

NCMRS ETC Department Reference Guide

Overview

The goal of the Evaluation, Testing & Certification (ETC) Department is to ensure that equipment, both locomotives and rolling stock, run on our layouts conform to the standards approved by the membership and published in the Appendices of the NCMRS New Member Orientation & Training Guide. The copy of the Club Standards on the NCMRS Website includes link to all of the referenced NMRA Standards & Recommended Practices. Click on New Members Information, then click on Rolling Stock.

Section 4 of the Appendices states “All rolling stock that is used on a club layout shall be certified by the Evaluation, Testing & Certification Department as meeting the Club Standards at least once a year.” This section further defines the steps to be taken when a piece of equipment does not meet these Club Standards.

Guidelines

1. The Club Standards are primarily based on the NMRA Standards and Recommended Practices.
2. This Department ***does not perform any maintenance*** on equipment that does not pass these Club Standards.
3. This Department ***does not ensure the proper installation or functioning of a decoder installed in a locomotive.*** When it is given to the ETC Department, it is assumed that the decoder is functioning properly and an address is properly set. ***In no circumstances shall any decoder be changed from the settings made by the owner!***
4. Non-DCC (DC Analog) locomotives used on the Show-N-Go shall also meet the Club Standards with the exception of the couplers. Individual members may also request certification of their DC Analog locomotives on an as-available schedule. DCC equipment locomotives shall have priority in certification.
5. Copies of the following NMRA Recommended Practices have not been included in this Guide but are used for reference.
 - RP-2 Standards Gauge
 - RP-20.1 Car Weight
 - RP-24.2 Wheelsets
 - Weight Guide
6. A copy of the following checklist along with the explanation of definition of each item checked is included in this guide:
 - NCMRS Locomotive Certification
 - NCMRS Rolling Stock Certification
 - Sample Record of Certified Rolling Stock
7. The following Gauges & Tools are used for all measurements required by this Guide:
 - NMRA RP-2 Standards Gauge
 - Kadee HO Scale Coupler Height Gauge #205
 - The Portable 3' Test Track
 - The permanent Test Tracks
 - Power Application Jig
 - Zephyr DCC Controller
 - DC Analog Controller
 - Digital Scale

8. At the completion of each Inspection, whether successfully completed or not, a copy of the Certification sheet will be given to the member with the recommendation that it be kept for future reference.

NCMRS LOCOMOTIVE CERTIFICATION

Owner: _____

Loco Type: _____

Road Name & Number: _____

Important Note: All checks are made in accordance with NCMRS Rolling Standards listed in the Members Orientation & Training Guide.

<i>General Condition:</i>	<u>YES</u>	<u>NO</u>	<u>Comment</u>
DCC Equipped?	___	___	
No Excessive Lubrication?	___	___	
No Loose Parts?	___	___	
No Low Hanging Parts	___	___	

<i>All Wheels & Trucks:</i>			
Wheels Metal?	___	___	
Wheels Clean?	___	___	
Moving Parts Free?	___	___	
Wheel Wobble Not Excessive?	___	___	
Wheel Width Correct?	___	___	
Tire Depth Correct?	___	___	
Non-Driver Wheels Spin Free?	___	___	
Trucks Run Straight/Not Bind?	___	___	

Tender Specific: (Not applicable to Diesel Locos nor Steam Loco Tenders that contain Decoders)

Tire Width Correct?	___	___	
Trucks Run Straight/Not Bind?	___	___	
Trucks Mounted/Wobble Correctly?	___	___	
Weight Correct?	___	___	

<i>Couplers:</i>			
Rear Coupler/Front Coupler?	___	___	
Metal & Kadee Compatible?	___	___	
Fastened Securely?	___	___	
Moves Freely & Returns To Center?	___	___	
Knuckle Functions OK?	___	___	
Height Correct?	___	___	
Glad Hand/Trip Pin Height Correct?	___	___	
Front Pilot Clear Railhead?	___	___	

<i>Performance:</i>			
Pull Up 2% Grade?	___	___	
Negotiate #6 Turnout?	___	___	

Certified By: _____

Date: _____

Locomotive Certification Definitions

If the **YES** column cannot be checked, when possible, note what the problem(s) are in the comments section.

