



Curved Track Centers

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NMRA Recommended Practices
RP-7.2
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NMRA RP-7.2 tabulates minimum recommended curved track centerline spacing (track centers) for various radii based on the four modeling eras defined in NMRA RP-7.1. The locomotive having the longest end-overhang, and the car with the widest bolster spacing, define the limiting equipment in use for each era. This equipment, and the era’s minimum tangent track centerline spacing (defined in NMRA RP-7.1), establish the curved track centers presented in the **MINIMUM CURVED TRACK CENTERS** table shown below. For each era, the limiting equipment and tangent track centers are:

Old Time/Narrow Gauge:

- Limiting Loco:** GN 2-6-6-2 of 1906
- Limiting Car:** 80-ft Passenger car
- Tangent Centers:** 12 feet

Classic:

- Limiting Loco:** UP 4-8-8-4 Big Boy
- Limiting Car:** 85-foot AREA “Design Car”
- Tangent Centers:** 13 feet

Early Modern and Modern:

- Limiting Loco:** EMD DDA40X Locomotive
- Limiting Car:** 90-ft Greenbrier Multi-Max Auto Rack
- Tangent Centers:** 14 feet

The Early Modern and Modern eras have the same limiting equipment and tangent centers, so their curved track centers are the same, and thus appear on the same line in the table. Be aware that obstacle clearances for these eras are not the same (see NMRA RP-7.3).

Layouts constructed to the minimum track centers in one of these eras should accept models of that era’s limiting and smaller equipment. Larger models from one era may encounter clearance problems on layouts built for other eras. For example, operating a Big Boy on a layout built for the Early Modern or Modern era may not have sufficient clearance, especially on curves of tighter radii. This may be considered during layout planning, or easily checked using the **MINIMUM CURVED TRACK CENTERS** table for existing layouts with known curved track centers.

Notes:

1. Prototype track centers are included for scaling to modeling scales not presented in the table.
2. Radius is measured at the track centerline – midway between rails of the inner of multiple tracks.
3. Always use a radius that equals or exceeds the larger of the equipment manufacturer’s minimum radius (if given) and the minimum radius prescribed by **NMRA RP-11**.
4. The **Tangent** values in the table are the recommended minimum track centers for parallel straight (tangent) track defined in **NMRA RP-7.1**. You may select any greater tangent center you like to accommodate personal preferences, for example, “finger” widths for equipment handling.
5. When your selected radius falls between two presented in the table, use the track center for the smaller of the two radii.

6. If a track center prescribed in the table is less than the tangent track center you may have selected in note 4, use your selected tangent track center instead of the table value.
7. Dual gage track shall use standard gage radii, centers and clearances.
8. Narrow gage locomotives and other equipment built on standard gage frames, such as K types, require standard gage track centers.
9. Increased track centers for curves shall be eased (see **D3 series Data Sheets**) for a distance along the track consistent with the equipment used.
10. If you prefer to use other equipment, or intend to use superelevation, use the accompanying **NMRA Curved Track Center and Obstacle Clearance Assistant**, following the instructions given in **NMRA RP-7.6**.
11. Construction or operation of equipment on curves sharper than those listed for its era are neither prohibited nor recommended.

