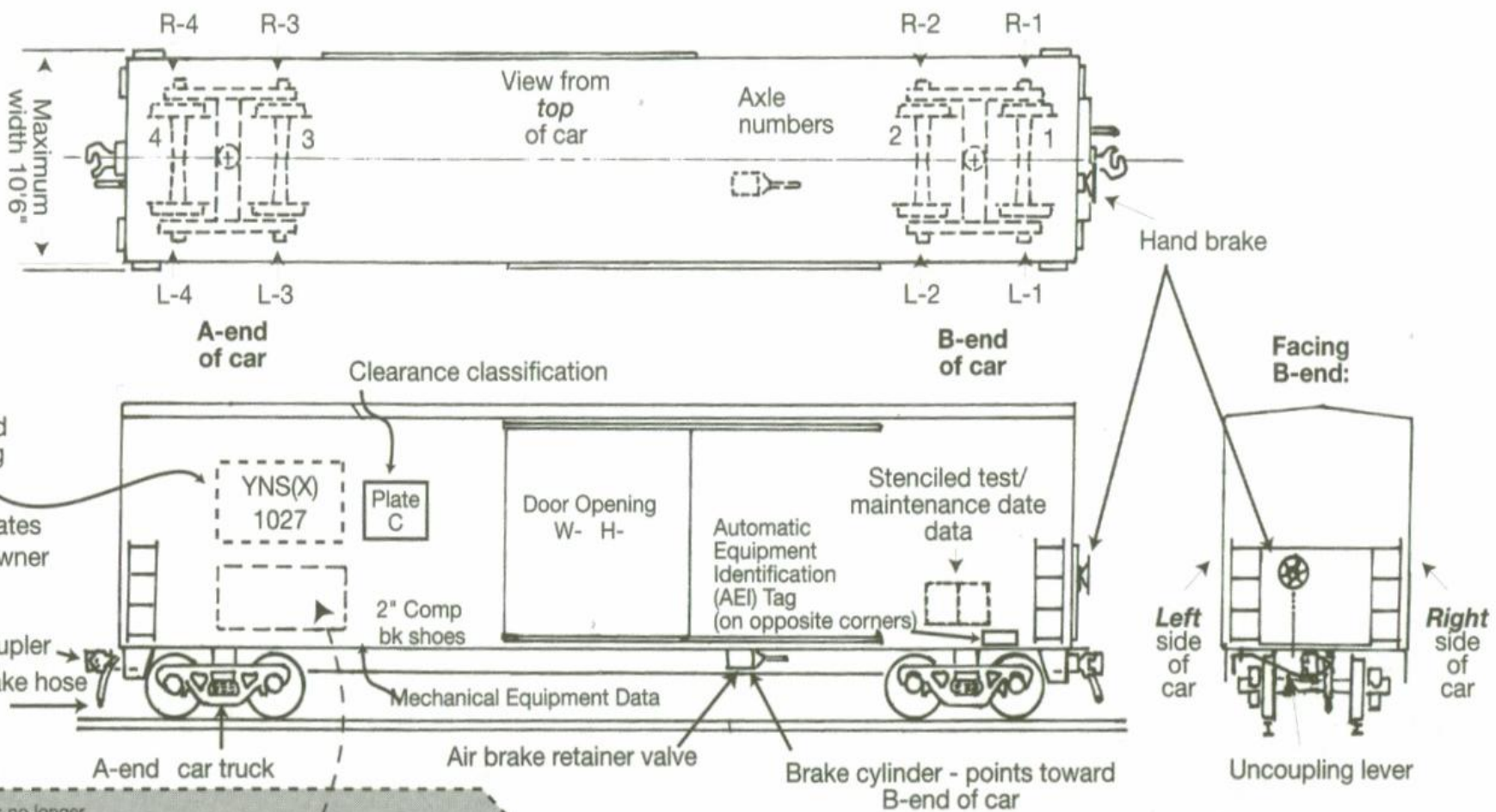


CH. 5

THE CAR

• The 8-wheel car

Designation of journal bearings & wheels by position on car



These items no longer stenciled on car - in UMLER

Capy	154,000	XM
Ld Lmt	160,500	
Lt wt	59,500	XY 7-80

AAR Mechanical Designation

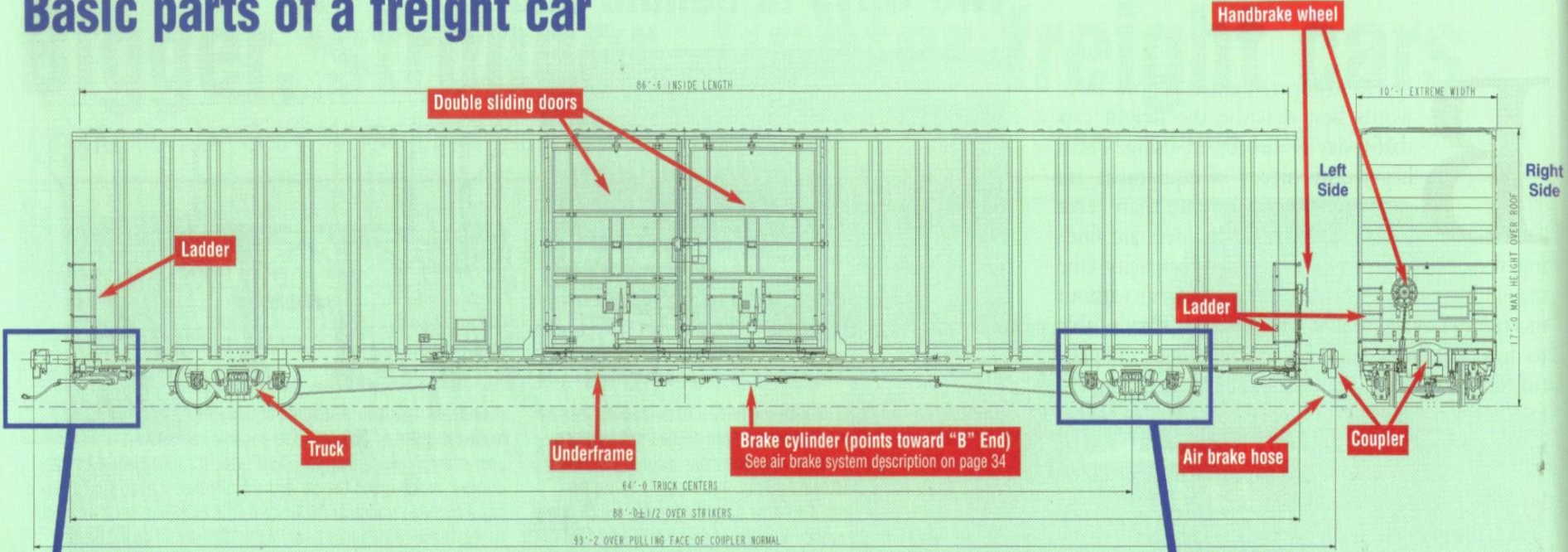
"XM" = boxcar not equipped with lading restraint or other special devices

Nominal Capacity, lb.
(Can not exceed load limit)

Light (Empty) weight of car,
to nearest 100 lb.
Load Limit
= Allowable weight on rail minus light weight:
220,000 (for "70-ton" car)
- 59,500
160,500

Station Code & Date of most recent "reightweighting" (reweighing of empty car required following repairs or modification)

