

**RAIL COACH FACTORY, KAPURTHALA**

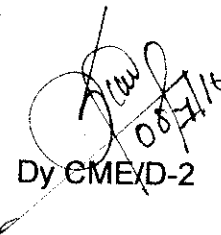
MD22181

Date: 08.07.2016

**Sub:** Schedule of Technical Requirements of Flush Valve for IR Passenger coaches to MDTS-46291 Rev-00.

Please find enclosed a copy of Schedule of Technical Requirements of Flush Valve for IR Passenger coaches to MDTS-46291 Rev-00.

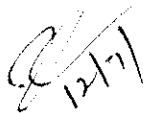
**Encl. MDTS-46291 Rev-00.**

  
Dy CME/D-2

Dy CPLE-III  
Dy CPLE-II

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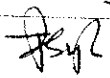

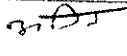


SPECIFICATION No.  
MDTS 46291 Rev-00

Schedule of Technical Requirements for Flush  
Valve for IR passenger coaches

Dated-23.05.2016  
PAGE 1 OF 7/6

6

Designation	Name	Signature	Date	Level
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SECTION - A


1.0 SCOPE

This section covers the technical requirements/provisions relating to material, manufacture, tests, sampling and method of tests of Para Flush Valve for BG Coaches.

2.0 REQUIREMENTS

- 2.1 The material used in the manufacture of Para Flush Valve body and its spindle shall be 50% glass-fiber reinforced, **Polyarylamide (PARA)** compound with properties mentioned in Table-I.
- 2.2 The material used in the manufacture color, knob and back nut of Valve shall be *PA6, injection molding grade, 60 % glass fibre reinforced compound*. DURETHAN BKV60 manufactured by M/s Lanxess or any other equivalent primary manufacturer of similar material grade conforming to the requirement mentioned in Table-II for the valve spindle/stem.
- 2.3 Use of regenerated/ reconstituted raw material is not permitted.
- 2.4 The PARA compound for this item should be sourced from any of the following grades of Primary Manufacturers:
- Ixef 1022 from M/s Solvay, USA
  - RENY 1022H of M/s Mitsubishi Engg. Plastic Corporation, Japan
  - RTP 209K from M/s RTP Company, Minnesota, USA
- 2.5 The manufacturer shall have a valid tie-up in the form of a written Memorandum of Understanding (MOU)/contract with Primary Manufacturer of "*50% glass-fiber reinforced, Polyarylamide compound*" & "*PA6, injection molding grade, 60 % glass fibre reinforced compound*" as mentioned in para 2.2 above for manufacture of Para Flush Valve, covering raw material supplies and technical support including quality control. Any certificate/MoU with any dealer or distributor is not valid. Also, the MoU with the manufacturer should have at least one year validity on the date of opening of the tender.
- 2.6 The Para Flush Valve shall be supplied in natural colour of compound and use of any external coloring agents is not permitted.
- 2.7 The Gasket shall be manufactured based on EPDM Rubber Compound as per requirement of Table -III.

  
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<b>SPECIFICATION No.</b> MDTs 46291 Rev-00	<b>Schedule of Technical Requirements for Flush Valve for IR passenger coaches</b>	<b>Dated-23.05.2016</b> <b>PAGE 3 OF 7</b>
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2.8 The Metallic Insert (Threaded) shall be made from Stainless Steel SS 304.

2.9 The material for the metal spring shall be as per IS 4454, Pt-4, 2001, Grade- 1.

2.10 The manufacturer shall produce documentary evidence to the inspection authority with respect to procurement of specified raw material from primary supplier and shall keep a record of its utilization against supplies made to Railways.

**3.0 DRAWING, DIMENSIONS AND TOLERANCES**

The Para Flush Valve shall be manufactured as per major dimensions and requirements mentioned in RCF drawing no. CC63805 with latest alteration. Based upon this RCF drawing, the firm shall submit their own drawings and bill of material of the subject item for approval, before undertaking prototype manufacture.

**4.0 CONSTRUCTION, WORKMANSHIP AND FINISH**

The surface of the Para Flush Valve shall be smooth, free from moulding defects such as bubbles, surface streaks, splash marks, voids, surface sinking, crazing, cracks blistering of the surface. All edges shall be neatly finished and free from flash.