MINIMUM CURVED TRACK CENTERS

Curvature (degrees)	0	5	10	15	20	25	30	35	40	45
PROTOTYPE Radius (ft.)	Tangent	1146	574	383	288	231	193	166	146	131
Old-Time/NG (ft.)	12.0	12.7	13.4	14.0	14.7	15.3	15.9	16.5	17.0	17.5
Classic (ft.)	13.0	14.2	15.5	16.7	17.8	18.9	20.0	21.0	22.0	23.0
Early Modern/Modern (ft.)	14.0	15.0	15.9	16.8	17.7	18.6	19.4	20.2	20.9	21.6
O SCALE Radius (in.)	Tangent	286 9/16"	143 13/32"	95 25/32"	72"	57 3/4"	48 9/32"	41 9/16"	36 9/16"	32 21/32"
Old-Time/NG (in.)	3"	3 3/16"	3 11/32"	3 1/2"	3 21/32"	3 13/16"	3 31/32"	4 1/8"	4 1/4"	4 3/8"
Classic (in.)	3 1/4"	3 9/16"	3 7/8"	4 5/32"	4 7/16"	4 23/32"	5"	5 1/4"	5 1/2"	5 3/4"
Early Modern/Modern (in.)	3 1/2"	3 3/4"	3 31/32"	4 7/32"	4 7/16"	4 21/32"	4 27/32"	5 1/32"	5 7/32"	5 13/32"
S SCALE Radius (in.)	Tangent	214 15/16"	107 9/16"	71 13/16"	54"	43 5/16"	36 7/32"	31 3/16"	27 13/32"	24 1/2"
Old-Time/NG (in.)	2 1/4"	2 3/8"	2 1/2"	2 5/8"	2 3/4"	2 7/8"	2 31/32"	3 3/32"	3 3/16"	3 9/32"
Classic (in.)	2 7/16"	2 21/32"	2 29/32"	3 1/8"	3 11/32"	3 9/16"	3 3/4"	3 15/16"	4 1/8"	4 5/16"
Early Modern/Modern (in.)	2 5/8"	2 13/16"	3"	3 5/32"	3 5/16"	3 15/32"	3 5/8"	3 25/32"	3 29/32"	4 1/16"
OO SCALE Radius (in.)	Tangent	191 1/32"	95 5/8"	63 27/32"	48"	38 1/2"	32 3/16"	27 23/32"	24 3/8"	21 25/32"
Old-Time/NG (in.)	2"	2 1/8"	2 7/32"	2 11/32"	2 7/16"	2 9/16"	2 21/32"	2 3/4"	2 27/32"	2 15/16"
Classic (in.)	2 5/32"	2 3/8"	2 9/16"	2 25/32"	2 31/32"	3 5/32"	3 11/32"	3 1/2"	3 21/32"	3 27/32"
Early Modern/Modern (in.)	2 11/32"	2 1/2"	2 21/32"	2 13/16"	2 15/16"	3 3/32"	3 7/32"	3 11/32"	3 15/32"	3 19/32"
HO SCALE Radius (in.)	Tangent	157 15/16"	79 1/16"	52 25/32"	39 11/16"	31 27/32"	26 5/8"	22 29/32"	20 5/32"	18"
Old-Time/NG (in.)	1 21/32"	1 3/4"	1 27/32"	1 15/16"	2 1/32"	2 3/32"	2 3/16"	2 9/32"	2 11/32"	2 13/32"
Classic (in.)	1 25/32"	1 31/32"	2 1/8"	2 9/32"	2 15/32"	2 19/32"	2 3/4"	2 29/32"	3 1/32"	3 5/32"
Early Modern/Modern (in.)	1 15/16"	2 1/16"	2 3/16"	2 5/16"	2 7/16"	2 9/16"	2 21/32"	2 25/32"	2 7/8"	2 31/32"
TT SCALE Radius (in.)	Tangent	114 5/8"	57 3/8"	38 5/16"	28 25/32"	23 3/32"	19 5/16"	16 5/8"	14 5/8"	13 1/16"
Old-Time/NG (in.)	1 3/16"	1 9/32"	1 11/32"	1 13/32"	1 15/32"	1 17/32"	1 19/32"	1 21/32"	1 11/16"	1 3/4"
Classic (in.)	1 5/16"	1 7/16"	1 17/32"	1 21/32"	1 25/32"	1 29/32"	2"	2 3/32"	2 3/16"	2 5/16"
Early Modern/Modern (in.)	1 13/32"	1 1/2"	1 19/32"	1 11/16"	1 25/32"	1 27/32"	1 15/16"	2"	2 3/32"	2 5/32"
N SCALE Radius (in.)	Tangent	85 31/32"	43 1/32"	28 23/32"	21 19/32"	17 5/16"	14 1/2"	12 15/32"	10 31/32"	9 13/16"
Old-Time/NG (in.)	29/32"	15/16"	1"	1 1/16"	1 3/32"	1 5/32"	1 3/16"	1 1/4"	1 9/32"	1 5/16"
Classic (in.)	31/32"	1 1/16"	1 5/32"	1 1/4"	1 11/32"	1 13/32"	1 1/2"	1 9/16"	1 21/32"	1 23/32"
Early Modern/Modern (in.)	1 1/16"	1 1/8"	1 3/16"	1 1/4"	1 11/32"	1 13/32"	1 15/32"	1 1/2"	1 9/16"	1 5/8"

For those who may be interested, **NMRA TN-7 Track Center and Obstacle Clearance Calculation Methodology** describes the underlying engineering analysis behind the tabulated values.

Change History:

1. August 1964: Originally standard S-8 (Track Centers). Track centers based on “Normal Centers” and “Large Equipment”. “Normal Centers” was based on 17-foot rigid wheelbase diesel locomotives and 60-foot passenger cars. “Large Equipment” defined as the UP 4-8-8-4 locomotive (“Big Boy”). Tangent track was based on the ‘A’ dimension (15’) in S-7.
2. July 2002: S-8 (Track Centers). Track centers based on three classes: Class II, Class I and Class Ia. These three classes defined different size locomotives and cars. Tangent track was based on the ‘A’ dimension (15’) in S-7.
3. July 2017: Changed NMRA S-8 to a Recommended Practice because the dimensions in S-8 are not critical to interoperability of equipment. Track centers based on four eras – Old Time/NG, Classic, Early Modern and Modern – which is consistent with RP-7.1. Tangent track centers are based on AREA established clearances as follows: NG/Old Time = 12’; Classic = 13’; Early Modern = 14’, Modern = 14’.
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