

INDIAN RAILWAYS



सत्यमेव जयते

PARTICULAR SPECIFICATION

FOR

BOGIE CONTAINER FLAT WAGON TYPE "BLCS (A&B-CAR)"

BROAD GAUGE -1676MM

(B.G. 5' 6")

RESEARCH DESIGNS AND STANDARDS ORGANISATION
MINISTRY OF RAILWAYS
MANAK NAGAR,
LUCKNOW-226011.

September -2018

Price : Rs1300/=

C O N T E N T S

CLAUSE No.	Description
1.	Scope
2.	Definitions
3.	Welding
4.	Testing
5.	Standard Specifications
6.	Use of Alternatives
7.	Particular Requirements
8.	Inspection:
9.	Guarantee
10.	Spare Parts
11.	Service Manuals And Spare Parts Catalogue
12.	Field Service Trials
13.	Dispute Regarding Interpretation
14.	'As Made' Drawings, Photographs and Models
15	General Conditions

A N N E X U R E S

Annexure-I	Method of Finding out Tare Weight of Wagons.
Annexure-II	Nylon Brake Gear Bushes in the Brake Gear of BG Wagons.

INDIAN RAILWAYS

PARTICULAR SPECIFICATION FOR BOGIE CONTAINER FLAT WAGON TYPE "BCS (B-CAR)"

1. SCOPE

- 1.1 This specification covers the particular requirements for the manufacture and supply of Broad Gauge Flat Wagon type 'BLCS (A&B-CAR) for transportation of ISO Container and other permitted Containers, strictly to the relevant drawings outlined in RDSO index drawings no. WD-15011--S-01(with latest alteration) for A-Car and WD-15012--S-01(with latest alteration) for B-Car. This wagon shall conform to the requirements of General Standard specification No. G-72 with latest revision/amendments, which can be had from Director General, RDSO (Wagon), Manak Nagar, Lucknow-226011. These wagons shall be supplied complete in all respects.
- 1.2 Light Weight Low Height 25 Axle Load Cast Steel Bogies (LWLH25), complete together with wheel and axle sets with K-Class cartridge roller bearing mounted adapters along with elastomeric pads thereon, all components of center pivot assembly and side bearer are referred to in Clause 7.2, high tensile center buffer couplers(non-transition) together with high capacity draft gears, striker casting, yokes, yoke pins, yoke pin support plates, are referred to in Clause 7.3, complete Air Brake equipment along with pipes and pipe joints are referred to in Clause 7.4. (STR's and drawings are mentioned in the relevant clauses).
- 1.3 The Contractor shall prepare his own working drawings based on the aforesaid key design drawings and submit them to the 'Engineers' for approval before undertaking production. The Contractor shall ensure that working drawings submitted for approval of the 'Engineers' are fully in accordance with key design drawings and deviations, if any, are specially pointed out. Approval of the 'Engineers' will only pertain to the design features, important controlling dimensions and the deviations from the design drawings specially pointed out by the Contractor. Corrections of the details in drawings will not be checked by the 'Engineers' and the responsibility for the same will be that of Contractor.

2. DEFINITIONS

- 2.1 '**Purchaser**' – means the President of the Republic of India.
- 2.2 '**Engineers**' – means Research Designs & Standards Organisation, Ministry of Railways, Manak Nagar, Lucknow-226011 and will be represented by Ex. Director Standard Wagon ,RDSO.

- 2.3 **'Inspecting Officer'**- means the person, firm or department nominated by the purchaser to inspect the work on his behalf and the deputies of the Inspecting Officer so nominated.
- 2.4 **'Contractor'**-means the person, firm or company with whom the order for the supply is placed and shall be deemed to include the contract's successors (approved by the Purchaser), representatives, heirs, executors and administrators as the case may be unless excluded by the terms of contract.
- 2.5 **'Sub-Contractor'** means the person, firm or company from whom the contractor may obtain any material or fittings to be used in the manufacture of the above parts.

3. **WELDING**

- 3.1 General requirements and comprehensive guidance with regard to edge preparation, fit up for welding, welding procedure and inspection of welded joints are contained in clause 8 of General Standard Specification No. G-72) with latest revision/amendments. This should be strictly followed.
- 3.2 Wherever welding is specified or adopted in the manufacture of the wagons or in the fabrication of sub- assemblies and components, the manufacturer shall obtain the approval of his proposed welding procedure in format and sequence from the Engineer. An exception statement to down hand welding shall be provided by the contractor while submitting along with WPS for approval. This however, will not in any way reduce the Contractor's responsibility for satisfactory execution of the contract in all respects as stipulated in Clause 4 of General Standard Specification No. G-72 with latest revision/amendments.

