

Rail Scale Glossary of Terms

Anti-Creep: a steel structure used to hold rails from sliding in either direction on a scale or on the approach to a scale.



AAR: Association of American Railroads

A.R.E.A.: Former American Railroad Engineering Association

AREMA: American Railway Engineering and Maintenance-of-Way Association **AREMA**

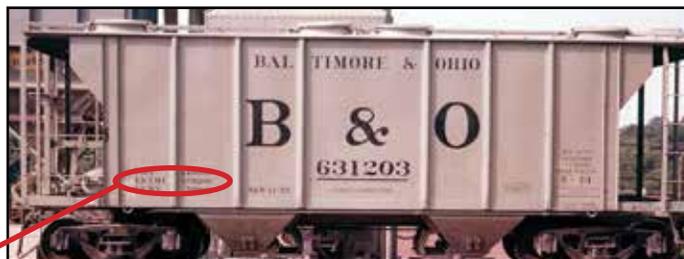
Axle Loading: Total weight on each axle expressed in Pounds per Axle (or Thousands of Pounds, or “Kips”, K per Axle). When load is not longitudinally centered on car, the axles of the truck closest to longitudinal center of gravity of load will carry a greater total load than the axles of the truck farthest from the center of gravity of the load. Their loading is Maximum Axle Loading, and is of more significance in most cases than Average Axle Loading.

Axle Spacing: Distance between centers of adjacent axles of a single truck measured parallel to longitudinal center line of car.

Ball: The head of the rail.

Ballast: Aggregate placed under the track to give it a firm, well drained base.

Car: The main unit of a train, it is pulled behind the locomotive.



Capacity (CAPY): The nominal working load of a freight car expressed in pounds, gallons, or cubic feet. This figure is stenciled on the car.

CIM: Coupled In Motion Weighing

Class I Railroad: A railroad having operating revenues of more than \$256.4 million annually.

Coupled Rail Cars: Rail cars that are coupled on one or both ends.



Coupler: An apparatus that allows cars and locomotives to be hooked up to one another.



Cooper E Loading: A live loading concept originally designed by Theodore Cooper in 1894 for the design of railroad bridges. (The “ E “ originally stood for steam engine, and designated the axle load on the drivers or drive wheels).

Cooper Rating: (1) For Cars: A measure of the effects of a load (car) or a series of loads (cars) on a railroad bridge span expressed in terms of the design Cooper E Loading. (2) For Bridges: A measure of the load carrying capacity of a railroad bridge span expressed in terms of the design Cooper E Loading.

Compromise Joint: A special joint bar used to join rail ends of two different cross-sections while holding the top running surface and inside gauge surface even.

Combination Truck/Track Scale: A Scale capable of weighing both rail cars and tractor trailers on the same platform.



Creepers: A rail anchor of spring steel that is driven onto the base of the rail and bears against the tie which is prevented from moving by the resistance of the stone ballast. The name comes from the function of the anchor which is a “rail anti-creep device.”

Double Track: Two tracks side by side.

Dead Rails: Either rail of the independent track provided over a railway track scale for the movement of locomotives and rail cars not to be weighed.

Dead Section: The distance between two sets of platform scales, also referred to as the intermediate section.

Double Draft: This method of weighing involves placing one rail car truck on a scale platform, recording the weight, and moving the rail car to weigh the second truck. The combined weight of the two rail trucks will provide a gross weight.

Expansion Rails: A rail assembly especially designed for the use in the approach to a railway track scale or similar structure, one end of which can be secured in a fixed position while the other end is longitudinally movable within designed limits.

Freight Cars: Box, Reefer, Flat, Gondola, Hopper, Tank, etc.

F.R.A.: Federal Railroad Administration



Fishplate: Length of iron, applied to either side of rail web, used to connect sections of rail together.

Flatcar: An open car without sides or roof.

Frog: The “X” shaped portion of a switch or diamond; also an implement to rerail car wheels. The intersection of two rails of a switch.

Flange: A small lip on the rail or wheels of a train that prevents the train from running off the rails.

Full Draft: A rail car can be weighed by positioning each rail truck of the rail car on an individual platform with a dead section in between the two ends.

Grade: 1. The rate at which the track rises. 2. A portion of track that is on an incline.

Gauge: Gauge of the rail track with the standard gauge being 4 feet, 8-1/2 inches apart, and with 3 feet of hang over on each side of the train.