Basic parts of a freight car



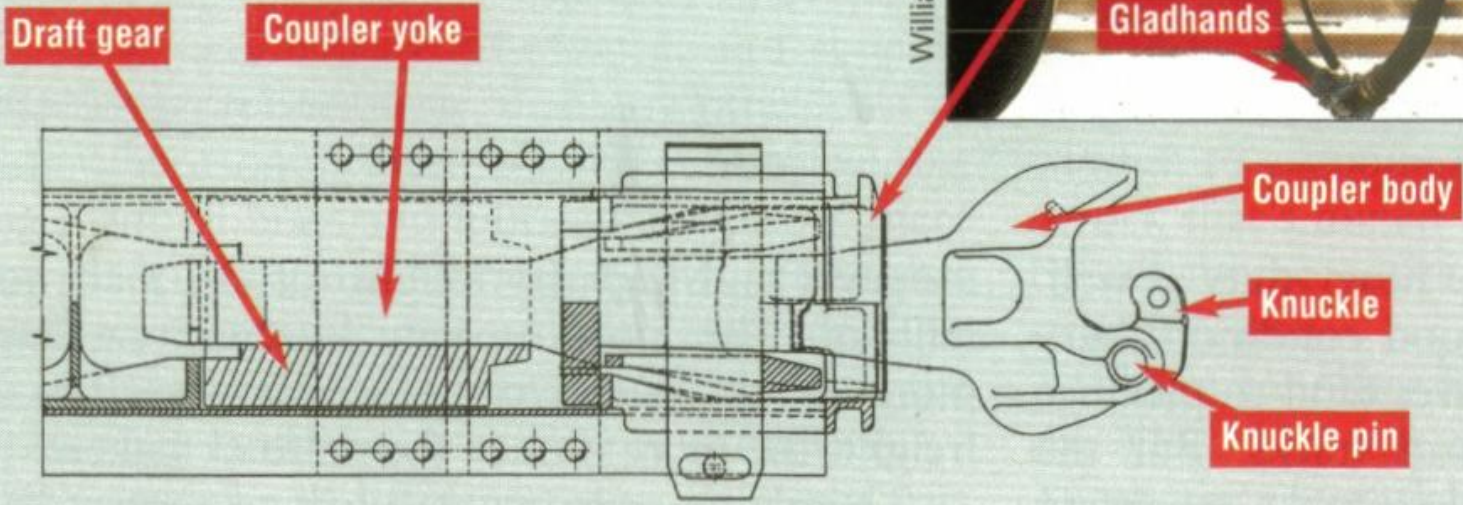
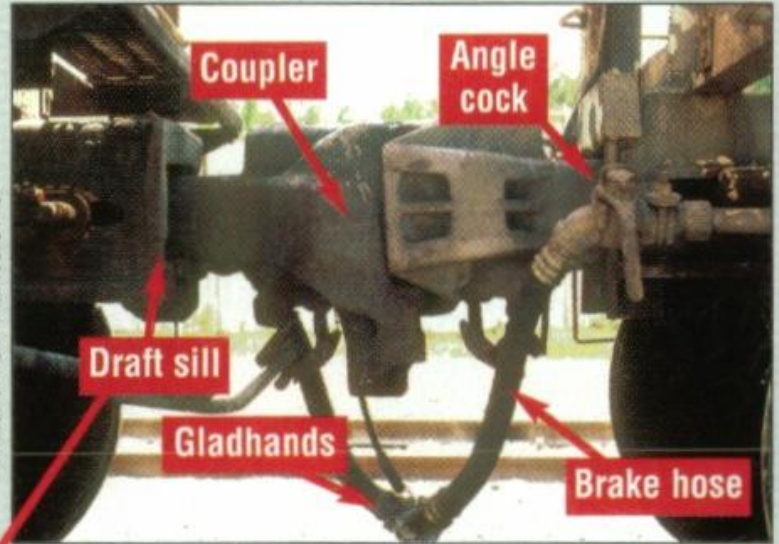
Trinity Industries 86-foot high-cube auto parts boxcar

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.

