[Optional] Authors of this revision; include prior authors if minor revisions

1 General

This Standard is to provide target dimensions for scale track, and an upper and lower limit whereby track manufactured within these limits will accommodate the operation of wheels built within the limits of S-4.2, without fault.

1.2 Introduction and Intended Use (Informative)

It is not the specific purpose of the NMRA STANDARDS to set production dimensions or tolerances but rather to set limits which manufacturers can use when setting their tolerances. When used to determine manufacturing tolerances, care must be taken to ensure that the production dimensions are not at the extreme edge of the range specified. Specific NMRA Tech Notes supplement the standards to provide additional guidance.

1.3 References

This standard should be interpreted in the context of the following NMRA Standards, Technical Notes, and Technical Information.

1.3.2 Normative

- S-1 General Overview
- S-1.2 General Standard Scales
- S-3 Trackwork
- S-3.1 Proto and Fine Scales
- S-3.3 Deep Flanges for Guarded Track
- S-4.2 Scale Wheels
- RP-7 Track Centers and Obstacle Clearances
- RP-7.1 Tangent Track Centers and Clearance Diagrams
- RP-7.2 Curved Track Centers
- RP-7.3 Tangent Track Centers and Clearance Diagrams
- RP-7.4 Interurban Track Centers and Obstacle Clearances
- RP-11 Curvature and Rolling Stock
- RP-25 Wheel Contour

1.3.3 Informative

- TN-3.2 Track Standard Scale (yet to be written)

1.4 Terminology

Term	Definition
Inside Railhead	When standing between the rails, this is the edge of the railhead closest to the observer.
Outside Railhead	When standing between the rails, this is the edge of the railhead farthest away from the observer.

Term	Definition
Frog	The area where the rails cross at the diverging and straight routes of the turnout. It is located at the heel of the closure rails and is the point where the diverging route and the straight route become fully defined as separate tracks. Also, in crossings where one route crosses another. There are four frogs in a single gauge crossing, and one frog in a single-gauge turnout.
Closure rails	The rails between the heel of the point rails and the frog, which guide the railcars and locomotives towards the different routes.
Point Rails	The movable rails, pointed at the leading edge as one is facing the length of the turnout looking along the rails from the entrance of the turnout towards the two diverging routes at the far end. These rails may be separate from the closure rails and hinged where they meet them, or they may be integral with the closure rails and moved by flexing the rail for a distance from the points.
Stock Rails	The continuous rails that make up the outside rails of the turnout. While facing down the length of the turnout towards the diverging routes, the stock rails begin to diverge from each other at the points and extend beyond the frog and become the two outside rails of the diverging routes.
Wing Rails	Those rails which make up the guard rails of the frog.
Guard Rails	Those rails positioned along the stock rails and which extend from a point before the frog to a point past the frog. Their purpose is to guide the wheels through the frog area, keeping the inside wheel flanges from hitting or "picking" the frog as they roll through the frog.
Switch Point	The very end of the point rails that move from side to side to select the route in a switch.
Column Headings	
Track Gauge - G	The distance between the insides of the railheads.
Check Gauge - C	The distance between the frog railhead and the outside of the guardrail railhead.
Span - S	The distance between the outside of the wing rail railhead the outside of the guardrail railhead.
Flangeway - F	This is the distance between both the inside of the stock rail and the guard rail, and the frog rail and the wing rail. F1 is the flangeway at the frog, and F2 is the flangeway at the stock rail. F1 and F2 may have different dimensions, depending on the track in question. F1 and F2 will fall within the measurement range specified in the scale tables.
Switchpoint Spread - P	The distance between the inside railhead of one switch point rail and the outside of the opposite switch point rail at the free ends (the moving ends) of the points.
Flg Dpt - H	Flange Depth. This is the depth of the flangeway from the top of the rail to the bottom of the flangeway.

