

CARRIAGE DIRECTORATE

No. MC/WA/GenI

Date: 21.01.2021

Sub: Draft corrigendum No.2 to RDSO specification No. IRS R-19/93 Part-II (Rev.4) with corrigendum No.1 of August 2015.

Please find enclosed herewith a copy of draft corrigendum No.2 to RDSO specification No. IRS R-19/93 Part-II (Rev.4) with corrigendum No.1 of August 2015 for "Indian Railway Standard specification for Forged Steel wheels for Carriages, Wagons and EMU stock.

The above draft corrigendum No.2 has also been uploaded on RDSO website and can be browsed at following address:

<http://www.rdsso.indianrailways.gov.in> → Directorate → Coaching → Carriage → Specification → Draft Spec./STR for comments.

It is requested to furnish your valuable comments on draft corrigendum No.2 to RDSO specification No. IRS R-19/93 Part-II (Rev.4) with corrigendum No.1 of August 2015, uploaded on RDSO website at following address latest by 20.02.2021.

1. By Post: Executive Director (Standards) Carriage, Carriage Directorate, RDSO, Manak Nagar, Lucknow (U.P.) – 226 011
2. By e-mail: edcar.rdsso.railnet.gov.in, dirvdg1@rdsso.railnet.gov.in,
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DA: As above (Through e-mail)


21-1-2021
(Shobhit Pratap Singh)
Joint Director (VDG)/Carriage

Government of India
Ministry of Railways
Railway Board
Corrigendum No. 2 of January 2021
to
Indian Railway
Standard specification
for
Solid forged steel wheels for
Carriages, Wagons and EMU stock
Serial No. IRS R-19/93 Part II (Rev.4)
(Applicable to all gauges)

PART-I: The following modifications are applicable for wheels of FIAT bogie of LHB coaches only. However, other parameters of this specification with corrigendum No.1 of August 2015 shall remain unchanged.

1. CHEMICAL COMPOSITION - Ladle analysis (percentage):

Clause 2.2.1.1: Replace the C, Mo, P, S and V content by the following:

Element	Percentage composition
C	0.56 max.
Mo	0.08 max.
P	0.020 max
S	0.015 max.
V	0.05 to 0.15

2. Replace Clause 2.1 (2) by the following:

2.1 (2): The hydrogen content in liquid steel shall not exceed 2.0 ppm.
The method of determination and equipment used may be as agreed to between manufacturer and purchaser.

3. Add a new para as clause 2.1 (4):

The Oxygen content in the liquid steel shall not exceed 15 ppm.

4. Replace clause 4.3.2 by the following:

4.3.2 Fatigue test:

“Fatigue test shall be carried out in accordance with clause 3.2.4 of EN 13262:2004+A2:2011.

5. Add a new para as “clause 4.4 SHOT PEENING”

4.4 Shot peening:

Shot peening of wheels shall be carried out in accordance with the requirements of clause 7.0 of AAR M-107/M-208.

6. Replace clause 5.2 by the following:

5.2 For LHB wheels to drawing No. MI006615 alt. ‘a’ or latest, location of stamping shall be as per RDSO drawing No. Sketch-92114 alt. ‘8’ or latest.

7. Clause 8.0 A: Mechanical Properties of rim:

i) Replace the Mechanical properties of rim in TABLE-2 by the following:

Tensile strength	: 870 – 980 N/mm ²
Yield strength	: \geq 540 N/mm ²
Hardness range	: 275 to 335 BHN
Min. Elongation (%)	: \geq 13

ii) Add the following in table-2:

Minimum impact strength (KV) in joules at -20°C
Average value : 10
Individual value : 5

iii) Add the following in clause 8.0 B i.e Mechanical properties of web:

“Reduction of tensile strength in web in comparison to tensile strength of rim on same wheel should be more than or equal to 120 N/mm².”

8. Read drawing No. “MI006615 (rough turned wheel) with latest alteration” in place of “LW02103/LW02103 (rough turned wheel)” in the following clauses of the specification.
- i) First para of Part-I of corrigendum No.1
 - ii) S.No. 8 (Clause 6.8.1) of corrigendum No.1

PART-II: The following modifications are applicable for all type of wheels including LHB wheels.

9. CHEMICAL COMPOSITION - Product analysis

Clause 2.2.2.1: Replace Copper & Vanadium: +0.02/-0.00 by Copper, Molybdenum & Vanadium: +0.02/-0.00

10. Replace clause 5.1 by the following:

- 5.1** Marking/Stamping/Branding shall be as per RDSO drawing No. Sketch-92114 alt. ‘8’ or latest. Following particulars shall be hot stamped as per RDSO drawing No. Sketch-92114 alt. ‘8’ or latest on outer face of the rim before machining. The depth of letters for hot stamping shall be between 2 mm to 3 mm.
- i) Manufacturer’s code name (in 3 digits, with purchaser’s prior approval)
 - ii) Month & Year of manufacture (in 4 digits separated by “/” i.e. February 2014 should be indicated as 02/14).
 - iii) Consecutive/Individual serial number (in 5 digits).
 - iv) Batch Number
 - v) Inspector’s approval stamp
 - vi) ‘UT’ for ultrasonic testing

11. Clause 11.4.1:

- i) Replace IS: 3703-1998 by IS: 3703-2004 or latest version in second line.
- ii) Replace 15 W/m³ by 15 W/m² in fourth line.

12. Clause 11.5:

Replace clause 11.1 by clause 11.2 in second line.

13. Replace clause 18.1 and 18.2 by the following:

18.1 After inspection and approval, the wheels shall be cleaned of all rust, apply one coat of Red Oxide Zinc Chrome Primer to IS: 2074 followed by one coat of Ready Mixed Paint, Finishing, Bituminous Black, lead free, Acid, Alkali, Water and Chlorine Resistant to IS: 9862. The above method is applicable for the wheels except for the tread, rim and bore areas (on these areas, suitable rust preventive compound shall be applied with approval of purchaser).

18.2 The manufacturer may use any other suitable alternate painting (surface protection) system consisting atleast one coat of primer & atleast one coat of paint, subject to approval of purchaser. Wheels are to be supplied in painted condion. Safe transportation of solid forged wheels shall be the responsibility of supplier ensuring that no damage or corrosion during transit.

14. Replace the clauses/Figures of Appendix-A by the following:

- i) **A-6-2** The number of flaw signal of amplitude $\geq 20\%$ and $< 60\%$ shall not be more than 5 probing locations for tread & rim combined.
- ii) **A-6-3** The distance between two consecutive defects of signal amplitude $\geq 20\%$ and $< 60\%$ shall not be less than 20 mm, if it is less, it will be a cause for rejection.
- iii) **Fig.5** -----Refer clause A-2-6 (a), A-4 & A-5.
- iv) **Fig.5 (a)** Depth of 3.2 mm dia FBH shall be 25 ± 2 mm.
- v) **Fig.5 (b)** Depth of 3.2 mm dia through hole shall be 25 ± 2 mm.
- vi) **Fig.5 (c)** -----Refer clause A-2-6 (b), A-4 & A-5.