

### MODERN COACH FACTORY RAEBARELI ELECTRICAL DESIGN

Specification	Specification of EPDM ( Ethylene Propylene Diene Monomer ) For Cable and Conduit Transit Entry Sealing And Protection System For LHB AC and Non AC Coaches	MEDTS-0005, Rev.- 0 Page-01 of 03 Date- 12.12.2018
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Name	Designation	Signature	Date	Level
Sh. R.B. Yadav	SSE/Elect./Design	<i>[Signature]</i>	12/12/18	Prepared
Sh. Madan	Dy.CEE/Design	<i>[Signature]</i>	12/12/18	Reviewed
Sh. R.S.Bhidonia	CEDE	<i>[Signature]</i>	14/12/18	Approved

#### Specification for Cable and Conduit Transit Entry Sealing and Protection System for LHB AC and Non AC Coaches.

#### Forward

This specification covers the general and technical requirements for the modular based cable and conduit transit entry sealing and protection system for railway coaches to provide an appropriate arrangement to seal the pipes, cables and entry holes to avoid entry of rodents, dust besides propagation of vibration and fire through cables.

The modular systems are required to meet the following objectives.

- Fire protection.
- Ingress protection from dust, water and humidity.
- Protection of cutting and damage of cables and pipes due to vibrations.
- Rodent protection.
- Systematic distribution of cables and pipes.

S.No	PROPERTIES	REQUIREMENT	TEST METHOD
1.	Water, Dust & Dirt Protection	(i) Cable /conduit Transit/ Retention/ Protection & sealing System for cabinet / Cables Transit at under frames assembled with EPDM Modules. Whole arrangement of sealing system should comply with IP55.  (ii) Cable & conduit sealing System assembled with EPDM rubber Modules which is used at Entry or Exit of Cable/Pipe from Coach Wall at roof. Whole arrangement of sealing system should comply with IP67.	IEC:60529
2.	Fire Flammability resistance	UL (V-0)	UL 94
3.	Fire protection	<ul style="list-style-type: none"> <li>• Single side installation only.</li> <li>• No back to back installation</li> <li>• The Sealing system shall comply with protection</li> </ul>	UL 1479 or EN 45545-3 or IS:12458-88

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		more than IP55	
4.	Halogen Free	Total Halogen Content shall not > 1500 ppm	EN/IEC 61249-2-21
5.	Low Smoke	F-1 Class	NF F 16-101 /NF F 16-102
6.	Toxicity Index	Toxic Index, Shall not > 15 ppm.	NF X70-100
7.	Limiting Oxygen Index test	Minimum 32%	ASTM D 2863
8.	Vibration Protection	Category 1, Class A	IEC 61373
9.	UV Ageing Test	72 hours at 23 °C	ISO 815-1
		1000 hours	ISO 4892-2
10	Di-Electric Strength (Min)	14 KV/mm	IEC 60243-1/ASTM D 149
11	Heat radiation classification	M2 class (minimum)	NF-P 92-512
12	Colour	Blue and Black or Any Colour	Visual inspection
13	Temperature of Decomposition	>+300 °C	OEM Certification
14	Normal operating Temperature	- 40°C to +80°C	OEM Certification

**Table-1: Cable and Conduit Transit Entry Sealing and Protection System for LHB AC Coaches**

ITEM NO	DESCRIPTION	SPEC. FOR REFERENCE	QPC
1	<p>Supply &amp; installation of EPDM modular based cable/Pipe sealing system for roof mounted AC package unit suitable for power and control cables in accordance with specification no. EDTS 253 Rev. J / EDTS 252 Rev. J for the following cable harnesses:</p> <p>A) Harness No 31, 31A,31B,31,C-(RMPU unit I) B) Harness no.32, 32A,32B,32,C-(RMPU Unit II)</p> <p>The system shall replace the existing arrangement of end fittings comprising of the following;</p> <ul style="list-style-type: none"> <li>Connecting fitting NVAV-P299G, PG29 of M/s PMA or equivalent as approved by RDSO -04 Nos.</li> <li>Elbow screw joint fitting NVAV-P299G, PG29 of M/s PMA or equivalent as approved by RDSO -04 Nos.</li> <li>Connection fitting (BFIO fitting) NVAV-P299G, PG29 of M/s PMA or equivalent as approved by RDSO -04 nos.</li> </ul>	RDSO/2008/EL/SPE C/0067 Rev-2	1 coach set comprising <b>8 nos.</b> For 2 RMPUs.

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	<ul style="list-style-type: none"> <li>Nut-DIN 46320, PG29 or equivalent as approved by RDSO -08 nos.</li> </ul>		
2	Supply & installation of EPDM modular based cable/Pipe sealing system for <b>switch board cabinet. The system shall replace the existing arrangement of end fittings.</b>		01 set
3	Supply & installation of EPDM modular based cable/Pipe sealing system <b>for PACIL light.</b> Suitable for 3 Nos. 1.5 sq mm e- beam cable to RDSO specification no. ELRS/SPEC/ELC/019 Rev.4.		02 NOS.

**Table-2: Cable and Conduit Transit Entry Sealing and Protection System for LHB Non AC Coaches**

ITEM NO	DESCRIPTION	SPEC. FOR REFERENCE	QPC
1	Supply & installation of EPDM modular based cable/conduit sealing system for On-Board panel of switch board cabinet suitable for cables emanating from Under frame to On-Board Panel.	RDSO/2008/EL/SPEC/00 67 Rev-2	01 set
2	Supply & installation of EPDM modular based cable/conduit sealing system for PACIL light. Suitable for 3 Nos. 1.5 sq mm e-beam cable to RDSO specification no. ELRS/SPEC/ELC/019 Rev.4		02 nos.

**Note:** This system is being provided for the first time in LHB coaches. Therefore firm shall associate during commissioning of initial supplies to ensure precise fitment in place to meet the desired results.

  
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