CH. 5

THE CAR
• The 8-wheel car
Basic parts of a freight car

Trinity Industries 86-foot high-cube auto parts boxcar

Trinity Industries illustration
Couplers and air brake hoses

There’s more to a coupler than meets the eye. Most of it is inside the “draft sill,” hidden from view. The “draft gear” helps absorb impacts. Brake hoses, joined by “gladhands,” connect air brake lines from car to car. The “angle cock” manually opens and closes the air brake line on an individual car.
- Standardization/Interchange
- Repairs
- Capacity/Load Limits

<table>
<thead>
<tr>
<th>Nominal Car Capacity</th>
<th>Gross Rail Load (4-axle car)</th>
<th>Journals (diam. &amp; length)</th>
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<tbody>
<tr>
<td>30-ton</td>
<td>60,000 lbs</td>
<td>103,000</td>
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<td>40-ton</td>
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<td>125-ton</td>
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</table>
• Clearances – Plate B -- Plate H
• Safety - 1893 & 1970
• Components and Design
Component Nomenclature

- Bolster
- Center plate
- Side bearing
- C-PEP
- Brake shoe retainer key
- Wheel
- Side frame
- Axle
- Spring group (load coils)
- Bolster gib
- Side frame column
- Brake shoe
- Side spring (damping)
- Brake beam wear liner (hidden)
- Pedestal roof
- Bearing adapter
- Roller bearing end cap
Basic parts of a three-piece freight car truck

- Wheelset (wheel and axle)
- Sideframe
- Bolster
- Center plate
- Center plate rim
- Side bearing pad
- Compression member
- Tension member
- Top member
- Spring group (load coils)
- Gib
- Column
- Pedestal
- Pedestal roof
- Bearing adapter
- Roller bearing

American Steel Foundries illustration
Road locomotives, passenger-train cars and some cabooses use trucks with two-stage suspension and swing-motion lateral-shock isolation or equivalent.

A lateral shock on the wheels and truck frame acting toward the left as at A will tend to tip the car body clockwise, but it will also push the truck frame to the left, tilting the swing hangers.

The swing hangers are inclined so that they generate an opposite torque, overcoming the effect of the torque generated by the shock itself and keeping the car body level.

Swing hangers may be located inside or outside (illustrated) of truck frame. Coil springs with hydraulic “shock absorbers” to provide damping may be used instead of leaf springs.
• Rock and Roll

• Bearing/Hot Boxes
• Axles/Wheels

• Thermal Loads

• Wheel Wear
• Car Body Structure
• Truck Hunting
• Radial/Premium Trucks
• The Rolling Bridge
• Car Body Materials

• Cost and Maintenance

• Interchange and Inspections