



Vision

To be the provider of choice
for advancing railway safety
and technology

Transportation Technology Center, Inc., a subsidiary of the Association of American Railroads

Closed Car Loading Rules and Standards

Tom Feltault

Senior Manager Damage
Prevention Engineering



Damage Prevention & Loading Services

Provide Industry Programs and Services for Prevention of Damage and Safe Movement of Freight by Rail

Boxcar and Intermodal

- Damage Prevention & Freight Claim Committee**

Motor Vehicles

- Multi-Level Pooling Executive Committee**
- Vehicle and Equipment Quality Task Force**
- Specially Equipped Freight Car Committee**

Open Top Loads

- Open Top Loading Rules Committee**





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Specialist





Damage Prevention & Loading Services



ASSOCIATION OF AMERICAN RAILROADS

2013 Damage Prevention & Freight Claim Rule Book

Rules of Order
Principles and Practices
Freight Claim Rules

Supersedes 2012 Damage Prevention & Freight Claim Rule Book
with changes effective January 1, 2013

Published by
Association of American Railroads
Damage Prevention & Loading Services

For Orders Contact
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Damage Prevention & Loading Services

Closed Car & Intermodal

- **Develop, Evaluate and Maintain Industry Rules and Standards for Loading Methods & Materials**
- **Testing Procedures**
 - Impact Testing (4,6,6 and Reverse 6MPH)
 - Rail Environment Simulation Testing (VTU)
 - Field Testing (Minimum 25 test shipments)
 - Laboratory Testing – Strapping Materials, Pneumatic Dunnage, Void Fillers, Separators, etc. (ASTM/Industry Testing Protocols)
- **Loading Publications on Approved Methods/Materials in Major Business Areas**





Damage Prevention & Loading Services

Closed Car & Intermodal

Mandatory Rules versus Minimum Standards

Mandatory Rules have been formulated for the purpose of providing SAFE methods of loading closed cars and intermodal, and **MUST** be observed.

The primary purpose of these rules is safe transit of the rail car from origin to destination.

Minimum Standards afford a means of providing uniform consent of member railroads for interchange of approved methods unless restricted by individual carrier rules; are intended for safe transit of the trailer/container/railcar from origin to destination; and for prevention of lading and equipment damage.

These are considered minimum standards, and individual carriers may have different terms of acceptance.



Closed Car Loading Mandatory Rules

CIRCULAR NO. 42-K

(Supersedes Circular No. 42-J)

GENERAL RULES COVERING LOADING OF CARLOAD SHIPMENTS OF COMMODITIES IN CLOSED CARS



Issued November 1, 2010

The "General Rules" quoted in AAR Circular No. 42-J, dated January 1, 2001 have been revised as shown herein.

These "General Rules" **MUST** be observed for all closed car loading and take precedence over the "Loading Methods" referred to, or included, in the loading publications. Those publications contain detailed methods for loading specific commodities.

Approved by

**DAMAGE PREVENTION AND FREIGHT CLAIM COMMITTEE
ASSOCIATION OF AMERICAN RAILROADS**

Published by

**Transportation Technology Center, Inc.
55500 D.O.T. Road
Pueblo, CO 81001**

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Closed Car Loading Mandatory Rules

RULE 1. INSPECTION AND SELECTION OF CARS

RULE 2. CLEARANCE AT SIDE BEARING - LOADED CARS

RULE 3. MAXIMUM LOAD WEIGHT

RULE 4. DISTRIBUTION OF WEIGHT LENGTHWISE IN CARS

RULE 5. DISTRIBUTION OF WEIGHT - CROSSWISE OF CAR

RULE 6. LOADING, BLOCKING AND BRACING - BOX CARS

RULE 7. DOORWAY PROTECTION

RULE 8. CENTER OF GRAVITY

RULE 9. SPECIAL EQUIPMENT

RULE 10. OPENING AND CLOSING OF DOORS





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Intermodal Loading Mandatory Rules

CIRCULAR 43-E

**RULES GOVERNING THE LOADING, BLOCKING AND BRACING
OF FREIGHT IN CLOSED TRAILERS AND CONTAINERS
FOR TOFC/COFC SERVICE**



**Issued by:
ASSOCIATION OF AMERICAN RAILROADS**

**(Printed in U.S.A.)
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Intermodal Loading Mandatory Rules

- 1. Inspection and Selection of Equipment**
- 2. Planning of Load**
- 3. Maximum Weights, Weight Distribution, and Center of Gravity**
- 4. Hazardous Materials/Hazardous Substances**
- 5. Loading and Securement**
- 6. Special Equipment**