William C. Vantuono



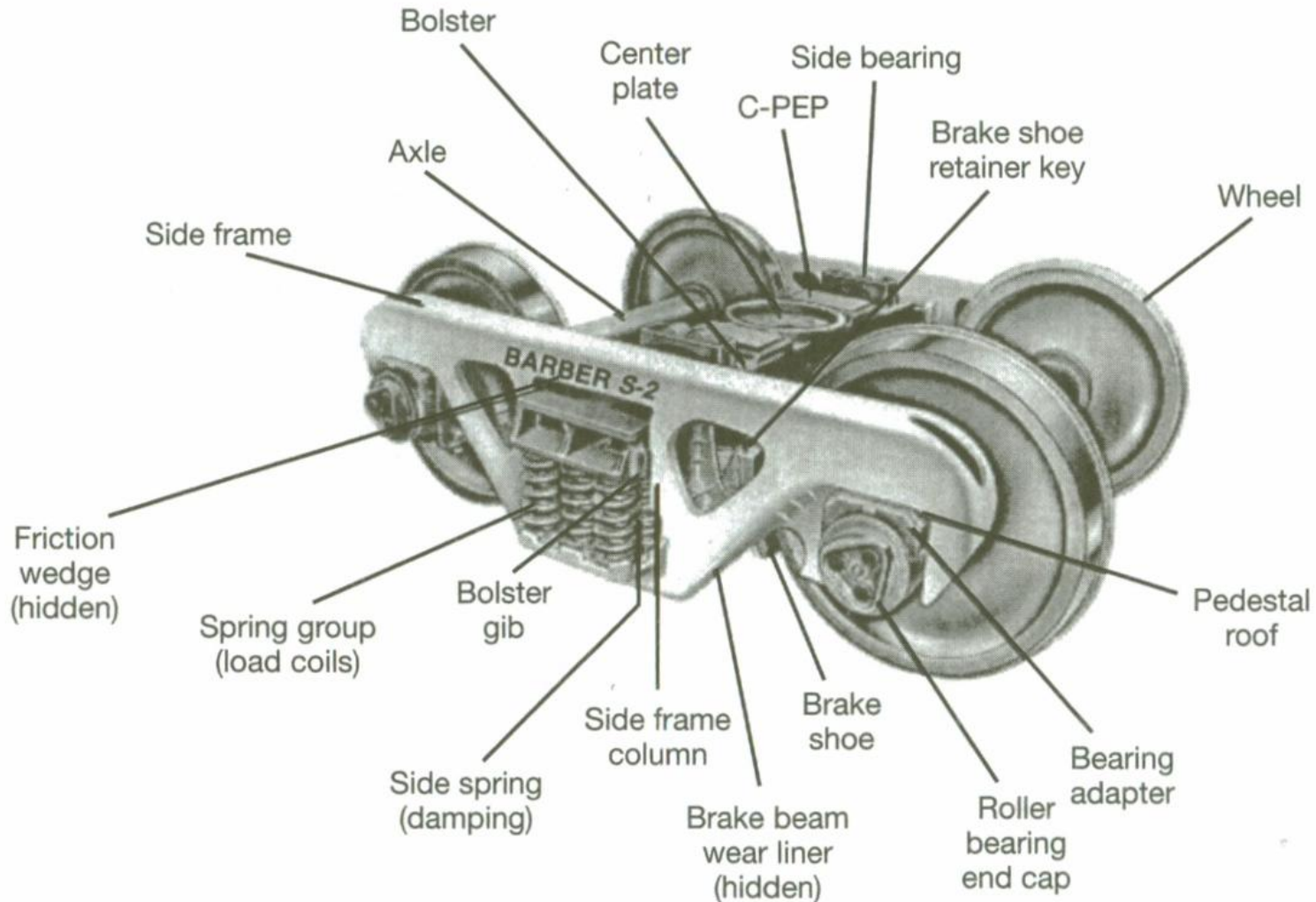
Mechanical Committee of the Standard Coupler Manufacturers illustration

