

SPECIFICATION	SCHEDULE OF TECHNICAL REQUIREMENTS FOR SEATS OF DPC,AC (MG) DMU FOR PTB,SENEGAL COACHES	MDTS 211 REV-NIL Page 1 of 6 DATED 07/06/2010
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
1. Scope:

- 1.1 This specification covers the general and technical requirements of single seater & 2-seater for DPC,AC (MG) DMU for PTB,SENEGAL COACHES.
- 1.2 The general arrangement and mounting of the seats shall be as per general arrgt. drawing no. FF61100.
- 1.3 The scope of supply covers different types of seats LH/RH including hardware required for mounting.
- 1.4 Along with each coach set of seats, the supplier will supply 5 meter length of upholstery cloth, exactly the same as used on the chairs.
- 1.5 While quoting, the tenderer shall give clause wise comments and shall also submit a deviation statements if there are any deviations in the offer with respect to these specifications.

2. Functional Requirements:

- 2.1 Design of seats shall be stylish & aesthetically pleasing.
- 2.2 All fasteners and metal parts shall be suitably concealed. Where ever fasteners are visible to the passengers, only flushed stainless steel star headed or hex. socket head (Allen head) fasteners with spring washers should be used. The seats shall have no sharp edges or corners anywhere.
- 2.3 Moulded cushion for seat and back rest shall be moulded from polyurethane foam as per RDSO/2007/CG-04. Contours of the moulded seat and back rest should be ergonomically perfect and shall be within the overall dimensions indicated in the drawing.
- 2.4 Seat cushions and back rest contours shall provide adequate comfort and will be approved on submission of prototype seat. RCF reserves the right to update the design after first prototype observations.
- 2.5 Seat manufacture should display very good styling in design of chairs to have aesthetics of international standards. Mounting of seats should have easy access for tightening.
- 2.6 The rear side of back rest shall also be covered with upholstery.


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- 2.7 Corners and edges towards aisle side should be provided with aluminium protecting cover & shall have robustness against usual wear.
- 2.8 No rattle or vibration shall be emitted by the seat or any component.
- 2.9 The concept of mounting the seats on the floor and side wall shall be identical for all seats to ensure interchangeability. Mounting holes should be drilled with the help of template/jig to ensure consistency of manufacture.
- 2.10 Arm rest other than the arm rests on the aisle side of seats shall be movable. Movable arm rest should flush with back rests when folded up. Armrest top shall be of integral PU skin with minimum PU thickness of 5mm. Bracket/arm of the armrest shall be made up of aluminium die casting.

3. Technical Requirements:

- 3.1 Frames of seat and back rest should be sturdy enough to withstand normal misuse by Railway passengers. The frame of seat should be made of stainless steel of grade AISI-304. The frame should have a good finish at welded joints. There should be no sharp edges. Structural supports should be suitably concealed. On the aisle side, a powder coated aluminium die casted cover should be provided below arm rest for concealing purpose.
- 3.2 Moulded cushion for seat and back rest shall be made of polyurethane to Technical specification No. RDSO/2007/CG-04. A sample of P.U. foam of size 570x570x50(thick.) shall be submitted along with prototype to RCF for approval before start of the bulk manufacture of chairs.
- 3.3 Fire retardant upholstery having properties as per Annexure-1 shall be used. Colour and pattern of upholstery should match with "Aunde Jacquard Moquette 'Ampurias' quality & design name 'Circuite Verde" of M/s Aunde, Spain. A sample of upholstery shall be got approved from RCF for colour, specification and quality before the bulk manufacture of chairs. In addition, supplier shall submit WTC for this along with supply.
- 3.4 Stainless steel sheet of grade AISI-304 to be used as a support for cushion in seat & backrest. Alternatively, 6 mm. thick compreg for seat cushion and 4 mm. thick compreg for backrest cushion as per RDSO/Spec. C-9407 to be used.
- 3.5 All visible metal parts should be powder coated in colour shade no. RAL 9006 with thickness 50-60 Microns and gloss value 80-90.


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- 3.6 Colour scheme of seats & its parts for prototype will be approved by RCF at the time of approval of the drawings submitted by the supplier.
- 3.7 Colour scheme of the seats again will be reviewed at the time of submission of pilot sample for approval and RCF reserves the right to change colour shade considering the aesthetics of seats in coach during prototype approval.
- 3.8 Cushion & upholstery preferably be integrated and also should be dismantled easily at the time of replacement if required.
- 3.9 Seats should be designed to provide better comfort to passengers. For this purpose, pressure mapping of cushion as per recognised national / international standards should be ensured. Supplier should submit documentary proof of such test.
- 3.10 Weight of seats shall be approx. as given below :
- | | | |
|----------------------|---|----------------------|
| Single seater module | : | 15 Kgs. \pm 2 Kgs. |
| 2-seater module | : | 18 Kgs. \pm 2 Kgs. |
- 3.11 **Fire Protection:-** Individual raw materials such as upholstery, PU foam & compreg used for manufacture of seats must confirm to fire retardancy standards as per RDSO spec. C-K610, CG-04 & C-9407 respectively.
- 3.12 Fibre-glass woven cloth as per IS:11273-75 having minimum density of 250 gm/sq.m or alternate approved fire barrier shall be provided all around PU foam including between upholstery and cushion as fire prevention measure.