Intermodal Loading Mandatory Rules

5. Loading and Securement (Rule 5A.)

The doors of the vehicle, meeting AAR trailer specification M-931 and AAR container specification M-930, can be relied on to secure *non-hazardous materials* lading only under the following conditions:

1. The load consists of multi-unit lading such as boxes of food-stuff, tissue, or soft paper products, furniture, appliances, etc., not exceeding 40,000 lb, covering a minimum of 60% of the door area and evenly distributed throughout the vehicle.
2. Lading must be loaded tightly lengthwise and crosswise and flush to the rear doors of the vehicle allowing no room for movement. If any void exists, fill void space with recommended dunnage.
3. The doors must fit squarely, the hinges must be tight, and locking bars must be in good condition and function properly.



COFC



Open Top Railcars



Impact Testing –
Evaluates load
securement integrity
during yard handling.

Multi-level Railcars





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Impact Testing (video) –





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Impact Testing (video) –





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Impact Testing (video) –





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Simulation Testing using the Vibration Test Unit (VTU) – Evaluates load securement integrity during over-the-road movement.





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Simulation Testing (video) –





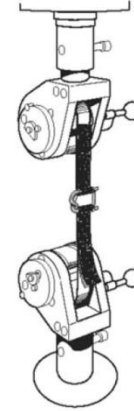
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Product Performance Testing



^ Pneumatic dunnage
performance testing

Strap tensile
testing >



Boxcar doorway
protection >





Damage Prevention & Loading Services

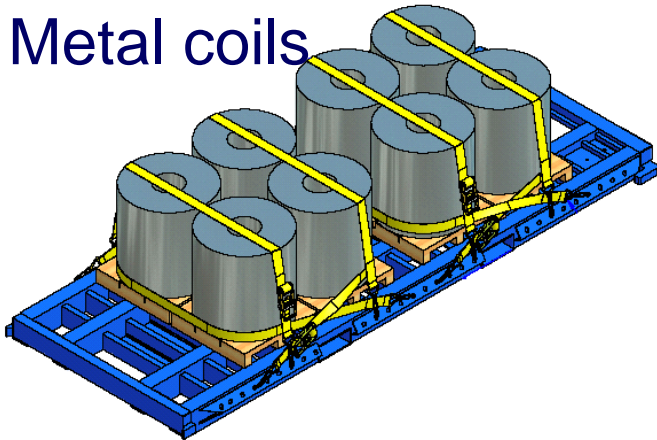
55 gallon drums



Flexitanks



Metal coils



Paper rolls





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Minimum Loading Standards

- ~~1 Freight Forwarder (2/80) Cancelled~~
- 3 Bags, Commodities in (10/93)**
- ~~4 Barrels, Drums or Kegs (11/65), Includes Special Supplement (6/74) Cancelled~~
- 6 Building Brick in Closed Cars (8/83)**
- 8 Plywood in Closed Cars (11/85)**
- 14 Minimum Loading Standards for Freight (12/84)**
- ~~15 Furniture (7/79) Cancelled~~
- 17 Packaged Food Products (10/88)**
- 20 Lumber in Closed Cars (10/87)**
- ~~21 Machinery (5/95) Cancelled~~
- 23 Steel Products in Closed Cars (4/95)**
- ~~25 Flat Paper Stock in Closed Cars & Trailers & Containers for TOFC/COFC Service (5/93) Cancelled~~
- ~~29 Household Appliances (10/79) Cancelled~~
- 37 High Density Metallic Commodities (11/84)**
- 39 Supplemental Loading Standards for Roll Paper/Pulpboard in Closed Cars (11/96)**
Also see **Best Practices for Loading of Roll Paper in Rail Cars** for additional information.
- 41 Dictionary of Standard Terms (7/82)**
- ~~42 Glass, Flat (6/94) Cancelled~~





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Minimum Loading Standards

Closed Car Loading Guide (CCLG), Part 1, Minimum Loading Standards for Freight in General Purpose Boxcars, (1/14)

Parts 2-10 (commodity specific guides) scheduled for release this year.