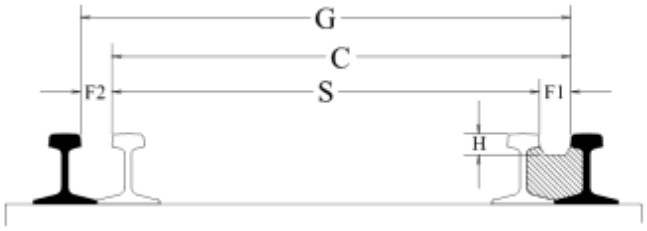
Term	Definition
Tgt	The target, or engineering nominal, value. This is the “perfect” dimension.
Min	The minimum or smallest acceptable dimension.
Max	The maximum or largest acceptable dimension.
Wheel Code	The width of the wheel (N) measured from the back of a wheel to the face of the same wheel. Value is expressed in fractions of an inch for very large scales, and in thousandths of an inch for all other scales. For example, Code 110 refers to a wheel width of 0.110 inches wide. Code 72 refers to a wheel width of 0.072 inches wide.

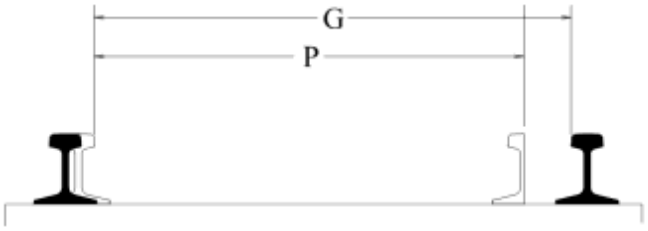
30

2 Data Tables

2.1 1” Scale (Ratio 1:12)

2.1.1 Standard Scale: Imperial Data Governs





G			C (See Note 2)			S			F (See Note 2)			P			H	
Track Gauge			Check Gauge			Span			Flangeway at Frog			Switchpoint Spread			Flg Dpt	Wheel Width
Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Code**
Imperial (Inch)																
4.750	4.752	4.812	4.582	4.586	4.597	4.364	4.366	4.370	0.153	0.218	0.220	4.557	4.561	4.565	0.156	500
Metric																
120.7	120.7	122.2	116.4	116.5	116.8	110.8	110.9	111.0	3.9	5.5	5.6	115.7	115.8	116.0	4.0	500

Notes:

1 The Span, S, is derived from the equation S=C-F. C is the primary controlling dimension.

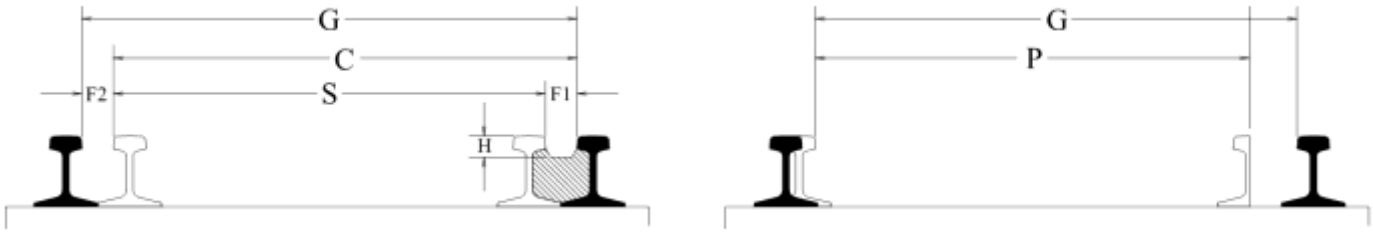
2 The Flangeway at the Frog, F1, is defined by the equation S=C-F1, with C the primary controlling dimension. The Flangeway at the Guardrail, F2, is defined the equation G-C=F2, with C the primary controlling dimension. Depending on the specific trackwork, F1 and F2 may or may not be equal value, but both will fall within the value range specified for F in the table.

3 **See S-4.2, Scale Wheels** for wheel contour information.

