing.
- 7.3.3** Pump packing should be cartridge type and placed in a cartridge which does not require the entire pump to be taken into a workshop for repacking if required.
- 7.3.4** Hydraulic pump should have an outlet filter built in the pump system.
- 7.3.5** Hydraulic pump should have 2 outlets to enable two guns to be connected when two persons need to paint at the same time.
- 7.3.6** Hydraulic Pump second gun opening should be plugged with an insert to prevent collection of paint in the 2nd outlet when not being used.
- 7.3.7** Hydraulic pump piston and cylinder must be made of rust proof material like Nickel or hard chrome steel with plasma coating for max. life.

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- 7.3.8 Hydraulic pump should be provided with safety dump valve to release pressure from the pump.
- 7.3.9 Inlet port of hydraulic pump should be large to allow thick materials to be sucked with minimum suction loss.
- 7.3.10 Hydraulic pump cylinder and lubrication system must be covered with bellow.

#### 7.4 Air Motor Features:

- 7.4.1. De-Ice control system should be inbuilt on the air motor.
- 7.4.2. Air motor cover should be made of corrosion resistant material.
- 7.4.3. Air motor and hydraulic parts should be separated by a chamber filed with liquid to clean and lubricate the piston. Ratio pump shall work only during actual spray operation.
- 7.4.4. Air motor should have inbuilt pressure reducing valve to adjust air pressure.
- 7.4.5. Air motor and Hydraulic pump should be connected with a quick disconnect coupling which is easy to operate and does not needs tools to operate.
- 7.4.6. Air motor shall operate on compressed air. Piston operation shall be controlled by a hard wearing pneumatic control system. Air pressure shall be adjusted by pressure reducing valve. Normally compressed air available on shop floor is 6.5 to 7.0 kg/cm<sup>2</sup> pressure.
- 7.4.7. Hydraulic part piston shall be driven by air motor. Double action reciprocating movement of piston shall develop requisite pressure on the spray material and ensure a continuous flow. Suction and exhaust valves made of special material shall cut in and cut out the flow.

#### 7.5 Hose Features:

- 7.5.1 Air and fluid hoses shall be safe to withstand with the pump pressures. The maximum length of the hose, which can be used between the pump and the spray gun without any drop in the delivery pressure, shall be indicated.
- 7.5.2 The inner layer of the hoses shall be resistant to spraying materials.

#### 7.6 Spray Gun Features:

- 7.6.1. Gun should be provided with inbuilt filter.
- 7.6.2. Gun swivel should be pressure rated and mentioned on the swivel.
- 7.6.3. The spray gun shall be provided with a trigger lock to prevent accidental triggering and a trigger guard to protect the nozzle.
- 7.6.4. The spray gun shall be supplied alongwith turn tip cleaner for easy maintenance.
- 7.6.5. Tip guard should hand tight and capable of withstanding high pressure. The pressure rating of the tip guard should be mentioned on the tip.
- 7.6.6. Whip hose should be flexible and able to withstand high pump pressure and create less fatigue to the operator while operation.
- 7.6.7. Spray Gun should have grooves to increase the grip. It should be light weighted, weighing not more than 850 grams.
- 7.6.8. The material of the packings and periodicity of their adjustment shall be indicated. The gun tips shall be of Tungsten carbide while the gun body shall be of stainless steel.
- 7.6.9. The gun shall be designed for a point deposition efficiency of at least 80% on flat

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surfaces.

- 7.6.10. Arrangement for cleaning the clogged tip shall form a part of the offer and shall be fully explained.
- 7.6.11. It shall be able to handle materials with pot life close to 30 minutes.
- 7.6.12. Working pressure of spray gun should not be less than 7250 psi (500 bar).
- 7.6.13. The operation of spray gun should be four finger to reduce the fatigue of operator.

## 7.7 Valve Features:

- 7.7.1. Pressure reducing regulator valve should be provided for adjusting air pressure.
- 7.7.2. Inlet ball seats should be reversible and made of Tungsten Carbide to increase life.
- 7.7.3. Inlet bass should be 1½ inch of high density to able to shut correctly and prevent backflow of material.
- 7.7.4. Inlet valve should be provided with shims to increase the height for heavy viscosity material.
- 7.7.5. Inlet valve should be quickly knocked down with large threads to allow easy and quick access to the intake valve for maintenance.
- 7.7.6. Inlet valve shall be provided with an area to put a pad lock to lock the pump and prevent unwanted usage of the sprayer.
- 7.7.7. Suction Filter features:
- i) Suction Filter element should be made of Stainless Steel of mesh size 60.
  - ii) Filter element screen should have marking of the mesh size on the filter to confirm the mesh size.
- 7.7.8. Suction Filter should be able to open from both side for ease of cleaning and flushing.

## 7.8 Machine Additional Features:

- 7.8.1. Data Track control system should be provided with machine. The system should provide the following information:
- Shut off pump when barrel is empty.
  - Pump diagnostic.
  - Material usage.
- 7.8.2. It should have an integrated air control that prevents any damage to the Air Regulator, Gauge and Filter.
- 7.8.3. The equipment shall be cart mounted with direct fluid supply from a container.

## 8.0 CONCOMITANT ACCESSORIES

8.1 The following concomitant Accessories shall be supplied along with the machine:

a)	Every basic machine consisting of air motor, airless spray gun, fluid hoses, air controls and filters etc.	
b)	Airless high pressure spray gun with necessary accessories like gun swivel, nozzle tips of 0.013, 0.015 and 0.017 inch dia and guard	01 set
c)	Fluid tank of min. 25 ltr. Capacity	01 no.
d)	Air controls and filters	01 no.
e)	Dual Hose feed pipe of 30mtr. Length	01 set.(2nos.)