Broad gauge (Spain):	1674 mm	5'5 9/10th"
Broad gauge (Portugal):	1665 mm	5'5 11/20th"
Broad gauge (Ireland):	1600 mm	5'3"
Broad gauge (Finland):	1524 mm	5' exactly
Broad gauge (former USSR):	1520 mm	5'
Standard gauge:	1435 mm	4'8 1/2"
Narrow gauge (Cape gauge):	1067 mm	3'6"
Narrow gauge (meter gauge):	1000 mm	3'3 37/100"

Gondola: Type of rolling stock with a flat bottom and relatively low sides, used to haul material such as ore or scrap, and loaded and unloaded from the top. May be covered or uncovered.



Gross Weight: Total of weight of car, net load, and dunnage.

Goat: A yard engine.

Grade: The ratio of elevation gained or lost per distance traveled expressed as a percent “%”. The base is 100 Ft. so a 1% grade represents a 1 ft. elevation change in 100 ft. of travel.

- Light Grade = 1% or less
- Heavy Grade = 1% to 1.8%
- Mountain Grade = 1.8% or greater
- Cresting Grade = A long ascending Grade that changes with enough magnitude to require a change in train handling procedures.

Hump Yard: A yard where gravity and powered switches sort incoming trains onto correct tracks. DO NOT HUMP signs are placed on cars that must not use a hump yard because of cargo restrictions or car age.

Hopper: An open-top car with pockets, or hoppers, opening on the underside of the car for unloading bulk commodities.

Heavy Duty Car: Car having weight capacity in excess of 100 tons.

Intermediate Section: The distance between two sets of scale platforms. Also referred to as a “dead section”

Joint Bar: A bolted plate to join two adjoining rails.

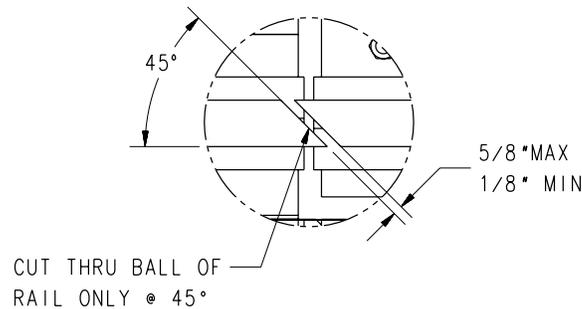


KIP (K): Unit of 1,000 pounds of weight.

Light Weight (LT WT): Weight of empty railroad car expressed in pounds. This figure is stenciled on the car. Also referred to as Tare Weight.

Mainline: The main track on a railroad, That part of a railroad exclusive of switch tracks, branches, yards and terminals. (Often large railroads have several mainlines; not a siding.)

Mitre Joint: a mitre cut across the top of the rail to allow for smooth transition from approach rails to scale rails.



Modular Rail Scale: A self-contained platform scale for weighing each end of a rail car.

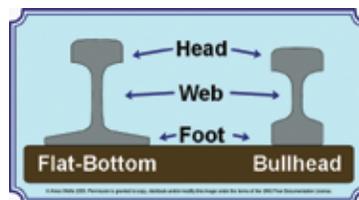
Narrow Gauge: railroad track where the rails are spaced less than 4 ft 8 1/2 in (1435 mm) apart. There are many common gauges narrower than standard, amongst them 3 ft. 6 in (1097 mm) widely in Africa and Asia; 3 ft (914 mm), which was the most common narrow gauge in the U.S.; and 2 ft (600 mm), which saw widespread use in the UK. Meter gauge (1000 mm) is also been used. Narrow-gauge lines are often found in mountainous terrain where the cost savings of building a smaller railroad can be considerable.

Piggyback: A phrase used to describe a train that has cargo containers stacked two high.



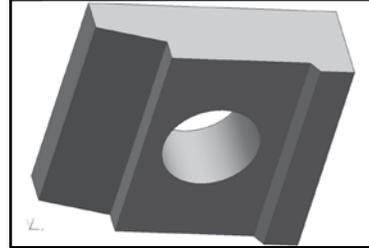
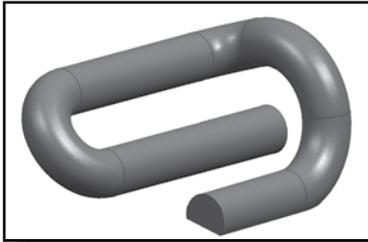
RAC: Railway Association of Canada (the AAR in Canada). 

Rail: A long metal bar that the train's wheels rest on. Rail is one of the 3 basic components of railroad track. The weight of a rail is measured in lb. per linear yard. Flat Bottom and Bullhead- Flat bottom rails set directly on ties, while Bullhead rails are installed in chairs.