2.2 ¾” Scale (Ratio 1:16)

2.2.1 Standard Scale: Imperial Data Governs

40



G			C (See Note 2)			S			F (See Note 2)			P			H	
Track Gauge			Check Gauge			Span			Flangeway at Frog			Switchpoint Spread			Flg Dpt	Wheel Width
Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Code**
Imperial (Inch)																
3.500	3.502	3.540	3.349	3.353	3.367	3.170	3.172	3.176	0.133	0.179	0.181	3.321	3.325	3.329	0.125	406
Metric																
88.9	89.0	89.9	85.1	85.2	85.5	80.5	80.6	80.7	3.4	4.5	4.6	84.4	84.5	84.6	3.2	406

Notes:

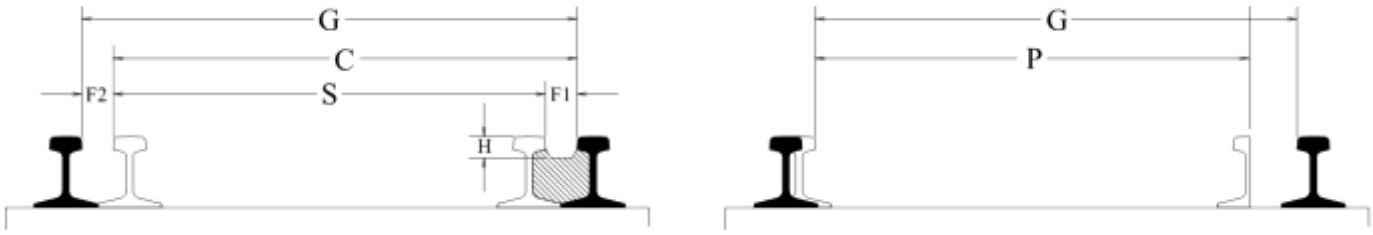
1 The Span, S, is derived from the equation S=C-F. C is the primary controlling dimension.

2 The Flangeway at the Frog, F1, is defined by the equation S=C-F1, with C the primary controlling dimension. The Flangeway at the Guardrail, F2, is defined the equation G-C=F2, with C the primary controlling dimension. Depending on the specific trackwork, F1 and F2 may or may not be equal value, but both will fall within the value range specified for F in the table.

3 See **S-4.2, Scale Wheels** for wheel contour information.

2.3 F Scale (Ratio 1:20.3)

2.3.1 Standard Scale: Imperial Data Governs



G			C (See Note 2)			S			F (See Note 2)			P			H	
Track Gauge			Check Gauge			Span			Flangeway at Frog			Switchpoint Spread			Flg Dpt	Wheel Width
Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Code**
F Standard Gauge																
Imperial (Inch)																
2.781	2.783	2.797	2.679	2.683	2.696	2.579	2.583	2.596	0.090	0.096	0.098	2.652	2.656	2.660	0.090	284
Metric																
70.6	70.7	71.0	68.0	68.1	68.5	65.5	65.6	65.9	2.3	2.4	2.5	67.4	67.5	67.6	2.3	284
Fn3 (36") Narrow Gauge																
Imperial (Inch)																
1.766	1.772	1.782	1.648	1.652	1.662	1.535	1.550	1.555	0.092	0.115	0.117	1.624	1.628	1.632	0.066	250
Metric																
45.0	45.0	46.5	41.9	42.0	42.2	39.3	39.4	39.5	1.3	2.9	3.0	41.2	41.4	41.5	1.7	250

Notes:

1 The Span, S, is derived from the equation S=C-F. C is the primary controlling dimension.

2 The Flangeway at the Frog, F1, is defined by the equation S=C-F1, with C the primary controlling dimension. The Flangeway at the Guardrail, F2, is defined the equation G-C=F2, with C the primary controlling dimension. Depending on the specific trackwork, F1 and F2 may or may not be equal value, but both will fall within the value range specified for F in the table.

