

**TECHNICAL SPECIFICATION OF WIND SCREEN ASSLY. FOR WAG-9,
3-PHASE ELECTRIC LOCOMOTIVE OF INDIAN RAILWAYS.**

1. SCOPE :-

This technical specification covers the minimum requirement of designing, manufacturing, testing and supply conditions of Wind Screen Assly, and its installation for WAG-9, 3-phase electric locomotive of Indian Railways.

2. SCOPE OF SUPPLY:

4 nos. i.e. 2L.H & 2R.H wind screen assly. as a complete unit per loco as per drg. No. 1209-08.130-263 ① are to be supplied for WAG-9 locos.

② ③ ④ ALT-①②③

3. GENERAL:

3.1 This wind screen assly. comprises of front looking laminated glass, elastomeric extruded sealing rubber of black E.P.D.M, having receptacle grooves to hold front looking glass and cab outer paneling sheet as well. Aluminium alloy frame suitably designed to provide extended performance under extreme conditions. This screen assly. is fitted in the front of both driving cabins of loco.

3.2 Sealing adhesive is applied to make the assly. leakproof.

4. TECHNICAL REQUIREMENT:

4.1 Front looking glass shall be laminated clear vision safety glass having thickness 10.76 mm ± 0.3mm conforming to IS:2553(I). Glass shall be procured from sources licenced by BIS, with prior approval of CLW.

4.2 Surface of the glass shall be smooth and clear natural colour.

4.3 Reflection thro' the glass shall be clear. No foreshorten, concave or convexnal image shall be formed to obstruct driver's vision.

4.4 Elastomeric extruded sealing rubber profile shall be of black E.P.D.M. Conforming to ASTM F22-94/ISI equivalent with chemical and physical properties and dimensional geometry to be maintained as per drg. No. 1209-08.130-263. To be decided during prototy PE Sample.

⑤ FOR TECH. SPECN OF SPDM

4.5 Extruded sealing rubber shall be capable to hold the glass and paneling sheet within its tolerance and shall not give away the shape when ageing takes place.

4.6 Glass, elastomeric sealing rubber, adhesive and Aluminium framing shall be capable to withstand ambient temp., heavy rainfall and 100% relative humidity.

4.7 No fragment should come out when glass hits and broken by stone or other foreign material.

4.8 Assly. to be free from rattles, distortion and blemishes which may impair its durability or performance.

APPROVED BY	BY	BY	BY
<i>M. Mani</i>	<i>Cam-10</i>	<i>Suraj</i>	<i>SME</i>
APPROVED BY	BY	BY	BY
DI. CME/CON/DED			
SPECIFICATION FOR: CHITTARANJAN LOCOMOTIVE			
WIND SCREEN ASSLY: WORKS, CHITTARANJAN (W.B.)			
FOR WAG-9, 3-PHASE			
ELECTRIC LOCO.			
NO: CLW/MS/3/027 ①②③			
DATE: 21-5-97 ④⑤⑥			

5. CLIMATIC AND ENVIRONMENTAL CONDITIONS:

- 5.1 Ambient Temperature : 0°C to 60°C
 5.2 Maximum Temperature : 80°C
 5.3 Relative Humidity : 100% saturation during rainy season.
 5.4 Rain Fall : Very heavy in the continent.
 5.5 Coastal Area : High humidity, salt laden atmosphere.
 5.6 Vibration : Shock up to 50 m/S².

6. SUPPLY OF DOCUMENTS:

- 6.1 Material certificate indicating the specification.
 6.2 All test certificate to be submitted as mentioned in Para 9 along with the test procedure.

6.3 Any testing and approval by the purchaser of the prototype sample shall be no way relieve the supplier of the responsibility under the terms of contract for the product supplied.

7. STANDARDS:

As mentioned in para 4 and 9.

