

National Capital Trackers

Module Inspection Program

Critical Category

The Critical Category covers all aspects of interconnecting a module to other modules. (Electrical, physical, and track spacing) If the module fails, it cannot be used in a show layout. The owner shall correct and pre-inspect before inclusion in a show

Grandfathered Modules: *Modules constructed prior to the NCT Standards approved 20 April 2015).*

Modules constructed before 20 April must meet all the critical inspection standards and pass critical standards tests (physical, track offsets, and electrical connection, but are indefinitely exempt from the details outlined in the current standards.

Newly Constructed: Modules constructed after the new standards were approved by the membership (20 April 2015) must meet all the critical inspection standards plus the items outlined in the new NCT standards

1. Module Construction
 - a. Reference the Basic Module Standards P 4
 - b. Reference the Building Guide P 10
1. Wiring
 - a. Reference the NCT Electrical Standards P 7-8.
- 3 Track
 - a. Reference NCT Track Standards P-6

Special Waiver Modules: *Modules in this category are typically corners, bridges and modules due to their creative design. For example: extending the track to the end of the module, special scenic design.*

1. Module Construction

- a. Size
 - 1. Length: 48 Inches or multiples of 48 inches
 - 2. Width: Minimum 15 1/2 in, maximum 60 In
- b. Framing (1X3 or 1X4) clear and straight poplar or pine
 - 1. At least one cross support
 - 2. Square assembly (front to side)
 - 3. Add on molding to hold Plexiglas. The top of the molding should be mounted flush with the module surface and attached with adjustable screws.
- c. Plywood decking (Solid, Smooth and Level),
 - 1. Level in all directions **(No Sagging)**
 - 3. Leg pockets, except for bridges that attach to adjacent modules
- d. Legs (Module must be self-supporting) except bridges
 - 1. Support module at 40" measured at top of track (Railhead)
 - 2. Adjustable + / - 1 inch
 - 4. Rubber or Plastic feet to protect flooring

How to Inspect Module Construction:

- 1. Verify framing is 1x3 or 1x4***
- 2. Verify molding for Plexiglas is attached and adjustable***
- 3. Verify length and width using a tape measure***
- 4. Verify square assembly using a Carpenters square***
- 5. Verify the surface is level in all directions using a 3 or 4 foot level (No Sagging)***
- 6. Inspect the leg and socket hardware (firmly attached) and adjustable +/- 1 in for a 40 in railhead. Verify rubber or plastic feet***

2. Wiring / Electrical

1. Club Harness Installed NCT-WH01-6FT **Harness not altered**
2. Minimum 14 Ga wire to track
3. Track feeds are soldered to the underside or bottom of the track.
4. For blackened center rail the blackening must be removed with a Dremel tool, Flux must be removed to prevent corrosion
5. Track feed wire color code should match the Harness color code
 - a. White, Outside track power
 - b. Black, Outside ground return (both outside rails)
 - c. Blue, Middle Track power
 - d. Gray, Middle ground return (Both outside rails)
 - e. Red, Inside track power
 - f. Brown, Inside ground return (Both outside rails)
 - g. All Ground returns must be separate for each track (*No continuity between grounds track to track*)**
6. Passing Sidings that are part of the mainline operation may use main line track power.
7. Other than passing sidings all additional tracks must be isolated (Both power and Ground) from the main lines. Any additional tracks must be powered from a separate power source.
8. Turnouts (Switches) must use a separate power source for motors and lights
9. All accessories must have their own separate power source (Not track power)
10. Inspect solderless connectors and Power Pole connectors
11. Inspect terminal strips for loose connections
12. Check continuity of wiring (**Power Pole Connectors to Track**)

How to Inspect Wiring / Electrical:

- 1. Verify the Club Wiring Harness is Installed (NCT-WHO1-6FT)***
- 2. Verify the minimum track feeds are 14 Gauge. The proper color coded track feeds are supplied with the club harness. These feeds can be attached to the track or wire already attached to the track using crimped connectors***
- 3. Verify the integrity of the wiring harness and connections using the Inspection Harness Checker Tool. (TBD)***
 - a. Include directions for attaching the harness checker and what to expect if everything is OK or if a failure is present.***
- 4. Passing sidings may use main line power (siding and mainline the same)***
- 5. Sidings (Non-passing) must have their own power source and isolated from the main line power and ground, (Separated with Plastic Isolation Pins Verify all track isolation using a ohm meter (Multi-meter)***
- 6. All accessories must have their own power source, using track power is prohibited. Verify all track isolation using a ohm meter (Multi-meter)***
- 7. Verify switch motor power is separate not track power***

Track

- a. Three Main Lines (Lionel tubular, K Line ,Gar Graves or Ross)
- b. Track positioning (measure from front edge of the module to the center rail)
 - 1. The outside track center rail is 3 ½ inches from the front edge
 - 2. The middle track is 7 ¾ inches from the front edge
 - 3. The Inner track is 12 inches from the front edge
- c. Maintain 4 ¼ spacing between tracks measured at center rail
 - 1. Curve minimum is O-72
 - 2. If curves are used adequate clearance between tracks must be check. (Big Boys or Large 89' cars must not touch adjacent rolling stock or engines)
- d. Straight track (Use a straight edge)
- e. Check Track condition
- f. Check Bridge tracks both 5 and 10 inch
 - 1. When non Lionel tubular track is used the module owner must provide the proper adapter pins or transition tracks as well as the required 5 and 10 inch bridge tracks
- g. Check Lionel track insulators

How to Inspect Track:

- 1. Verify track type (Three main lines)**
 - a. Lionel Tubular**
 - b. Gar Graves**
 - c. Ross**
 - d. Atlas**
- 2. Using test jig measure track placement from the front edge of the module**
 - a. Outside main 3 ½ to center rail**
 - b. Middle main 7 ¾, to center rail**
 - c. Inside main 12 inches to the center rail**
- 3. Verify main lines end 5 inches from the end of modules**
 - a. Special waivers due to design must be considered.**

- 4. Using a long straight edge (4 foot yard stick) verify the main line track is laid in a straight line.***
- 5. Verify track spacing 4 ¼ between main lines (Center rail to center rail)***
- 6. Using a two extra-long cars check track to track clearances especially when curved track is used. (Minimum curve is O72). Will cars suffice or are Big Boy type engines needed for this test??***
- 7. Check track insulators for wear and shorts (Lionel Tubular)***
- 8. Inspect bridge tracks***

Non-Critical Category

Both **Grandfathered** and **New Build** modules are inspected in the same manner. If a failure is noted in the non-critical category the module owner is expected to repair the deficiency as early as possible. Failure will not exclude the module from the show.

Plexiglas:

1. Size
2. Condition of Plexiglas (Scratches)

Velcro:

1. Proper Velcro both front and rear of module
2. Location of Velcro (measured from the top of module)

How to Inspect Non-Critical:

- 1. Plexiglas should be 6 x 48 x 1/8 inches***
 - a. Special waivers may be considered***
 - b. Mounted with 5 inches of the Plexiglas above the module surface***
- 2. Verify condition of Plexiglas***
 - a. Clear and free of excessive scratches***
 - b. Smooth edges for safety reasons (Less chance of injury)***
- 3. Velcro***
 - a. Attached both front and rear of module. 1 ½ inches measured from the module surface (Velcro Hook)***