4. **TESTING**

- 4.1 One 'Pattern Wagon' shall be manufactured by the supplier, manufacturing this wagon first time, for carrying different tests. This wagon will be squeeze load tested at the premises of the manufacturer in presence of engineers to establish manufacturing quality. Required test rig for squeeze load test shall be provided by the manufacturer and therefore, the wagon builders having this facility already available with them should be preferred.
- 4.2 The same wagon shall also be tested under loads as detailed in Clause No.12 of General Standard Specification No. G-72 with latest revision/amendments. Clearances between various members on under frames and bogies measured under tare, fully loaded, over loaded and under no load conditions, and submitted to the engineers by the Inspecting Officers.

4.3 The performance of air brake equipments of each wagon shall be tested with single wagon test as per proforma prescribed by the Engineers.

4.4 Any modification arising out of squeeze load test/ FEM shall have to be carried out by the manufacturers. It is only after approval of the prototype, series production of wagon shall be taken in hand.

5. STANDARD SPECIFICATIONS

All materials required for the manufacture of the wagons shall conform to the latest issue of relevant specifications as adopted by RDSO for Railway use unless otherwise specified herein.

6. USE OF ALTERNATIVES

In Clause 7 of this specification, as also in some of the drawings of the relevant wagon listed at RDSO index drawings no WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car certain alternatives showing different methods of manufacture or use of alternative material which are technically permissible, have been indicated. Wherever such alternative use has been permitted, the tendered must quote separately for the alternatives.

7. PARTICULAR REQUIREMENTS

Construction drawings for wagon indicated in RDSO index drawing no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car.

The following are the particular requirements in respect of the work required under this specification.

7.1 Material of Construction:

Sole bar, longitudes, bolsters, - cross bars, stiffeners etc.	Details are provided in relevant construction drawings mentioned in RDSO index drawing no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car.
--	---

7.2 Bogies & Wheels:

7.2.1 The wagon shall be equipped with Cast Steel Bogies (LWLH25), to Latest RDSO STR with latest amendments as per relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car.

7.2.2 Bogie shall be fitted with wheel set to relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car.

7.3 COUPLER AND DRAFT GEAR:

7.3.1 'BLCS (A&B-CAR)' wagon shall be equipped with:

7.3.2 High Tensile Center Buffer Coupler (NT) to RDSO STR with latest revision/amendment as mentioned in the relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car.

7.3.3 High capacity draft gear to RDSO STR with latest revision/amendments as mentioned in relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car.

7.3.4 Coupler operating mechanism for center buffer coupler shall be positioned as shown in the relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car. The fitment of coupler, high capacity draft gear, striker casting, yoke pin support, and yoke and back stop etc. shall conform to the relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car.

7.4 Air Brake:

7.4.1 The wagon shall be equipped with graduated release air brake equipment to RDSO STR with latest amendments to the relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) and WD-15012--S-01 (with latest alteration) for B-Car. The layout of the complete air brake equipment shall be in accordance with the arrangement shown in to the relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) and for A-Car WD-15012--S-01 (with latest alteration) for B-Car.

7.4.2 The pipes and joints consisting of brake pipe, branch pipes & pipe joint as specified in RDSO specification as mentioned in the relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car.

7.4.3 The complete air brake equipment including the pipes and joints shall be fitted on pattern wagon in accordance with the relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car and offered to the Engineers for approval. The Contractor shall be

obliged to carry out any modifications on the layout of the air brake equipment if found necessary by the Engineers.

- 7.4.4 Brake block force shall be checked at the time of prototype testing, with the necessary facilities, equipments, etc. being provided by the manufacturer. The manufacturer shall carry out any modification required after testing.
- 7.4.5 Contractor shall proceed with the bulk production of the pipes and joints only after the final approval of the layout of complete air brake equipment, on the pattern wagon.
- 7.4.6 During the bulk production of wagons, the Contractor shall ensure that the complete air brake equipment is fitted on the wagon correctly as per the dimensions shown in the layout drawing. Special care must be taken with regard to the clamping arrangement of pipes to under frames besides securing of clamps with pipe and tack welding of nuts with bolts.

7.5 Painting & Markings:

The surface preparation and painting of wagon under frame, fixed ends, and floor plate shall be as follows.