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- 8.2 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 accessory is included in the basic price of the machine the same should be specifically mentioned.
- 8.3 Any other accessory, which in the opinion of the tenderer can contribute to higher performance, should be indicated and quoted separately.
- 8.4 A maintenance tool kit containing hand tools is required to cover all the fasteners of all sub-assemblies of the equipment.

## 9.0 SPARES & CONSUMABLES

- 9.1 The tenderer should furnish details of spares covered under warranty.
- 9.2 List of important spare parts and accessories with their part number and costing.
- 9.3 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.
- 9.4 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.
- 9.5 List of recommended consumables for two years shall be quoted separately.
- 9.6 The quantities should relate to, in case of non-perishable spares, to two years normal maintenance and in case of perishable spares to the duration of its shelf life or two years whichever is less. Shelf life should be indicated with the quotation for spares.
- 9.7 Useful life estimated/expected for each equipment and its sub assembly should be indicated by the tenderers.
- 9.8 Two year maintenance spares to be supplied alongwith the machine consisting of

i)	Pump Repair Kit	02 sets
ii)	Motor Repair Kit	01 set
iii)	Gun Repair Kit	02 sets
iv)	Hose pipe 30 mtr	01 no.
v)	Gun Swivel	02 nos.
vi)	Turn tip with nozzle	02 nos.
vii)	Nozzle tips set of 0.013, 0.015 & 0.017 inch dia	03 sets.

## 10.0 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.

## 11.0 INSPECTION OF EQUIPMENT & TESTING AT MANUFACTURERS WORKS

- 11.1 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.

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11.2 A functional test must be carried out at the manufacturer's works. Reliability of the equipment shall be demonstrated to the satisfaction of the appointed inspector or inspecting agency.

11.3 A sample inspection chart for inspecting the equipment should be supplied along with the bid.

## 12.0 INSTALLATION COMMISSIONING AND PROVING TESTS

12.1 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.

12.2 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.

12.3 The successful tenderer shall have to commission the Spray Painting Equipment within 30 days from the date of receipt of equipment at RCF, Kapurthala.

12.4 The successful tenderer shall have to prove out the Performance of Spray Painting Equipment on at least 10 (Ten) coaches shells on different applications.

12.5 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. 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.

## 13.0 TECHNICAL LITERATURE

13.1 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.

13.2 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, 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.

## 14.0 SPECIAL FEATURES

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

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**15.0 MAKE**

- 15.1 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.
- 15.2 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 authorised 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 authorisation certificate from OEM.
- 15.3 The supplier shall furnish the complete details of Model No. Make & Manufacturer's details/ address, Country and authorization details of Dealership.
- 15.4 The firm shall provide the calibration certificate of National / International Traceability along with validity of at least two years.

**16.0 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.

**17.0 SERVICING FACILITIES**

- 17.1 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 service / maintenance manual. Firm should provide list of equipment available for providing calibrations and routine maintenance support as per manufacturer.
- 17.2 Supplier will undertake for service repairs & replacement of any needed part as & when needed.
- 17.3 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.
- 17.4 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.
- 17.5 The contractor shall give a comprehensive spare part list with OEM details and price for all the sub systems.
- 17.6 The tenderer/contractor shall provide list of spares, consumables required for maintenance for 5 years after completion of warranty period as per annexure A.
- 17.7 Tenderer shall provide expected life for the components of the system and provide the maintenance schedule required for 5 years for as per annexure -B

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- 17.8 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.
- 17.9 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.

**18.0 SCHEDULE OF ANNUAL MAINTENANCE CONTRACT (AMC) FOR PERIOD OF 5 YEARS AFTER COMPLETION OF WARRANTY PERIOD**

- 18.1 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.
- 18.2 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.
- 18.3 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.
- 18.4 The firm shall ensure that the machine is in proper working condition, to the full capacity, after repair and maintenance.
- 18.5 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.
- 18.6 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.
- 18.7 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.
- 18.8 Besides attending the breakdown calls, the firm shall attend to the corrective and preventive maintenance of the machines once in a month.
- 18.9 The AMC is valid for five years from the date of completion of the warranty period. No freight is admissible.
- 18.10 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.
- 18.11 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.

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18.12 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.

19.0 **WARRANTY**

19.1 As per IRS conditions or as quoted by the tenderer whichever is later.

19.2 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.

20.0 **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.

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

Following documents must be submitted by the bidder 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. Details 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	Characterstics	Value
1.	Fluid Air pressure Ratio	Minimum 50:1 to 60:1
2.	Maximum Fluid Outlet Pressure	330-385 bar
3.	Maximum air Inlet Pressure	100 psi
4.	Max Fluid out	40-50 Litres per minute
5.	Fluid output @ 60 cycles	13 to 15 Litres per minute
6.	Max. out put per cycle	210-280 CC
7.	Paint fluid hose pipe	30 meter light weight ¼ inch npt pipe with min. 3300 psi rating and weighing approx. 3 kg. Rating must be engraved on hose pipe.
8.	Spray Gun	Four finger operation to reduce the fatigue of operator, built in filter, light weight with safety lock, working pressure not less than 7250 psi (500 bar) with gun swivel.

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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.		

Prepared by  
JE/M&P

Agreed by  
Dy.CPE-I