

5. Vehicle standards

5.1 General vehicle standards

To ensure troublefree operation all locomotives, passenger coaches and freight cars need to comply to a few standards, which are easy to understand. These standards include wheels, couplers, electrical system and maximum train length.

5.2 Wheel standards

On J-Modules normal N-scale wheels are to be used, the Japanese manufacturers use wheels that are very similar in terms of back-to-back and wheel flange dimensions. Please check when you want to run very old models or models with modern low-profile wheels (not yet supplied by the Japanese brands). Turnouts are the critical place, so test there. Normally, the manufacturers have done most of the hard work and most Japanese models do not cause any trouble, when used on Tomix, Kato or Peco track.

5.3 Couplers

Couplers are the devices used to join several vehicles into a train. Couplers have to transfer the traction and braking forces in an accelerating train or absorb the braking force when slowing down. Recommended is the use of the standard N-scale (Rapido) coupler, but there are a few exceptions:

5.3.1 Magnetic knuckle couplers

1. The use of magnetic-uncoupling knuckle couplers, as offered by Micro-Trains, Atlas and lately, Kato is allowed and may be encouraged for prototypical shunting operations. When using these couplers, be sure that you have suitable uncoupling devices (magnets or electromagnets) built into your modules. These couplers may be fitted on locos, coaches and wagons. Please ensure that there are no screws etc. protruding downwards between the rails, the use of the Micro-Trains trip pin gauge is recommended (0.25 mm clearance between railtop level and underside of train). Magnetic couplers are most useful on locomotives used for freight duties and freight wagons.

5.3.2 Fixed rakes and multiple-units

2. Within a fixed rake of rolling stock (passenger train, EMU, DMU) all kinds of coupler may be used. When such a unit is loco-hauled, either a Rapido or a Micro-Trains compatible knuckle coupler may be used at the outer ends of the unit. Recommended for internal rake use are the Tomix TN-style couplers, which are available in a wide variety, perform well and have a 'short-coupling' feature. In case of using a knuckle coupler, a loco equipped with a matching coupler should be supplied by the owner of the rake.

5.4 Electrical system

Locos and MU power cars should perform according to the NMRA standard S-9 and NEM 630 and 631 standards. These standards are almost identical.

As normal DC is used on the J-Modules, all rolling stock needs to be DC-compatible. When you take your trains straight from the box, there is *nothing to worry about*. The use of DCC-decoder fitted locos is not recommended, the Tomix 'CL' controllers used by some modellers have an output waveform that may damage the sensitive DCC decoders. The same applies to Selectrix (Trix, Müt, Rautenhaus) and other command control decoders or receivers. Simply put: no decoders fitted into your rolling stock, to avoid damage to the decoders.

Recommended practice: Use normal DC locomotives and rolling stock wherever possible, no problem with Japanese models straight out-of-the-box.

Some background information: In normal DC operation the right-hand rail is the positive lead (+) and the

left-hand rail is the return lead (-), when seen in the direction of travel. This is explained in the NEM standard 630 and 631 or NMRA standard S-9. (NEM are the European standards, *Normen Europäischer Modellbahnen*, NMRA stands for *National Model Railroaders Association*, US standards)

5.5 Maximum train length

This very important, as maximum train length should be shorter than the minimum length for sidings and station platforms. Discussion learned that the maximum train length should not exceed 150 cms. This equals a train length of about 10 cars for multiple units (EMU or DMU) and 9 cars plus a locomotive for loco-hauled trains. Any extra locomotives count as a single car. Be aware that articulated locos (EH10, EH500, DD50) and tender steam locos are longer than single-unit diesel, electric or tank locomotives. Under some conditions longer trains may be used, provided that there's at least one siding on the setup where they could be parked.