Intermodal Loading Guide (ILG) for Products in Closed Trailers and Containers (7/11)

Intermodal Loading Guide (ILG) for Paper Products in Closed Trailers and Containers (8/01)





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Part	Subject/Title	Publication Date	Formerly
1	Minimum Loading Standards for Freight in General Purpose Boxcars	1/2014	Pamphlet No. 14, Minimum Loading Standards for Freight in General Purpose and Specially Equipped Boxcars (12/84)
2	Best Practices for Loading of Roll Paper in Railcars		Best Practices for Loading of Roll Paper in Railcars/Pamphlet No. 39, Supplemental Loading Standards for Roll Paper/Pulpboard in Closed Cars (5/11)
3	Minimum Loading Standards for Plywood and Similar Building Products in Closed Cars		Pamphlet No. 8, Minimum Loading Standards for Sanded and Sheathing Plywood in Closed Cars (11/85)
4	Minimum Loading Standards for Lumber in Closed Cars		Pamphlet No. 20, Minimum Loading Standards for Lumber in Closed Cars (10/87)
5	Minimum Loading Standards for Building Brick in Closed Cars		Pamphlet No. 6, Minimum Requirements for Loading, Bracing and Blocking Carload Shipments of Building Brick in Closed Cars (8/83)
6	Minimum Loading Standards for Prepared Food and Similarly Packaged Products in Closed Cars	1/2014	Pamphlet No. 17, Minimum Loading Standards for Packaged Food Products in Closed Cars and TOFC/COFC (10/88)
7	Minimum Loading Standards for Intermediate Bulk Containers in Closed Cars		New
8	Minimum Loading Standards for Bagged and Baled Commodities in Closed Cars		Pamphlet No. 3, Minimum Loading Standards for Bagged and Baled Commodities in Closed Cars (10/93)
9	Minimum Loading Standards for Coiled Metal Products in Closed Cars		Pamphlet No. 23, Minimum Standards for Loading Steel Products in Closed Cars, Trailers or Containers (4/95)
10	Minimum Loading Standards for Primary Metal Products in Closed Cars		Pamphlet No. 37, Minimum Standards for the Safe Loading of Ingots, Pigs, Anodes, Rods and Similar High Density Metallic Commodities in Closed Cars (11/84)



◆ Safety, Efficiency, Consistency, Reliability

- Railroad experts combine knowledge and experience
- Formulate and maintain industry rules on loading, bracing, securement
- Evaluate/certify new load designs and components
 - ▲ Field impact testing
 - ▲ Experimental over-the-road testing
 - ▲ Simulation testing at TTCI using vibration test unit (VTU)
 - ▲ Applied knowledge of rail & vehicle behavioral environment

Major Components

- ◆ **Performance standards, testing, approval, identification, application**
 - Metal and non-metallic securement strapping
 - Woven cargo webbing, winches, ratchets
 - Chain, binders, tensioners, hooks, shackles
 - Tensioning and shock mitigation devices
 - Wire rope, clips, thimbles, turnbuckles
 - High tech, high compression packout materials
 - Specially designed load securement components
- ◆ **AAR/TTCI MID inspections of OT loads in the field**

AAR Open Top Loading Rules Manual

- ◆ **Interchange Rules for open top loads**
- ◆ **7 books governing all commodities**
- ◆ **Recognized standard by N. American government and regulatory agencies**
- ◆ **Specifies:**
 - Responsibilities
 - Performance standards for securement implements
 - Component certification requirements
 - Rules for weight and load distribution
 - Multi-car shipment standards



AAR Open Top Loading Rules Committee

Open Top Loading Rules - Manuals

- ◆ **Section 1 - General Rules**
- ◆ **Section 2 - Pipe and Metal Products**
- ◆ **Section 3 – Machinery, Heavy Components & Misc Commodities**
- ◆ **Section 4 –Archived Rules and Figures Sections 1 thru 7**
- ◆ **Section 5 - Forest Products and Building Materials**
- ◆ **Section 6 - Military Materiel**
- ◆ **Section 7 - Open Top Trailers & Containers**





