

2


**RAIL COACH FACTORY, KAPURTHALA**

MD46111

Date: 21.09.2016

**Sub:** Specification no. MDTS-203 for Modified Coach Watering Inlet for Side Filling Arrangement.

Please find enclosed a copy of spec. no MDTS-203 Rev-05 for Modified Coach Watering Inlet for Side Filling Arrangement for LHB type and conventional type coaches.

  
(Suraj Prakash)  
Dy CME/D-11

Dy CPLE-III  
Dy CPLE-II

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<b>RAIL COACH FACTORY, KAPURTHALA</b>	<b>SCHEDULE OF TECHNICAL REQUIREMENTS FOR MODIFIED COACH WATERING INLET (CONNECTOR)</b>	<b>MDTS-203 REV.05 DATE - 16.09.2016 Page 1 of 5</b>
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Designation	Name	Signature	Date	Level
SSE/D/Fur-2	T.P.Singh		16.09.16	Prepared
Dy.CME/D-1	Suraj Prakash		16.09.16	Reviewed
CDE	A.K.Kathpal		16.09.16	Approved

Revision	Details of changes	Date
01	<ol style="list-style-type: none"> <li>As per CAMTECH letter No.CAMTECH.M.GWL.Coach Watering dated 03.3.2011, para 2.3 modified to add "or the raw material should be purchased from the original supplier as per para 2.1 and para 2.2 supported by authorised documents and test certificates.</li> <li>Para 2.7 added.</li> </ol>	11.5.2011
02	<ol style="list-style-type: none"> <li>Para 2.2 modified and requirement for equivalent material grade mentioned.</li> <li>Para 2.3 -- requirement of validity of MoU added</li> <li>Para No.2.7 deleted.</li> <li>Annexure 'A' deleted.</li> </ol>	28.01.2014
03	<ol style="list-style-type: none"> <li>Para 1.1 for drawing CAMTECH.M.Coach Watering-08-S modified to CAMTECH.M.Coach Watering-08-S(R).</li> <li>Page '6' for drawing of Modified Water Inlet Head revised to specify hole size of 6 mm for strainer.</li> </ol>	15.07.2014
04	<ol style="list-style-type: none"> <li>Para 1.1 modified as "Modified Water Inlet Head for Coaches shall dimensionally conform to the drawing as referred in Para 10.0."</li> <li>Para 10.0 added for referred drawings.</li> </ol>	16.08.2016
05	<ol style="list-style-type: none"> <li>Clause 09 for Warranty, corrected to "As per IRS conditions of contract".</li> <li>Clause 10 for referred drawing is modified.</li> <li>Equivalent material for strainer redefined in para 2.2</li> <li>Table-2 to modified for Ash content and density range.</li> </ol>	16.09.2016

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This schedule covers the technical requirements /provisions relating to material, manufacture and tests for Modified Coach watering Inlet Head (Connector).

**1.0 Drawings**

1.1 Modified Water Inlet Head for Coaches shall dimensionally conform to the drawing as referred in Para 10.0.

**2.0 Material**

2.1 The material used for the manufacture of Modified Water Inlet Head (connector) for Coaches shall be Thermoplastic Polyurethane TPU (Estaloc of M/s Lubrizol or modified Desmopan of M/s Bayer) conforming to the properties specified in this specification. Use of regenerated/reconstituted material is not permitted.

2.2 The Strainer for the Modified Water Inlet Head shall be as DURETHAN BKV60 manufactured by M/s Lanxess or any other equivalent material grade. The equivalent grade material should be 60% Glass reinforced (minimum) Nylon 6 with parameters mentioned in Table-2. The tenderer should submit the details of the equivalent material grade viz the OEM, grade, datasheet and test certificates from independent lab conforming to the above properties. Use of regenerated/reconstituted material is not permitted.

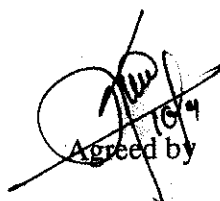
2.3 The supplier of modified Water Inlet Head for coaches shall either have a valid tie-up in the form of a written Memorandum of Understanding (MOU) with original manufacturers of raw materials as per Para 2.1 & 2.2 above and covering supplies and technical support or the raw material should be purchased from the original supplier as per Para 2.1 & 2.2 supported by authorized documents and test certificates. The MOU with OEM should have atleast one year of validity left on the date of opening of tender.

2.4 The metallic insert of Modified Water Inlet Head shall be made of stainless steel SS:304. For this, a material test certificate from an approved lab shall be submitted at the time of inspection.