8. MANUFACTURE:

- 8.1 Laminated glass shall be manufactured according to IS: 2553 (V) and satisfy its chemical and physical properties therein.
- 8.2 Grooves provided in the elastomeric extruded sealing rubber, shall be within the manufacturing tolerance, and key to be provided or other suitable arrangement to be made to hold the glass and panelling sheet.
- 8.3 Lamination of glass shall be transparent and adhesive should be perfect so that it can withstand max. temperature and cold with expansion/contraction.
- 8.4 The corner of glass shall be radiused and the edges of the glass to be ground properly ②
 edges. ②
 Length ~~885~~ 886 mm \pm 0.5 and width ~~712~~ 712 mm \pm 0.5 shall be maintained as per the drg.
- 8.5 Framing to be manufactured from aluminium alloy, conforming to IS: 2001.
- 8.6 Frame finish to be powder coated with *pebble grey* colour.
- 8.7 In the event of glass breakage the unit must be capable of being re-glazed without removing the frame from loco body.

PREPARED BY	APPROVED BY	SPECIFICATION FOR: CHITTARANJAN LOCOMOTIVE
BY <i>[Signature]</i>	BY <i>[Signature]</i>	WIND SCREEN ASSLY WORKS, CHITTARANJAN (W.B)
BY <i>[Signature]</i>	BY <i>[Signature]</i>	FOR WAG-9, 3-PHASE
BY <i>[Signature]</i>	BY <i>[Signature]</i>	ELECTRIC LOCO.
BY <i>[Signature]</i>	BY <i>[Signature]</i>	NO: CLW/MS/3/027 ① ② ③
BY <i>[Signature]</i>	BY <i>[Signature]</i>	DATE: 21-5-97 ④

INSPECTION AND TESTING:

Nominated representative of purchaser will carry out the inspection of prototype sample. All the necessary tests conducted during inspection shall be arranged and borne by the supplier.

9.2 Laminated glass shall be tested according to IS:2553.(L)

9.3 Reflection test to be conducted as per IS: 2553.

9.4 Ageing test for elastomeric extruded sealing rubber i.e. Accelerated oven ageing test to be conducted according to ASTM D573.

9.5 Flammability test to be done

9.6 Adhesive used shall be of high quality and guarantee certificate to be submitted to the purchaser.

① 9.7 **SEE BELOW OF THIS PAGE.**
QUALITY ASSURANCE:

As per ISO 9000.

LABELING/MARKING:

Product shall be marked with the following particulars:-

- i) Name of the product.
- ii) Month and Year of Manufacture.
- iii) Name of the manufacturer, Trade Mark, Code and Batch No.

12. GUARANTEE:

12.1 All aspects of design, workmanship and material will be covered by the guarantee of satisfactory performances of the product from the date of installation at least for 10 years.

12.2 Any defects which occur resulting from poor workmanship or design must be rectified by the supplier at his cost during warranty period.

13. PACKAGING AND DELIVERY:

13.1 Protective packaging to be done which is suitable for transport and storage under climatic and environmental conditions mentioned in para 5 and which will prevent any damage to the material during handling, transit and storage.

13.2 For other detail refer bid document of tender specification.

13.3 **TENDERER SHOULD OFFER COMMENTS AGAINST EACH CLAUSE OF THE SPECIFICATION.**

① 9.7① **PRIOR TO PROTOTYPE INSPECTION CLW'S REPRESENTATIVE WILL BE DEPUTED TO SEAL THE SAMPLE PIECE OF THE MATERIAL SPECIFIED FOR TEST IN THE GOVT. APPROVED RDSO APPROVED TEST LAB. THE TEST REPORT SHOULD BE PRODUCED AT THE TIME OF PROTOTYPE INSPECTION.**

①② **STANDARD FASTNERS OF M/S. TVS/M/S. LPS AND M/S UNBREAKER M/S KUNDAN ONLY SHALL BE USED IN THE Assly.**

PREP'D	CHKD	REVI-	APPROVED BY	SPECIFICATION FOR: CHITTARANJAN LOCOMOTIVE
BY	BY	BY		WIND SCREEN ASSLY: WORKS, CHITTARANJAN (W.B)
				FOR WAG-9, 3-PHASE
				ELECTRIC LOCO.
				IND: CLW/MS/3/027 ① ② ③
				DATE: 21-5-97 ④