3 For a full discussion of minimum radius, minimum turnout and radius equivalents of degrees of curvature, etc., see **RP-7, Track Centers and Obstacle Clearances.**

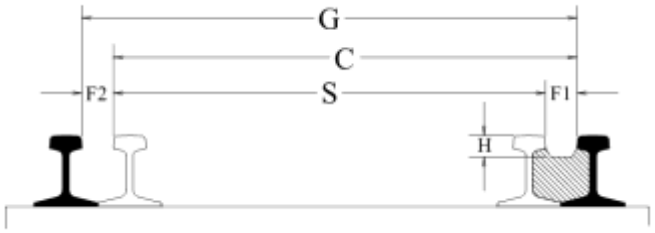
4 For Proto / Fine Scales, see Standard **S-3.1, Proto and Fine Scales.**

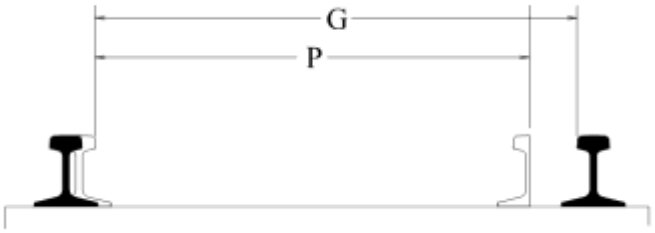
5 For deep flange wheels, see Standard **S-3.3, Deep Flanges for Guarded Track.**

6 See **S-4.2, Scale Wheels** for wheel contour information.

2.4 Large Scale (Ratio Varies)

50 2.4.1 Standard Scale: Imperial Data Governs





G			C (See Note 2)			S			F (See Note 2)			P			H	
Track Gauge			Check Gauge			Span			Flangeway at Frog			Switchpoint Spread			Flg Dpt	Wheel Width
Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Code**
Imperial (Inch)																
1.766	1.772	1.782	1.648	1.652	1.662	1.535	1.550	1.555	0.092	0.115	0.117	1.624	1.629	1.632	0.118	--
Metric																
44.9	45.0	45.3	41.9	42.0	42.2	39.0	39.4	39.5	2.3	2.9	3.0	41.2	41.4	41.5	3.0	--

Notes:

1 The Span, S, is derived from the equation S=C-F. C is the primary controlling dimension.

2 The Flangeway at the Frog, F1, is defined by the equation S=C-F1, with C the primary controlling dimension. The Flangeway at the Guardrail, F2, is defined the equation G-C=F2, with C the primary controlling dimension. Depending on the specific trackwork, F1 and F2 may or may not be equal value, but both will fall within the value range specified for F in the table.

3 For a full discussion of minimum radius, minimum turnout and radius equivalents of degrees of curvature, etc., see **RP-7,**

4 For Proto / Fine Scales, see Standard **S-3.1, Proto and Fine Scales.**

5 For deep flange wheels, see Standard **S-3.3, Deep Flanges for Guarded Track.**

6 See **S-4.2, Scale Wheels** and **RP-25, Wheel Contour** for appropriate wheel contours.

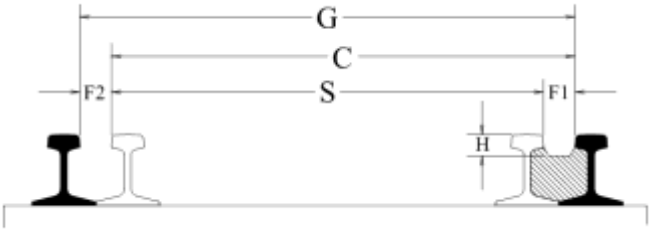
7 The term "LS" for "Large Scales" standards covers all common commercial scales running on LS 45mm gauge track (1:32, 1:29, 1:24, 1:22.5, and 1:20.3) without regard as to whether the trains are standard or narrow gauge.

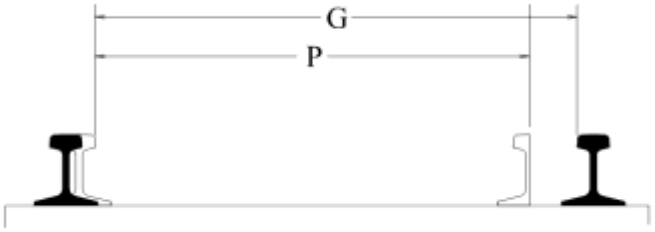
8 Due to the inherent nature of large scale trains, the wheel and track standards for "Standard" (S x.2) and "Deep Flange" (S-x.3) are identical except in terms of flange width and depth, thus the

9 With regard to 1:20.3 (also designated "F" scale), trains built to that scale running on LS 45mm gauge track are also classified Fn3. Standards for Fn3 track and wheels are identical to those for LS, with exception given to more specific targets given for tread width and flange depth. Track standards for Fn3 are to be identical to those used for LS 45mm gauge.