4. Interfaces with the car body

The seats are to be mounted in the interior of the coach with the fixing dimensions, tolerances and mounting arrangement as per clause 1.2.

5. Mechanical strength requirements

- 5.1 The mechanical strength of the seat has to meet the requirements of UIC 566. According to this, the design and fastening of the seat is to be made such that the mounted seat can withstand static loads as per clause 8.1 of this specification.
- 5.2 The passenger coaches running on Railways are designed for a service life of 30 years. The seats should be developed and assembled keeping the same objective in view.


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- 5.3 Seats should be tested for endurance against braking and acceleration forces in fully loaded conditions for 1 lac cycles. After the test, there should not be any permanent deformation in cushion & seat frames in any case.

6. Warranty:

The supplier shall give warranty for the complete assembly or part of seats, for failing or proving unsatisfactory in service due to defective design, material or workmanship within 36 months from the date of regular supply and shall replace the same at his own cost and risk. The supplier's name plate along with month and year of supply to RCF should be provided in aluminium name plate at the bottom of seat for traceability purpose.

7. Documents to be submitted by supplier for prototype approval

The following documentation for the assembly of the seats are to be prepared by the supplier for submission along with the prototype assembly.

1. A set of drawings of parts like frame, seat, backrest & cushion etc. with spare part lists.
2. The manufacturer shall mention the material used along with specification while quoting for the supply of chairs.
3. The documentation of the design in form of plots on paper and as CAD data in IGES file format
4. Clearly organised instructions for mounting and adjusting the seats, changing the seat and wearing parts
5. Maintenance and repair instructions.
6. Complete technical details description of the seat on the drawings.
7. Test certificates of all the tests mentioned in this spec. from a reputed test laboratory.

8. Testing of prototype & regular production assemblies

The supplier shall submit one prototype of seat along with the documents indicated above for approval before commencing bulk supply. The prototype and drawings shall be examined from all view points and supplier shall incorporate changes suggested by RCF on the basis of this review in the prototype and drawings as well as bulk supply. The bulk manufacture shall be undertaken **only after the approval of prototype and drawings.**

- 8.1 Testing of the seat shall be done in the same condition as fixed in the coaches. The following static load test shall be applied to prototype samples:

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- i) 150 kgf vertical load to be applied per person at the centre of the seat cushion by using press board of hard board of circular area 615 sq. cm normal to the surface of sitting area.
- ii) 50 kgf of horizontal load to be applied to the frame at the top aisle side corner of back rest of seat sets.
- iii) 50 kgf of horizontal load to be applied at the centre of back rest by using press board of hard board of circular area 615 sq. cm normal to the surface.

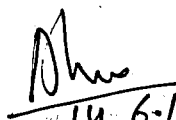
The above tests shall not give rise to any deformation in any component.

10. Eligibility criteria

Tenderer should have their own following test facilities:

- i) Endurance test facility.
- ii) Pressure mapping test facility with visual and graphical output.


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Annexure-1

AUNDE S.A.

JACQUARD MOQUETTE SPECIFICATION
85 % WO : 15 % PA



Composition	
Pile	85% WO 15 % PA
Overall	55 % WO 10 % PA 35 %
CO	
Width	157±2 Cm.
Weight / m ² (UNE 40339)	825 grs/m ² ± 5%
PAC backing	25 grs/m ²
Thickness (UNE 40224)	4.4 mm. ± 0.5 mm.
Strength (UNE 40085)	
Warp	>40 Kg.
Weft	>70 Kg.
Seam strength (LEITAT 88311)	
Warp	>40 Kg.
Weft	>50 Kg.
Abrasion resistance	
MARTINDALE (BS 5690)	>60.000 Ciclos/Rubs
Colour Fastness	
Light (UNE 40187-73)	6 min.
Washing (UNE 40331)	4 min.
Organic solvent cleaner (UNE 40099)	4 min.
Rubbing (UNE 40029)	
Dry	4 min.
Wet	4 min.
Flammability	
UTAC ST-18.502/1	A-1
FMVSS 302	O.K.
European Standard 95/28/CE	O.K.
BS 5852 Part 1 Ignition source 0 and 1	O.K.
BS 5852 Part 2 Ignition source 5	O.K.

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