- (i) Degrease with petroleum hydrocarbon solvent to IS: 1745-78 (or latest), low aromatic grade 145/205 or any other degreaser (which is suitable for IS 2062:2006 E410Cu)
 - (ii) Surface preparation: Shot blast, parts made of IS 2062:2006 E410Cu to get a surface finish of minimum Sa2.5 as per ISO: 8501-1. Clean the surface by using compressed air or any other suitable means like brush etc.
 - (iii) Within 02 hours of cleaning the surface, apply 2 coats of Epoxy zinc phosphate primer (Two pack) to RDSO spec No. M&C/PCN/102/2005 (or latest) to minimum DFT of 120 microns.
 - (iv) Apply 2 coats of ready mix Red Oxide (ISC: 446), to RDSO Spec. No. M&C/PCN/122/06 (or latest) to minimum DFT of 80 microns.
- 7.5.1 The painting of bogies, couplers and air brake equipments shall be as given in para-11.2.5 of General standard specification no. G-72 with latest amendment except that brake pipe hose coupling shall be painted with paint to IS:13607-1992 ISC no. 570 (Traffic red).
- 7.5.2 Precautions before and after painting shall be observed as detailed in para-11.2.2, 11.2.3 and 11.2.4 of specification no. G-72 with latest revision/amendment.

- 7.5.3 The tare weight of the wagons shall be marked in Tonnes up to one decimal place, as determined by the method detailed in Annexure - I.
- 7.5.4 Two standard plates fitted on the Sole bars at diagonally opposite corners, one shall be in English and the other shall be in Hindi to the relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car. Mild steel drops stamped standard plates are acceptable as an alternative.
- 7.5.5 Owing Railway initials to be marked will be intimated later. The Mechanical Code to be stenciled and stamped at locations shown in the relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car.
- 7.5.6 The markings other than those indicated in Clause 18.1 of General Standard Specification No.G-72 with latest revision/amendment shall be as indicated in the relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 for A-Car (with latest alteration) and WD-15012--S-01 (with latest alteration) for B-Car.

8. Inspection:

- 8.1 The inspection of the wagon with all its fittings, during the wagon manufacture, is to be carried out by RDSO Wagon Inspection Directorate. The Contractor will provide all the facilities to the Inspecting Officer. However, inspection of the non-IRS components & sub-assemblies, used in the wagon, shall be as per the conditions specified in their individual specifications
- 8.2 In case of dispute between the manufacturer and the inspector regarding the interpretation of any clause/ clauses of this specification, the decision of the 'Engineers' will be final and binding on the Contractor.

9 GUARANTEE

- 9.1 The Contractor shall guarantee the satisfactory performance of the wagons supplied under the contract for a period of 24 months from the date of commissioning or 30 months from the date of inspection whichever is earlier. However, for certain other subassemblies & bought out items Guarantee periods will vary and which are covered in their individual specifications. For the items whose guarantee is not specified anywhere, standard provisions as per as per Clause 5 of the G-72 with latest revision/amendment.
- 9.2 If during such period any defect appears or if the quality of the material becomes unsatisfactory under conditions of reasonable service and if such defects or deterioration will have been caused by the use of defective design or using unsuitable material or bad workmanship in the manufacture, the

Contractor shall arrange to repair and replace as soon as possible and at the Contractor's own cost (including all transport charges) such replacements or additional materials or parts as are necessary.

- 9.3 Further should any design modification be required to be made in any part of the equipment, the period of 24 months would commence from the date when the modified part is commissioned in service. However, for certain other sub-assemblies and bought out items, the period of guarantee for replaced part shall be as specified in the individual specification of the item /sub-assembly

10 SPARE PARTS

- 10.1 The Contractor shall also submit an itemized list of recommended maintenance spares for two years requirement and of any special tools and gauges required for maintenance along with quotations for each item, indicating name and address of the manufacturer. The Purchaser will finalize this list after the detailed design has been approved by RDSO/ Lucknow. The delivery of such spares and tools as the Purchaser elects to purchase will be effected by the Contractor along with the first consignment of wagons.
- 10.2 The Contractor shall be responsible for ensuring subsequent availability of the spare parts for efficient working of the wagons.

11 SERVICE MANUALS AND SPARE PARTS CATALOGUE

- 11.1 Detailed maintenance and operation manual of CBC, Draft Gear, K-Class CTRB and other uncommon (with BOXNHS) sub-assemblies procured by the manufacturer shall be supplied in 10 copies (in both hard and soft format).
- 11.2 Detailed spare parts catalogue of the sub-assemblies mentioned in para 11.1 above shall also be included in this maintenance and operation manual.
- 11.3 One set of all the above mentioned manuals shall be sent to Engineers in advance for approval.

12 FIELD SERVICE TRIALS

- 12.1 The wagons will have a trial period of 24 months, from their date of commencement of field operation. During these trials, maintenance and operational problems and wear data will be monitored. A joint meeting shall be organized every six months with the Railways, RDSO & Contractor for reviewing the data collected from the field. Any modifications found necessary as a result of the tests/trials shall be incorporated by the Contractor at his own cost in the vehicle in a manner approved by the Engineer. Drawings incorporating the modifications found necessary, as a result of tests and trial shall be submitted to Engineers for final approval.