2.5 O Scale (Ratio 1:48)

55 2.5.1 Standard Scale: Imperial Data Governs





G			C (See Note 2)			S			F (See Note 2)			P			H	
Track Gauge			Check Gauge			Span			Flangeway at Frog			Switchpoint Spread			Flg Dpt	Wheel Width
Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Code**
O Standard Gauge																
Imperial (Inch)																
1.250	1.252	1.264	1.179	1.181	1.194	1.100	1.102	1.104	0.056	0.077	0.079	1.152	1.156	1.158	0.036	145
Metric																
31.8	31.8	32.1	29.9	30.0	30.3	27.9	28.0	28.0	1.4	2.0	2.0	29.3	29.4	29.4	0.9	145
On3 (36") Narrow Gauge																
Imperial (Inch)																
0.750	0.752	0.764	0.705	0.707	0.717	0.652	0.654	0.656	0.033	0.051	0.053	0.681	0.685	0.687	0.030	116
Metric																
19.1	19.1	19.4	17.9	18.0	18.2	16.6	16.6	16.7	0.8	1.3	1.3	17.3	17.4	17.4	0.8	116
On30 (30") Narrow Gauge																
Imperial (Inch)																
0.649	0.651	0.661	0.605	0.607	0.614	0.555	0.557	0.559	0.035	0.048	0.050	0.584	0.588	0.590	0.028	110
Metric																
16.5	16.5	16.8	15.4	15.4	15.6	14.1	14.1	14.2	0.9	1.2	1.3	14.8	14.9	15.0	0.7	110
On2 (24") Narrow Gauge																
Imperial (Inch)																
0.500	0.502	0.511	0.455	0.457	0.464	0.405	0.407	0.409	0.036	0.048	0.050	0.434	0.438	0.440	0.028	110
Metric																
12.7	12.8	13.0	11.6	11.6	11.8	10.3	10.3	10.4	0.9	1.2	1.3	11.0	11.1	11.2	0.7	110

Notes:

1 The Span, S, is derived from the equation S=C-F. C is the primary controlling dimension.

2 The Flangeway at the Frog, F1, is defined by the equation S=C-F1, with C the primary controlling dimension. The Flangeway at the Guardrail, F2, is defined the equation G-C=F2, with C the primary controlling dimension. Depending on the specific trackwork, F1 and F2 may or may not be equal value, but both will fall within the value range specified for F in the table.

3 For a full discussion of minimum radius, minimum turnout and radius equivalents of degrees of curvature, etc., see **RP-7, Track Centers and Obstacle Clearance**s and **RP-11, Curvature and Rolling Stock.**

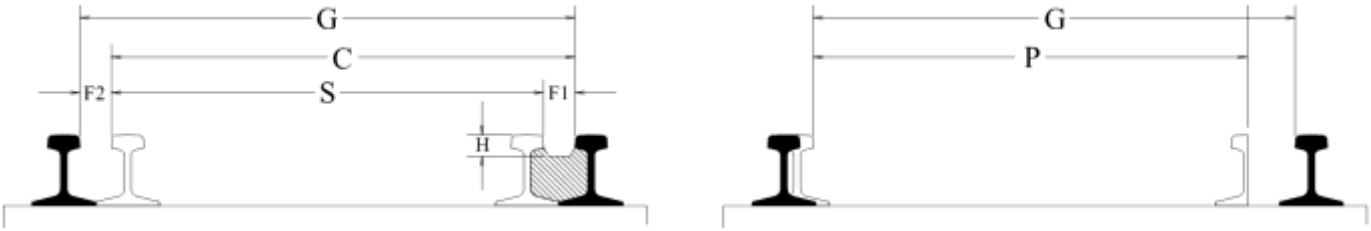
4 For Proto / Fine Scales, see Standard **S-3.1, Proto and Fine Scales.**