General Condition:

- DCC Equipped? – Self explanatory
- No Excessive Lubrication? – There should be no way that a locomotive will deposit any lubricant on the tracks.
 - On a diesel locomotive, check the bottom of the trucks for excess lubrication. Also check the wheel surfaces for signs of lubricants. If there are any signs of lubrication in these areas, it is excessive.
 - On steam locos, check the axle retaining plate that secures the driving wheels and the driving wheels themselves to ensure there is no sign of lubricants. If there are any signs of lubrication in these areas, it is excessive.
- No Loose Parts – Ensure there are no items that can fall off the locomotive or foul anything that it moves by.
- No Low Hanging Parts – Ensure nothing hangs low enough to foul turnouts or crossovers.

All Wheels & Trucks:

- Wheels Metal? – Self explanatory. Vinyl traction tires are acceptable.
- Wheels Clean? – Using the Power Application Jig with the appropriate Controller, slowly apply power to the pickup wheels to verify they are clean all around.
- Moving Parts Free? – This check is made under power. Ensure any moving part associated with movement will move freely and does not bind.
- Wheel Wobble Not Excessive? – For the driven wheels, using the Power Application Jig with the appropriate Controller, slowly apply power to the pickup wheels to verify no wobble. For the truck wheels, spin the wheels to check for wobble. If wobble is noted, check the wheel width at $\frac{1}{3}$ increments around the wheel to ensure the wheels remains within the correct wheel width.
- Wheel Width Correct? – As tested using the NMRA RP-2 Standards Gauge section labeled WHEELS, Section 4A, 4B & 4C.
- Tire Depth Correct? - As tested using the NMRA RP-2 Standards Gauge section labeled WHEELS, Section 4D.
- Truck Wheels Spin Free? - Self explanatory. *Important Note:* If an electrical pickup is used on the axle, the wheels will not spin freely – in this case ensure the wheels roll smoothly with no binding.
- Trucks Run Straight/Not Bind? - Self explanatory.

Tender Specific

- Tire Width Correct? - As tested using the NMRA RP-2 Standards Gauge section labeled WHEELS, Section 4E & 4F.
- Trucks Run Straight/Not Bind? – Ensure that the wheels in all trucks align in a straight line to preclude the tender from running down the track sideways. All trucks must rotate freely on their bolsters.
- Trucks Mounted/Wobble Correctly? – One set of trucks must be set to allow minimum side-to-side wobble while the other set must be free to allow some side-to-side wobble. This prevents the tender from wobbling on the track like a toy train car but allows the tender trucks to follow any inconsistencies in the track.

- Weight Correct? – This applies only to tenders that are not electrically connected to the locomotive via wires and/or electrical connections or a driveshaft. If the tender is a separate entity connected only by a drawbar, it shall have the correct weight for the tender body length as spelled out in the Weight Guide.

Couplers:

- Rear Coupler? – All tenders must have a rear coupler. Locomotives without a tender must have a rear coupler. Dummy front couplers are acceptable on steam locomotives.
- Metal & Kadee Compatible - Self explanatory. Using the ohm meter set on the 20Kohm scale, verify there is no connectivity between the couplers and the wheels.
IMPORTANT NOTE: Unit train consists (permanently run together) are not required to have end couplers.
- Fastened Securely? – The coupler mounting must be affixed securely and not be allowed to turn/rotate.
- Moves Freely & Returns To Center? – When the coupler is flicked side-to-side, it must freely return to the center position. A hang-up on either extreme will prevent proper coupling with other cars whose couplers function properly.
- Knuckle Functions OK – Ensure that portion of the coupler that pivots open and close will spring back to the closed position when manually opened.
- Height Correct? - Self explanatory. As measured using the Kadee Coupler Height Gauge. Vertical alignment of the coupler to the Gauge must not deviate by no more than 1/8 the height of the coupler knuckle.
- Glad Hand/Trip Pin Height Correct - Self explanatory. As measured using the Kadee Coupler Height Gauge.
- Front Pilot Clear Railhead? – Use a penny lying flat between the pilot and the track to ensure minimum clearance. This ensures a pilot will not foul when entering a grade or a frog on a turnout.

Performance:

- Pull Up a 2% Grade? – Ensure the locomotive will climb the 2% grade Test Track pulling the equivalent of four properly weighted 40 foot boxcars.
- Negotiate #6 Turnout? – Ensure the locomotive will properly run through the #6 turnout on the dual Test Tracks at a moderate speed pulling the equivalent of four properly weighted 40 foot boxcars.