



On The Subject Of Rail Codes

by Ken Scales MMR

This article has been written to take some of the mystery about HO track types, sizes and codes of rail. The NMRA Standards are really the best source of information on these matters. They contain all the exact measurements for rail and turnouts and in particular the measurements of frogs, flange ways and check rails. According to these Standards the following rail heights and weights apply to the codes of rail we use when modelling in HO Scale.

- Code 100 rail represents 152 pound rail with a height of 8.7 inches
- Code 83 rail represents 126 pound rail with a height of 7.1 inches
- Code 75 rail represents 114 pound rail with a height of 6.5 inches
- Code 70 rail represents 100 pound rail with a height of 6 inches
- Code 55 rail represents 83 pound rail with a height of 4.7 inches
- Code 40 rail represents 60 pound rail with a height of 3.5 inches

The weight of rail in the imperial system is measured in pounds per yard. The weight of rail is used by railway civil engineers to determine the strength of the rail and then maximum axle loads and speeds for that section of track. The weights and heights of rail for smaller and larger scales adjust according to the scale. I have a partly build World War 1 Military Layout which is 1:35 Scale and uses code 75 rail. This is adjusted to represent 45 pound rail with a rail height of 2.6 inches.

Many of the USA books we read show older light low horsepower diesels meandering along low wobbly light weight rail. However by 1965 in USA most new locos were producing around 3000 HP and many had only four axles. On top of this many USA locos were ballasted and were getting up towards 180 tons each. Consequently a 5 unit consist could weigh around 900 tons. Although the light rail may look nice you do not apply 15000 horsepower with 900 tons of locos on a continuous basis to light fragile rail, even in 1965. In Australia most locos were a lot lighter and most used 6 axle trucks so consequently rail was generally a lot lighter. The older Australian mainline diesels were usually just over 100 tons and developed around 1800 horsepower. The bigger later diesels such as the NSW 90 class diesel weighs 165 tons and produces 3838 horsepower while an 82 class weighs 132 tons and produces 3000 horsepower. Most of the newest Australian locos have six axles, weigh in around 134 tons and produce about 4200 horsepower. Steam engines produce a hammer blow action on rail and a whole different set of circumstances apply to steam but you still do not drive a 400 ton Big Boy at speed on 40 pound rail. The moral of the story is to use a code of rail that represents what you are modelling.

For beginners the easiest type and code of track to lay seems to be Peco Code 83. The frogs and flange ways on this track are very well engineered and in particular suit the narrower wheels that are being fitted to much of the newer rolling stock and locos. The points are sprung and can route power to sidings. Both insulfrog and livefrog Peco points will work with either DCC or DC provided they are wired correctly. The same is true of Peco Code 100 and Peco Code 75 rail products. Most other brands of track such as Atlas and Micro Engineering give perfect running if laid and wired correctly. Even the much maligned Shinohara can be made to behave perfectly but the skill level required is much greater than that required for Peco.

Peco Code 83 track has slightly smaller sleepers which fix the rail with spikes and is very representative of USA mainlines in the late steam and early diesel eras. Peco Code 75 and Code 100 have wider sleepers and the rail is fixed with clips which is more representative of the modern era track. You can also hand lay track and points either using the Data from the NMRA Standards or jigs such as the Trackfast System. There are considerable cost savings using the Trackfast jig on large layouts to make a lot of points. However you need a separate jig for each size point. This system is ideal for experienced modellers but the jury is still out regarding inexperienced modellers building larger layouts with a lot of handmade points.

Most of the information above is general and meant to help those starting out so I am sure not everyone will agree with all of it. However it is very important to start with track you will be happy with in the future. I have built layouts using all types of Peco Track as well as Atlas and Shinohara. My personal favourite for HO is Peco Code 83 because it is easy to get, easy to lay and it just works. Many of us still use Peco Code 100 because we accumulate large amounts of track and points over many years of modelling.

This means we have a large investment and when we build the next layout it is far more cost effective to reuse what we have. This also means you may be stuck with your original choice in years to come. It also saves a lot of time if you use a product you can buy over the counter at the nearby hobby shop. You simply buy what you need as you go. The internet may sometimes be cheaper but you cannot drive down to the internet on Saturday afternoon and get that extra No 6 Right hand point to finish the yard you have been building for six weeks.