**5.0 PROPERTIES**

The raw material used for manufacture of Para Flush Valve shall conform to the requirement given in the following tables:

**Table – I.**  
**Properties for Raw Material (PARA)**

S.No.	Type of Test	Guiding Specification	Acceptance Value	Sample Type
1	Density	ISO 1183	1.60 – 1.68	Finished Part
2	Water Absorption (@23 °C for 24 Hrs)	ISO 62	0.4% (Max)	Finished Part
3.	Tensile Stress (Break)	ISO 527	200 MPa (Min)	Prepared Test Specimen dry as molded (dam) condition
4	Flexural Strength	ISO 178	330 MPa (Min)	Prepared Test Specimen dry as molded (d a m) condition
5	Flexural Modulus	ISO 178	15000 MPa (Min)	Prepared Test Specimen dry as molded (d a m) condition
6	Izod Impact (un notched)	ASTM D 256	600 J/m (Min)	Prepared Test Specimen dry as molded (d a m) condition
7	Ash Content	ISO 345	49 % (Min)	Finished Part

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**Table- II**  
**Properties for PA-6, 60% Glass-filled**

S.No.	Property	Unit	Test Method	Parameters
1	Ball Indentation Hardness, Min	N/mm <sup>2</sup>	ISO-2039	125
2	Tensile Stress at Break, Min	Mpa	ISO-527	150
3	Flexural Modulus, Min	Mpa	ISO 178	11000
4	Water absorption (72 hrs at 100C). Change in Weight, max	%	ISO-62	5.0
5	Izod impact strength, Min	KJ/m <sup>2</sup>	ISO-180	15
6	Density	g/cc	ISO-1183	1.70 – 1.80
7	Ash Content	%	ISO-354	59 – 63

**Table- III**  
**Properties for Raw material (EPDM) FOR GASKET**

S.No.	Property	Unit	Test Method	Parameters
1.	Ash Content, Min.	%	ASTM D 5360	3 -5%
2.	Hardness	Shore A	ASTM D 2240	80±5
3.	Tensile Stress at Break, Min	MPa	ASTM D 412	2
4.	Elongation at break , Min.	%	ASTM D 412	300
5.	Compression Set (for 24 Hrs at 100 °C) Max	%	ASTM D 395	25
6.	Density, Min.	gms/cc	ASTM D 792	1.20
7.	Water Absorption (7 days at 70 deg C). Change in Vol. Max.	%	ASTM D 570	5

Unless otherwise specified, all tests mentioned above shall be carried out at a temperature of 27±2 °C and relative humidity 50 ± 5%.

  
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**6.0 SAMPLING CRITERIA FOR CONFORMITY**

The sampling plan for acceptance tests for Para Flush Valve shall be as under:


- 6.1 The inspection lot shall consist of 2000 nos or part thereof.
- 6.2 The inspecting authority should carry out test and details mentioned in the approved drawing of the firm.
- 6.3 The following test (as applicable from each type of raw material used for manufacturing of the valve) shall be carried for Acceptance Test as per the Table-IV below. Test specimens (as applicable) shall be provided by the supplier at the time of inspection as required.

**Table – IV**

S.No.	Test Details	Nos. of Samples	Sample Type
1	Visual Examination	5% (Subject to 10 Nos. minimum)	Finished Product
2	Dimensional Check	5% (Subject to 10 Nos. minimum)	Finished Product
3	Specific Gravity	1% (Subject to 3 Nos. minimum)	Finished Product
4	Ash Content	1% (Subject to 3 Nos. minimum)	Finished Product
5	Water Absorption	1% (Subject to 3 Nos. minimum)	Finished Product
6	Flexural Modulus	1% (Subject to 3 Nos. minimum)	Prepared test piece as per standard
7	Tensile Stress (at Break)	1% (Subject to 3 Nos. minimum)	Prepared test piece as per standard
8	Hardness	1% (Subject to 3 Nos. minimum)	Prepared test piece as per standard

- 6.4 Sample selected for Acceptance Test shall conform to the requirements as laid down. Should any one of the test samples fail to meet the requirements of Acceptance Test, double the number of samples from the same lot shall be drawn for re-testing. Should any of these samples fail, the entire lot shall be rejected.
- 6.5 In case of non-compliance in regard to dimensional check, the manufacturer may be given one chance to segregate the lot for dimensional conformity.
- 6.6 In the event of rejection of the lot, all the Para Flush Valve constituting the lot shall be made un-usable in the presence of the Inspecting Authority.

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SPECIFICATION No. MDTS 46291 Rev-00	Schedule of Technical Requirements for Flush Valve for IR passenger coaches	Dated-23.05.2016 PAGE 7 OF 7
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## 7.0 MARKING

Each Para Flush Valve shall be suitably marked as indicated the name of manufacturer, , year & month of manufacture and purchase order details.

## 8.0 WARRANTY

The Para Flush Valve supplied against an order shall bear a warranty of the contractor against defective material/workmanship and performance for a minimum period of 24 months from the date of supply or 18 months from the date of fitment whichever is earlier. In case, any Connector cracks/breaks within 18 months of service, it shall be replaced by new one free of cost within one month of receipt of information.

  
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