2.5 The Rubber gasket used in the Modified Water Inlet Head shall be EPDM based confirming to the properties specified in this schedule.

2.6 The Modified Water Inlet Head shall be supplied in Red colour, or any other colour mutually agreed to between purchaser and supplier.

  
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**3.0 Workmanship and Finish**

3.1 The surface of the Modified Water Inlet Head shall be smooth, free from molding defects such as bubbles, surface streaks, splash marks, voids, surface sinking, crazing and blistering of the surface, cracks etc. All edges shall be neatly finished and free from flash.

**4.0 Properties**

The raw materials used in the manufacture of modified water inlet head (connector) shall conform to the requirement as given below:

<b>Table 1 Connector Properties to be measured on prepared test specimen</b>				
SNo.	Property	Value	Unit	Test Method
1.	Hardness	72 ± 5	Shore D	ISO – 868
2.	Tensile Stress at Break, Min	70	Mpa	ISO – 527
3.	Water absorption (72 hrs at 100 C) Change in weight, max	0.5	%	ISO – 62
4.	Flexural Modulus, Min	2500	Mpa	ISO – 178
5.	Izod Impact Strength, Notched, Min	25	KJ/m <sup>2</sup>	ISO – 180
6.	Density, Max	1.45	g/cc	ISO – 1183
7.	Ash Content, Max	33	%	ISO 345-1,1

<b>Table 2 Strainer Properties to be measured on prepared test specimen</b>				
S.No.	Property	Value	Unit	Test Method
1.	Ball Indentation Hardness, Min	125	N/mm <sup>2</sup>	ISO – 2039
2.	Tensile Stress at Break, Min	150	MPa	ISO – 527
3.	Flexural Modulus, Min	11000	MPa	ISO – 178
4.	Water absorption (72 hrs at 100 C) Change in weight, max	5.0	%	ISO-62
5.	Izod Impact Strength, Min	15	KJ/m <sup>2</sup>	ISO – 180
6.	Density, Max	1.6 to 1.7	g/cc	ISO – 1183
7.	Ash Content, Min	60	%	ISO 345-1,1

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<b>Table 3 Gasket Properties to be measured on prepared test specimen</b>				
S.No.	Property	Value	Unit	Test Method
1.	Hardness	60 ± 5	Shore A	ASTM D 2240
2.	Tensile Strength, Min	12.0	Mpa	ASTM D 412
3.	Elongation at Break, Min	300	%	ASTM D 412
4.	Compression Set (for 24 hrs at 100 C), Max	25	%	ASTM D 395
5.	Water Absorption (for 7 days at 70 °C), Change in Vol, Max	5	%	ASTM D 570
6.	Ash Content, Max	5.0	%	ASTM D 5360
7.	Specific Gravity, Max	1.25	--	ASTM D 792

**5.0 Acceptance Tests**

5.1 The Acceptance Test shall consist of the following:

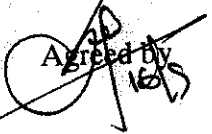
- (i) Visual examination
- (ii) Dimensional Check
- (iii) Specific Gravity
- (iv) Ash Content
- (v) Water Absorption

5.2 The supplier shall also furnish certificates from the primary manufacturer of raw material as referred every batch number of raw material supplied.

5.3 The inspection lot shall consist of 1000 nos. of modified water inlet head or part thereof.

5.4 In the event of rejection of the lot, all the material constituting the lot shall be made unusable in the presence of the Inspecting Authority.

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**6.0 Marking**

6.1 Each Modified Water Inlet Head shall be suitably marked with manufacturer's name / initial /trade mark, the month and year of manufacture and drawing no./part no.

**7.0 Packing**

The Modified Water Inlet Head shall be securely packed individually in plastic bag repacked in small carton box and shall be finally packed in a wooden / cardboard carton strong enough to resist damage in transit / storage.

**8.0 Storage**

8.1 The modified water inlet head shall be stored in a cool and dry place in the original packing.

8.2 The modified water inlet head shall be stocked and arranged in such order as to ensure First in – First out.


9.0 **Warranty:** As per IRS conditions of contract

**10.0 Referred Drawings:**

Drawing no. CAMTECH.M.Coach Watering-08-S (with latest Alteration), for Coaches where side filling connection is fitted in the middle of the coach.

Drawing no. MI006153 (with latest Alteration), Coaches where side filling connection is fitted at the Coach Ends.

  
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