- Standardization/Interchange
- Repairs
- Capacity/Load Limits

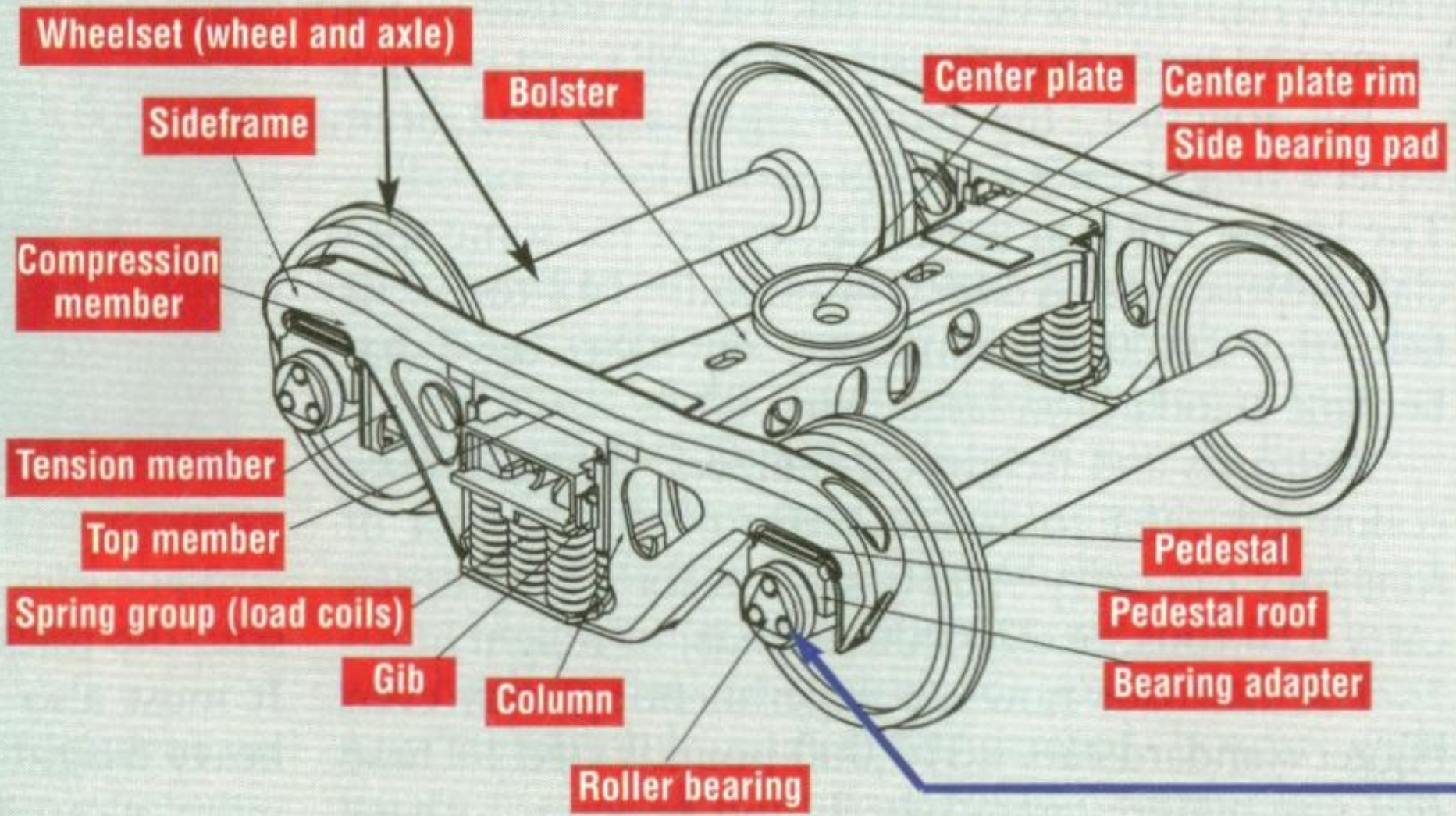
Nominal Car Capacity		Gross Rail Load (4-axle car)	Journals (diam. & length)	
30-ton	60,000 lbs	103,000	4.25x8 in.	Class B
40-ton	80,000	142,000	5x9	Class C
50-ton	110,000	177,000	5.5x10	Class D
70-ton	154,000	220,000	6x11	Class E
100-ton	200,000	263,000	6.5x12	Class F
110-ton	220,000	286,000	7x12	Class G
110-ton	220,000	286,000	6.5x9	Class K
125-ton	250,000	315,000	7x12	Class G
125-ton	250,000	315,000	7x9	Class M