5 For deep flange wheels, see Standard **S-3.3, Deep Flanges for Guarded Track.**

6 See **S-4.2, Scale Wheels** and **RP-25, Wheel Contour** for appropriate wheel contours.

2.6 S Scale (Ratio 1:64)

2.6.1 Standard Scale: Imperial Data Governs



G			C (See Note 2)			S			F (See Note 2)			P			H	
Track Gauge			Check Gauge			Span			Flangeway at Frog			Switchpoint Spread			Flg Dpt	Wheel Width
Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Code**
S Standard Gauge																
Imperial (Inch)																
0.883	0.885	0.895	0.839	0.841	0.848	0.789	0.791	0.793	0.035	0.048	0.050	0.818	0.822	0.824	0.030	110
Metric																
22.4	22.5	22.7	21.3	21.4	21.5	20.0	20.1	20.1	0.9	1.2	1.3	20.8	20.9	20.9	0.8	110
Sn3 (36") Narrow Gauge																
Imperial (Inch)																
0.563	0.565	0.575	0.519	0.521	0.528	0.469	0.471	0.473	0.035	0.048	0.050	0.498	0.502	0.504	0.030	110
Metric																
14.3	14.4	14.6	13.2	13.2	13.4	11.9	12.0	12.0	0.9	1.2	1.3	12.6	12.8	12.8	0.8	110
Sn2 (24") Narrow Gauge																
Imperial (Inch)																
0.413	0.415	0.423	0.377	0.379	0.383	0.337	0.339	0.341	0.030	0.038	0.040	0.359	0.363	0.365	0.023	88
Metric																
10.5	10.5	10.7	9.6	9.6	9.7	8.6	8.6	8.7	0.8	1.0	1.0	9.1	9.2	9.3	0.6	88

Notes:

1 The Span, S, is derived from the equation S=C-F. C is the primary controlling dimension.

2 The Flangeway at the Frog, F1, is defined by the equation S=C-F1, with C the primary controlling dimension. The Flangeway at the Guardrail, F2, is defined the equation G-C=F2, with C the primary controlling dimension. Depending on the specific trackwork, F1 and F2 may or may not be equal value, but both will fall within the value range specified for F in the table.

3 For a full discussion of minimum radius, minimum turnout and radius equivalents of degrees of curvature, etc., see **RP-7, Track Centers and Obstacle Clearances** and **RP-11, Curvature and Rolling Stock.**

4 For Proto / Fine Scales, see Standard **S-3.1, Proto and Fine Scales.**

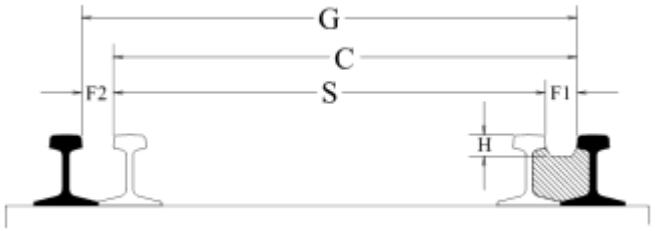
5 For deep flange wheels, see Standard **S-3.3, Deep Flanges for Guarded Track.**

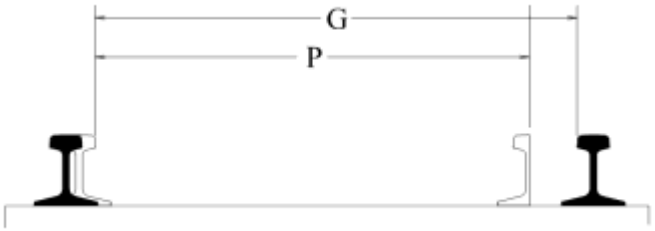
6 See **S-4.2, Scale Wheels** and **RP-25, Wheel Contour** for appropriate wheel contours.