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BNSF – Scott VanGosen

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CSX – Terry Smith

UP - Brent Lichty

KCS – Tim Perry

CN – Chris Howard

CP – Yi Wang

NOGC – Michael Haeg

FEC – Herb Wingo

Ferromex – Louis Paulin

TTX – Keith Songer

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RAC – Marcel Cedilotte

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DOD – Mike Bartosiak

AAR / TTCI – Mike Sandoval



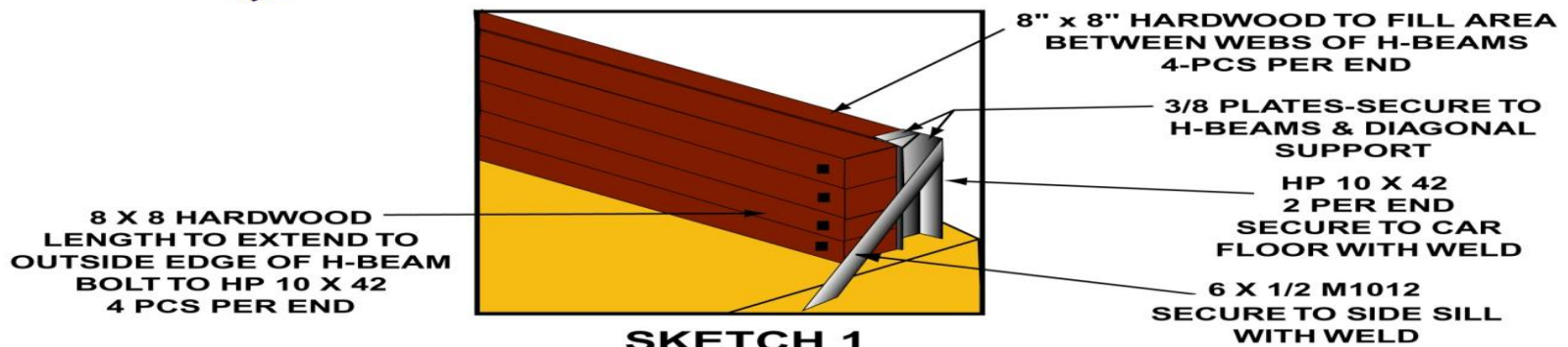
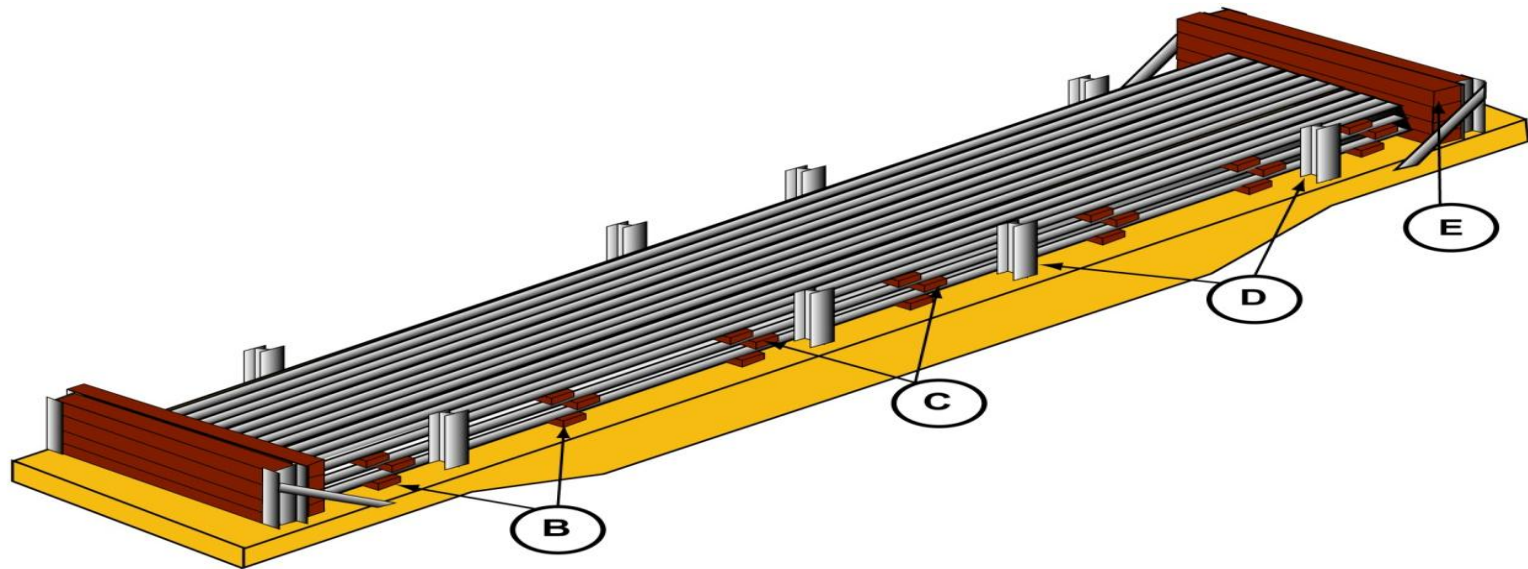