Railroad Track: A road composed of parallel heavy metal bars supported by ties, which are connected by metal plates and fasteners and provide a track for locomotive-drawn trains or wheeled vehicles to travel. Rail weights are from 60 to 155 pounds per a yard. The length of rail is from 30 feet to 78 feet, with 39 being the standard length.

Rail Clips: Rails are kept secure by use steel clips such as the Foster #62 and Pandrol style clips. Clips come in a wide range of styles and configurations.



Rail Scale Approaches: The concrete surfaces leading up to and away from a rail scale installation. AREMA and the using railroad dictates type and sizes.

Rail Car Axle Centers: Distance between axles on a truck. Most trucks have axle centers that are 5'9" or 5'10".

Rail Car Truck Centers: Distance between the center lines of the car trucks. This dimension varies considerably depending on the style and manufacturer of the rail car.

Rail Sizes:

- 115 lb/yd (57 kg/m)
- 119 lb/yd (59 kg/m)
- 132 lb/yd (65 kg/m)
- 133 lb/yd (66 kg/m)
- 136 lb/yd (67 kg/m)
- 140 lb/yd (69 kg/m)

Rail Tie: A wooden or concrete slat to which the rails of the track are attached. The tie helps keep the gauge correct and the rails in place.



Rail Profile: The specific shape of the rail. There are many different rail profiles which are often specific to individual railroads. Rails need to be periodically scanned electronically, the data inspected and analyzed, then re-profiled with rail grinding machines to maintain the safe and proper "rail profile". Rails that cannot be brought back to the proper rail profile are condemned and replaced entirely.

Single Draft Scale: The rail car is weighed when all the car wheels are on the weigh rails. Except for such special cases where all cars being weighed are the same length, this type of scale is used for uncoupled-in-motion weighing for individual cars.

Spike: A bolt, pin or nail used to hold rails, or plates connected to the rails (known as saddles), to sleepers.

Spur: Short, usually dead-end section of track used to access a facility or loading/unloading ramp. It also can be used to temporarily store equipment.

Spotting: The act of placing a car in a specific location on a track.

Static Weighing: A weighing system in which the load being applied is stationary during the weighing operation.

Tare Weight: Light weight of intermodal container or railroad car. (See Light Weight)

Test Weight Car: A railroad car designed to be a stable mass standard to test railway track scales. The test weight car may be one of the following types; a self-contained composite car, a self-propelled car, or a standard rail car.

Tie Plates: A thin plate of steel setting on the ties in which spikes are driven to hold the rails in place, and support the rail on the ties.

Tie: (U.S.) Called a sleeper in the (UK)

Ton:

- Short Ton (Net Ton) is a unit of measurement used in expressing weight capacity of railroad cars and intermodal containers/trailers, or weight of shipment, and is equivalent to 2,000 pounds or 2 kips (2K).
- Long Ton is used for weight of shipment of some bulk commodities, is 2,240 pounds.
- Metric Ton is used for weight capacity of intermodal containers or weight of international shipments, is 1,000 kilograms or about 2,205 pounds.

Track Head: The top of the track on which the wheels roll.

Track Material: Materials other than ties and rails, generally refers to spikes, tie plates and rail anchors.

- Box Car = Enclosed car used for general service and for freight that must be protected from the weather.
- Flat Car = Freight car that has a floor without any housing or body above. Frequently used to carry containers and/or trailers or oversized/odd-shaped commodities. Three types of flat cars used in intermodal transportation are conventional, spine and stack cars.
- Shortline = Small railroad that originates or terminate traffic and participates in division of revenue. It is usually less than 100 miles in length. It is usually affiliated with or sold by a major railroad. An example of a BNSF Shortline is Montana Rail Link (MRL).
- Tank Car = Any car used only for transporting liquids, liquefied gases, compressed gases, or solids that are liquefied or compressed prior to loading

Tie Plate or Chair: A plate of metal that is attached to the tie and holds down the rails.

Truck: A swiveling apparatus that is attached to the underside of a car and holds the wheels. A rail truck consists of two axles and 4 wheels.

Turnout: A split in the track used to switch a train between two different tracks.



Two Draft Scales: The two ends of a car are weighed separately and the two weights obtained are added to produce a gross weight of the car.

Uncoupled Rail Cars: Rail cars that are not coupled on either end.

Unit Train: A number of contiguous cars carrying a single commodity from one consignor to one consignee. The number of cars is determined by agreement among the consignor, consignee, and the operating railroad.

Waybill: A set of papers denoting the cargo and information on that cargo for a specific car in that train.

Weigh Rail: Either of the two load receiving elements of a track scale.

Wheel Flange: The inner section of a wheel that rides between the two rails. The angle between the wheel tread and flange is often specific to the rail to prevent wheel climb and possible derailments.