BY: *[Signature]* / *[Signature]*
SME / D&D
DY. COME/LOM/D&D

⑤

4.4. Sealing rubber shall be of black EPDM with following technical specifications -

1. Tensile strength - 10 Newton/mm² (minimum)
2. Hardness Shore A - 65 ± 5
3. Heat Aging - 70 Hrs. @ 100° C the following are allowable changes.
 - a) Reduction of Elongation 35% max.
 - b) Reduction of tensile strength 35% max.
 - c) Difference in hardness 10° IRHD.
4. Rubber contents - 25% (Minimum)
5. Ozone Resistance - 100 Hrs' at 38°C
50 PPHM concentration 30% elongation.
No visible cracks 12% & 10% magnification.
6. Compression set - 22 Hrs. at 70°C with 25% compression
40% max.
7. Manufacturing Process (Curing) - Microwave heating required for uniform Curing.

25.3.08 JEH/DRG. PEPD BY	M. S. S. S. 25.3.08 SME-D CHKD BY	A. 25.3.08 DY. CEED-1 APPV BY	<u>SPECIFICATION FOR</u> <u>WIND SCREEN ASSLY</u> <u>3PH. ELECTRIC</u> <u>LOCOMOTIVE</u> <u>WAG-9</u>	Chittaranjan Locomotive Works, Chittaranjan. Dist: Burdwan, West Bengal PIN-713331, No. CLW/MS/ CLW/MS/3/27 ALT. 5
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CHITTARANJAN LOCOMOTIVE WORKS - C - D & D

ALTERATION RECORD SHEET

ALT. NO.	DATE	DESCRIPTION	REASON	INITIAL & DATE
①	18-03-02	PARA 9.7 OF PAGE NO.- 3 ADDED.	AS DECIDED BY COMPITENT AUTHORITY VIDE LETTER NO. - C-D & D/707/111. Dt. - 18-02-02.	<i>A. Meem</i>
②	3-09-02	DRG. SUPERSEDED NEW NO.-1209-08.130-263 ALOTTED ② IN PARA 4.4 ASTM RELEVANT ADDED.	DETAIL DIMENSIONS NOT INDICATED IN OEM'S DRG.	<i>A. Meem</i> 3/9
3	1-11-02	③ GLASS SIZE CHANGED 1209-08-130-263 TO BE FOLLOWED AS PER ALT. ①	WIDTH & THICKNESS OF THE WIND SCREEN ASSLY. CHANGED. FOR PROPER MATCHING OF WIND SCREEN & FRONT PLATE OF CAB NO. DOME/ELA/43/3 Phase Dated: 10-10-02	<i>A. Meem</i> 2/11
④	27.11.03	④ ALT NO. ④ IS ADDED AGAINST DRG. NO. 1209-08.130, 263 IN SHEET NO. 1. ⑤ ALT. NO. 4 AGAINST SPECN. IN SHEET NO. 1, 2 & 3 IS ADDED.	TO UPDATE THE SPECN.	<i>HL</i>
⑤	25-3-09	TECH. SPECN. OF EPDM RUBBER AT PAGE. 4 ADDED	FOR DETAIL TECH. SPECN OF SEALING RUBBER (EPDM) AS APPY. BY CEE / LOCO	<i>A. Meem</i> 15.09
⑥	15.01.11	In SHEET-1, PARA 4.1 & Alt. no. OF Drg. No. 1209-08.130-263 altered.	FOR easy availability of material.	<i>A. Meem</i> 15/1/11
PREP. BY <i>Shalini</i> 19/10/2	CHECKED BY <i>A. Meem</i> 19/10/2	CLW. SPECN. NO. CLW/MS/3/027 SPECN. FOR WIND SCREEN ASSLY FOR WAGS 3-PHASE ELECTRIC LOCO.	REVIEWED <i>R. S. Meem</i> 19/10/10 SME / D&D	APPROVED <i>A. Meem</i> DY. CEE / CMM / J-1