- Clearances – Plate B -- Plate H
- Safety - 1893 & 1970
- Components and Design

Component Nomenclature

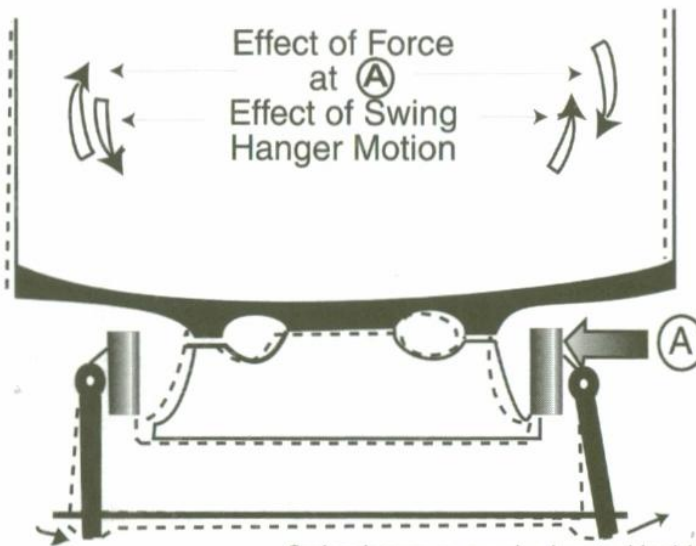


Basic parts of a three-piece freight car truck



American Steel Foundries illustration

Suspensions

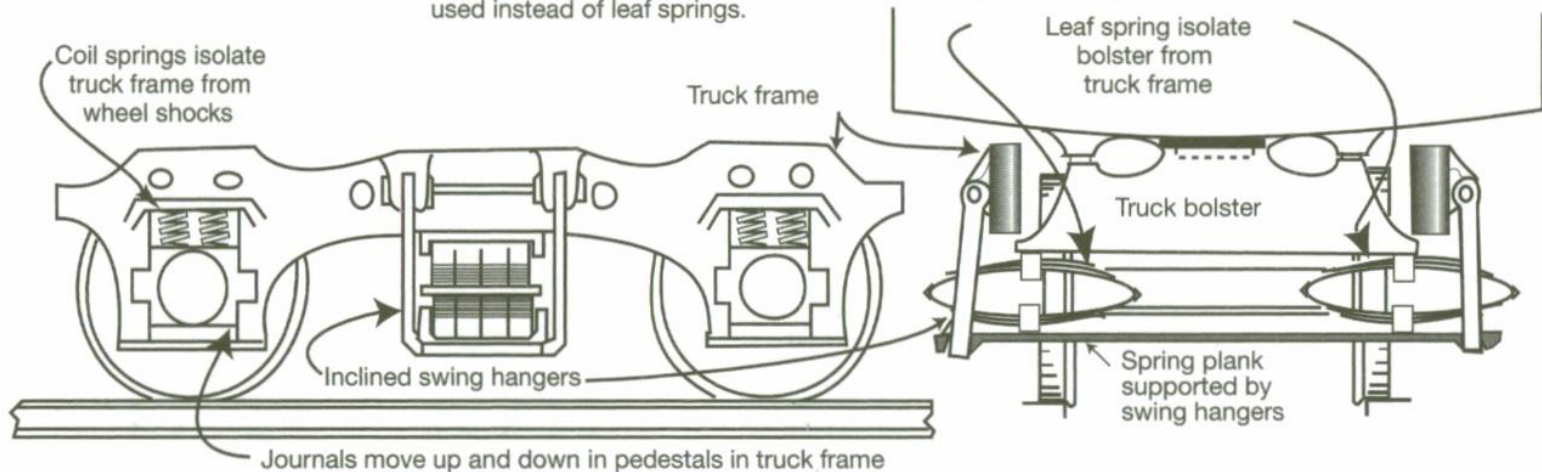


Road locomotives, passenger-train cars and some cabooses use trucks with *two-stage suspension* and *swing-motion* lateral-shock isolation or equivalent.