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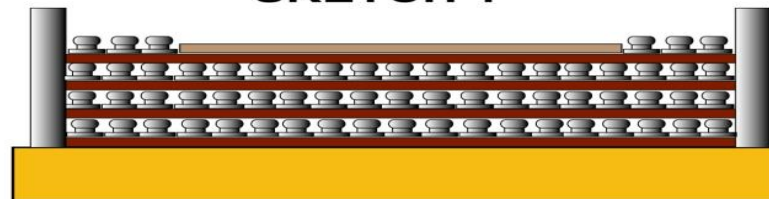




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SKETCH 1



SKETCH 2





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Open Top Loading Rules Manual

- [Free Index](#) INDEX OF RULES
- [Purchase](#) SECTION 1 General Rules
- [Purchase](#) SECTION 2 Metal Products Including Pipe
- [Purchase](#) SECTION 3 Machinery, Heavy Components, and Miscellaneous Commodities
- [Purchase](#) SECTION 5 Forest Products and Miscellaneous Building Materials
- [Purchase](#) SECTION 6 Military Equipment and Materiel
- [Purchase](#) SECTION 7 Open Top Trailers and Containers for Rail Transport
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[Section4 Archived Rules and Figures from Section 1 through 7](#)

[Section 3 Matrix of Changes to Figures Numbers and Titles](#)





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AAR Approved Securement Bands and Strapping, Steel Strap Sealless Systems, Web Certified Test Facilities and Products, Chain Tensioning Devices, Steel Band-Anchor Devices.

Table 17.5 - Steel Sealless Tool Mfg. 3 Die Cut
Table 17.6 - Steel Sealless Tool Mfg. Reverse Die Cut
Table 17.7 - Steel Sealless Arc Weld Systems
Tables 17.8, 17.9 - Steel Bands
Table 17.10 - IRS-USLM Banding
Table 17.11 - Non-Cushioned Band-Anchor Devices
Table 17.12 - Vibration Isolation Band-Anchor Devices
Table 17.13 - Constant Tensioning Devices
Table 19.1 - Type IV Polyester Strapping
Table 19.2 - Type IA Bonded-Woven Polyester Strapping
Table 19.3 - Type IA Polyester Strapping Grades 6 and 7
Table 19.4 - Metal Seal Systems Type IV PET Strap
Table 20.1 - Approved Webbing Companies
Table 20.2 - Web Assemblies and Tensioning Devices
Table 21.1 - Lever-type Binders for Chain
Table 21.2 - Ratchet & Turnbuckle Binders for Chain
Table 46.1 Web Certified Test Facilities





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Welcome	2013 Open Top Manuals	Approvals	Circular Letters 2007-2012
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[Railroad shippers - Open Top Loading Rules publication order form](#)

[Section1_Circulars_and_Rules_2010-2012](#)

[Section2_Circulars_2007-2012](#)

[Section2_Part1_Figures_2007-2012](#)

[Section2_Part2_Figures_2007-2012](#)

[Section2_Part3_Figures_2007-2012](#)

[Section3_Circulars_and_Figures_2007-2012](#)

[Section4_Circulars_and_Figures_2007-2012](#)

[Section5_Circulars_and_Figures_2007-2012](#)

[Section6_Circulars_and_Figures_2007-2012](#)

[Section7_Circulars_and_Figures_2007-2012](#)



New Securement Methods



07.22.2008 10:15





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AAR Open Top Loading Rules Committee





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- ◆ **A.A.R Open Top Loading Manuals**
 - ◆ **The AAR now offers free down load of the AAR Open Top Loading Manuals to Railway shippers.**
 - ◆ **Contact your carrier or OTLR Manager to obtain the proper form to fill out and submit.**





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