

**10M TYPE METROPLUS SEAT SPECIFICATION**

File Ref	DOCS_CMR3-#310296-V1-Specification_-_10M_Type_Metroplus_Seat.DOCX			Last Edit Date	2020-07-07
Creation Date	2015-03-24	Author		Nokuthula Makiwane	Page 1 of 7
Doc No. & Version	#310296-v1	System Engineer	Recommended	Zaki Petersen	
Volume & Edition	Vol. 1, 1 <sup>st</sup> Addison	Maintenance Engineering Manager (acting)	Approver	Shaun Dirks	

**PRASA Rail  
Engineering Services**


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Inter Business / Departmental Interface Approvals of Procedure:

Department	Name	Signature	Date of Approval
1.			
2.			
3.			
4.			
5.			


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## 1. GENERAL

This specification is an indication of the minimum acceptable standard and is in no way a limitation of a possible alternative supply of seats, which will be subject to our technical team approval. This, however, must be demonstrated and tested to show superiority in all aspects over the standard mentioned here.


## 2. SCOPE

- 2.1 This specification covers the seat bottom and backrest and excludes the seat frame.
- 2.2 The seat contours and shape shall conform to ergonomic principles for passenger comfort and body support, having robust construction with resistance to vandalism and abuse.
- 2.3 Any mechanical fixing to secure the seat pan to the seat frame shall be visible only from underside of the seat.
- 2.4 Suppliers are to supply seats according to relevant standards (BS, SABS, ISO, etc.) which will employ ergonomic principles to support a normal human weight as well as withstand any “reasonable” vandalism.
- 2.5 Although seat bottoms and backrest are specified in isolation, complete units will be considered as possible alternative supply of seats, which will be subject to our technical team approval. This, however, must be demonstrated and tested to show superiority in all aspects over the standard mentioned here.
- 2.6 Each individual seat (with its components) shall at least support a load of 85 kg of a person seated, plus 85 kg of another person standing at the edge of the seat. Additionally, the MetroPlus seater shall at least support a load of 85 kg at the “apex” (in-between, at the top) of the seats.

## 3. METROPLUS SEAT

### 3.1 General

- 3.1.1 High back commuter seat with individual seat places, consisting of ergonomically styled individual seat shells in moulded polypropylene and steel frame structure in multiple-seater configuration.

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- 3.1.2 The seats shall be resilient (padded), and covered with a suitable vandal resistant cloth material.
- 3.1.3 The cloth material shall be resistant to cutting, tearing, burning and graffiti.
- 3.1.4 The cloth material shall be non-toxic and flame retardant, hardwearing, easy to clean and stain resistant.
- 3.1.5 The seats are to be manufactured from material which shall be:
- Flame retardant;
  - Produce no toxic smoke and fumes in the event of a fire;
  - Impact resistant;
  - Hardwearing;
  - Easy to clean;
  - Graffiti resistant.

## 3.2 Seat Dimensions


The overall dimensions of individual seats shall meet the following requirements:

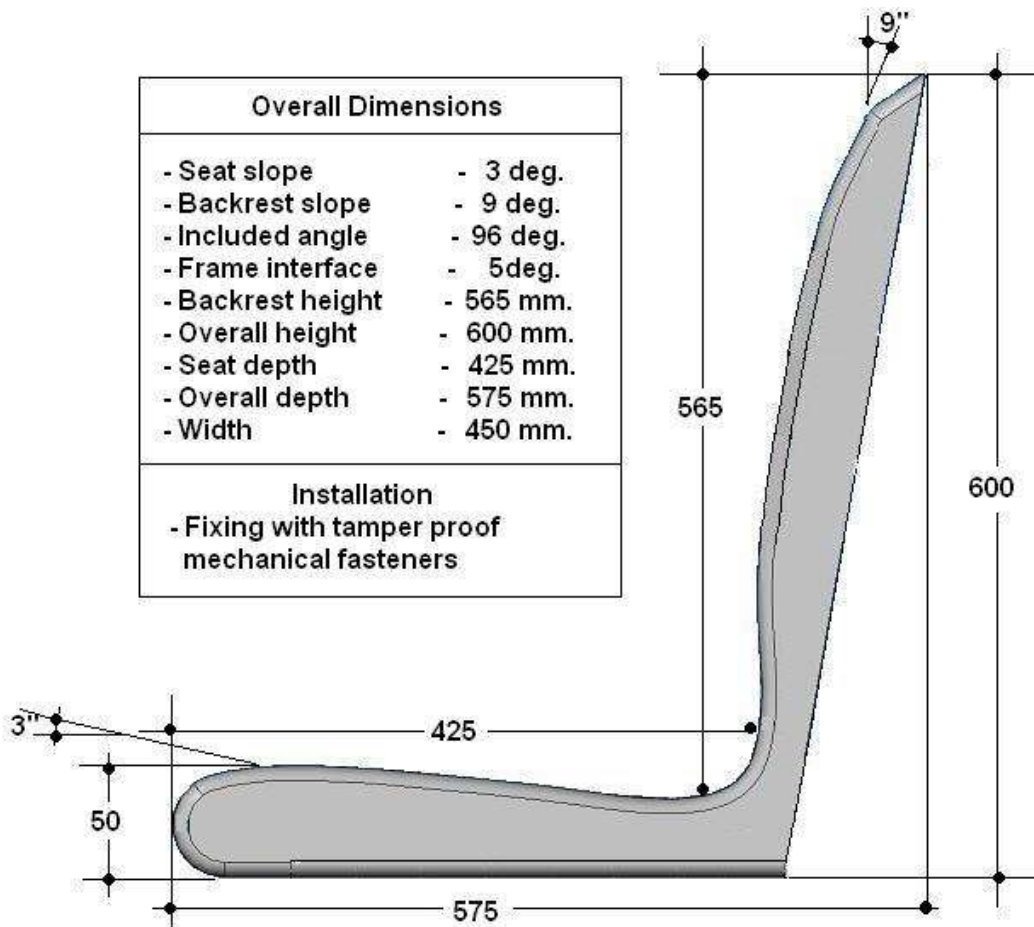
### 3.2.1 Seat Bottom

Depth	420 to 430 mm
Width	450 mm
Slope	3° (Degrees)
Indentation	15 to 40 mm
Front edge radius	50 mm

### 3.2.2 Seat Backrest

Height	565 to 600 mm
Width	450 mm
Indentation	30 mm
Inner radius	50 mm
Seat included angle	96° (Degrees)

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**Figure 1: High Back Overall Dimensions**

### 3.3 Seat Material Specification

The properties and characteristics of the seats shall conform minimally to the following:

- 3.3.1 Seat base and backrest shells shall be moulded plastic with high impact strength, scratch resistance (solid colour), chemical resistance and both seat backrests and seat bottoms to be embedded with trim fabric.
- 3.3.2 Seat shells shall conform to TREK Transport Polypropylene, ref. TT PP/531-7012, or equivalent, with the following as a standard:

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Colour reference	Basalt Grey (RAL 7012)
Hardness, Shore D	60 minimum when tested against ISO 868
Impact strength	20 kJ/m <sup>2</sup> minimum when tested against ISO 179
Flammability	BS5852, Part 2, source 5, UL94-V2
Chemical resistance	Resistance to aqueous solutions of salts, acids and alkalis (i.e. commercial solvents and paints) with 60hrs exposure to substance testing resulting in: <ul style="list-style-type: none"> <li>Swelling &lt;3%</li> <li>Weight loss &lt; 0,5</li> <li>Elongation at break not substantially altered</li> </ul>

3.3.3 Trim fabric shall be John Holdsworth wool moquette or equivalent with following properties:

Design reference	A668BM (charcoal graffiti)
Pile Composition	85% wool and 15% nylon
Strength	BS2576 <ul style="list-style-type: none"> <li>Warp + 400 N</li> <li>Weft + 700 N</li> </ul>
Abrasion resistance	BS5690 <ul style="list-style-type: none"> <li>Rubs ± 60 000</li> <li>Burst 16 N/m<sup>2</sup></li> </ul>
Flammability	BS5852 Part 1,2




3.3.4 The cut resistant barrier shall be steel mesh/silicone composite with at least the following:

Stainless steel	0.5 mm wire thickness minimum
Wire mesh spacing per apertures	4.0 mm maximum
Composite pad thickness	3.0 to 5.0 mm

#### 3.4 Passenger Comfort

3.4.1 The seat resilience shall have a deflection of 20 to 25 mm at an 85 kg load on seat pad and 10 to 20 mm at a 34 kg load on backrest.

3.4.2 The backrest profile shall be ergonomically formed with lumbar support for good body posture.

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### 3.5 Seat Shell Securing

The design of the seat shell securing system shall facilitate the easy removal and replacement of seating units (shells in particular) by maintenance personnel but it shall be virtually impossible for passengers to remove seats from the vehicle.

## 4. REVISION

Revision	Date	Changes	Page(s) affected	Reviewed by
1	2019/11/14	New document	NA	NA