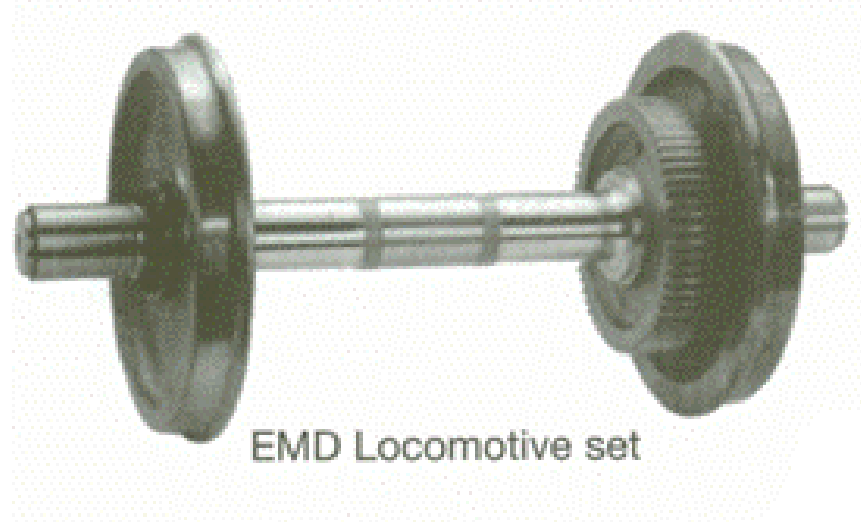
A lateral shock on the wheels and truck frame acting toward the left as at (A) will tend to tip the car body clockwise, but it will also push the truck frame to the left, tilting the swing hangers.

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.

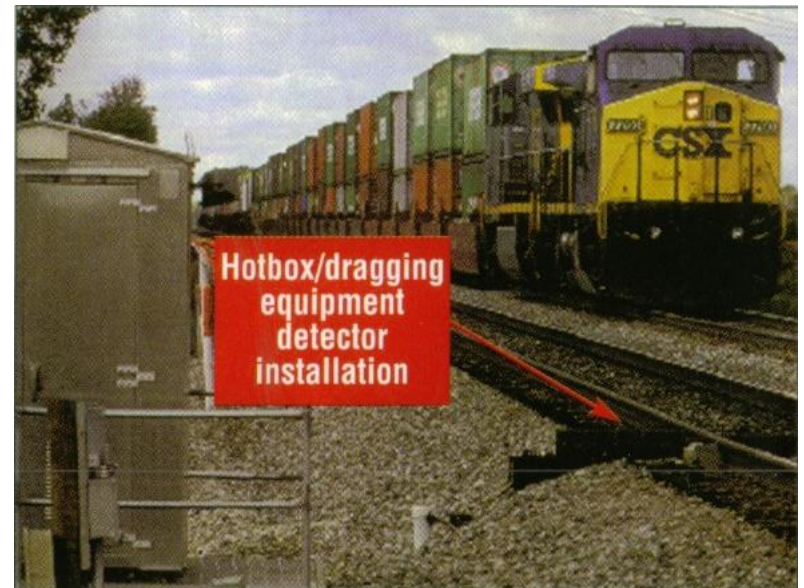
Swing hangers may be located inside or outside (illustrated) of truck frame. Coil springs with hydraulic "shock absorbers" to provide damping may be used instead of leaf springs.



- Rock and Roll



- Bearing/Hot Boxes

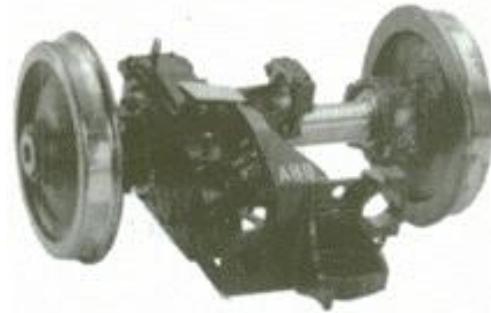


- Axles/Wheels



Light rail
vehicle set

- Thermal Loads



Heavy rail
vehicle set

- Wheel Wear



Plain bearing set



Reprofiled freight
car set

- Car Body Structure
- Truck Hunting
- Radial/Premium Trucks
- The Rolling Bridge

- Car Body Materials
- Cost and Maintenance
- Interchange and Inspections