- 12.2 The wagon builder shall ensure availability of service engineers who will be associated with the trials and attend to the repairs to the wagons in field, if so needed by the railways

13. Dispute Regarding Interpretation

In case of dispute between the manufacturer and the purchaser regarding the interpretation of any clause/clauses of the specification, the decisions of the 'Engineer' will be final and binding on the parties.

14. Drawings:

These wagons shall be manufactured strictly to to the relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car. The alteration numbers indicated against each drawing are, however, subject to advancement in the course of construction of these wagons and contractor shall comply with these amendments in manufacturing the components. Copies of such amended drawings will be supplied to the contractor free of cost. The drawings listed in the Annexure-I & are complete in all respects and any detailing, if necessary, will be done by the contractor.

15. 'AS MADE' DRAWINGS, PHOTOGRAPHS & MODELS

15.1 Drawings

The contractor shall supply two sets of 'As Made' Polyester Film Tracings (50 Micron thick matte) of drawings followed in the manufacture of the wagons for the record of Purchaser and Engineers. These tracings shall conform to the requirements as detailed in Clause 21 of General Standard Specification No. G-72 with latest revision/amendment. The contractor shall incorporate in the above set of tracings, any deviations, modifications and relaxations granted in the course of manufacture.

The 'As Made' drawings detailed above shall contain full details of each components/assembly/sub assembly, inclusive of the material specification, actual average weight and reference drawings. The general order of the drawings, title block etc. shall be strictly as indicated in SK.67521 with space for IRS drawings number left blank. The size of the sheet shall be A1 (841mm x 594mm) and the code of practice for drawings shall conform to IS Specn.No. 696. The hard wood strips for binding the tracings shall conform to SK. 67520 along with 6mm size brass set screws to SK.67522.

15.2 Photographs

The contractor shall furnish to the Engineers free of cost suitably mounted colour photos 600mm x 450mm bringing out the salient features as called for in Clause 21 of General Standard Specification No. G-72 with latest revision/amendment.

15.3 Models

The contractor shall furnish to the Engineers, if and when required, free of cost, a 1/16 scale model made out of steel or acrylic transparent sheet as called for in Clause 21 of General Standard Specification No. G-72 with latest revision/amendment.

16. GENERAL CONDITIONS

- 16.1 For the non free supply items: Along with the main offer, the tenderer will also offer comments on the clause –wise compliance with the technical specifications of the various non free supply items to be procured from the established suppliers, fulfilling the qualifying criteria as prescribed in the individual technical specifications.
- 16.2 The Contractor shall be entirely responsible for the design, construction and the efficient performance of the wagon, which includes all sub-assemblies & all bought out items, under contract, notwithstanding any approval which may have been given to the detailed drawings prepared by the Contractor or to the manufacture of materials or parts employed by the Contractor or to the test carried out by the Engineer.

ANNEXURE -I

METHOD OF DETERMINING THE TARE WEIGHT OF WAGONS

All contractors (whether equipped with weigh bridges or not in their works) will arrange to weigh each wagon of identical design and mark individual tare weight on them by actual weighment. The tare weight so arrived shall be deducted from the gross load to arrive at the correct carrying capacity that shall be marked on the wagons.

Tare weight of the wagons shall also be intimated to the Engineers duly certified by the Inspecting Officer.

ANNEXURE –II

NYLON BRAKE GEAR BUSHES IN THE BRAKE GEAR
OF BG WAGONS

1. Brake gear bushes of Nylon-66 shall be procured as per Schedule of Technical Requirements (STR) to the relevant drawing of the relevant wagon outlined in RDSO index drawings no. WD-15011--S-01 (with latest alteration) for A-Car and WD-15012--S-01 (with latest alteration) for B-Car.
2. Nominal dimensions of Nylon-66 bushes to be used will be same as of steel bushes, inclusive of step sizes, outside diameter. However, the tolerances and the chamfering should be as per Fig.1 of the STR.
3. Undersized holes should be drilled initially in the form type support brackets or fork end of pull/push rods. These holes should be drilled together to the required size only after the assembly but before the Nylon bushes are fitted therein. This will ensure that the two holes are concentric and, therefore, the pins passing through the bushes fitted therein will not tilt.
4. Steel pins used with the Nylon-66 bushes shall be with fine finish machined on all contact surfaces with the bush.
5. NYLON-66 bushes shall not be provided in LWLH25 Bogie brake gear parts.