60

2.7 OO Scale (Ratio 1:76.2)

2.7.1 Standard Scale: Imperial Data Governs





G			C (See Note 2)			S			F (See Note 2)			P			H	
Track Gauge			Check Gauge			Span			Flangeway at Frog			Switchpoint Spread			Flg Dpt	Wheel Width
Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Code**
OO Standard Gauge																
Imperial (Inch)																
0.750	0.752	0.761	0.705	0.707	0.714	0.655	0.657	0.659	0.036	0.048	0.050	0.684	0.688	0.690	0.028	110
Metric																
19.1	19.1	19.3	17.9	18.0	18.1	16.6	16.7	16.7	0.9	1.2	1.3	17.4	17.5	17.5	0.7	110

Notes:

1 The Span, S, is derived from the equation S=C-F. C is the primary controlling dimension.

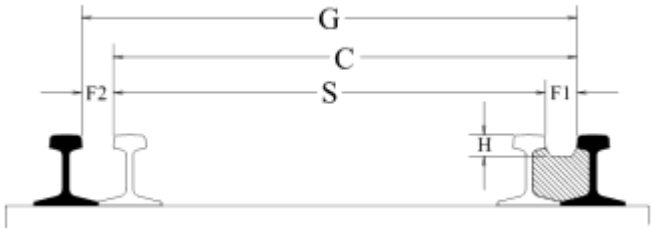
2 The Flangeway at the Frog, F1, is defined by the equation S=C-F1, with C the primary controlling dimension. The Flangeway at the Guardrail, F2, is defined the equation G-C=F2, with C the primary controlling dimension. Depending on the specific trackwork, F1 and F2 may or may not be equal value, but both will fall within the value range specified for F in the table.

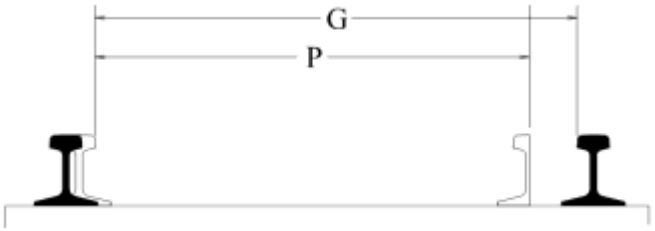
3 For a full discussion of minimum radius, minimum turnout and radius equivalents of degrees of curvature, etc., see **RP-11, Curvature and Rolling Stock.**

4 See **S-4.2, Scale Wheels** and **RP-25, Wheel Contour** for appropriate wheel contours.

2.8 HO Scale (Ratio 1:87.1)

2.8.1 Standard Scale: Imperial Data Governs





G			C (See Note 2)			S			F (See Note 2)			P			H	
Track Gauge			Check Gauge			Span			Flangeway at Frog			Switchpoint Spread			Flg Dpt	Wheel Width
Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Code**
HO Standard Gauge																
Imperial (Inch)																
0.649	0.651	0.661	0.605	0.607	0.614	0.555	0.557	0.559	0.035	0.048	0.050	0.584	0.588	0.590	0.028	110
Metric																
16.5	16.5	16.8	15.4	15.4	15.6	14.1	14.1	14.2	0.9	1.2	1.3	14.8	14.9	15.0	0.7	110
HOn3 (36") Narrow Gauge																
Imperial (Inch)																
0.413	0.415	0.423	0.377	0.379	0.383	0.337	0.339	0.341	0.030	0.038	0.040	0.359	0.363	0.365	0.023	88
Metric																
10.5	10.5	10.7	9.6	9.6	9.7	8.6	8.6	8.7	0.8	1.0	1.0	9.1	9.2	9.3	0.6	88
HOn2 (24") Narrow Gauge																
Imperial (Inch)																
0.276	0.278	0.285	0.246	0.248	0.252	0.213	0.215	0.217	0.024	0.031	0.033	0.232	0.234	0.236	0.023	72
Metric																
7.0	7.1	7.2	6.2	6.3	6.4	5.4	5.5	5.5	0.6	0.8	0.8	5.9	5.9	6.0	0.6	72

Notes:

1 The Span, S, is derived from the equation S=C-F. C is the primary controlling dimension.

2 The Flangeway at the Frog, F1, is defined by the equation S=C-F1, with C the primary controlling dimension. The Flangeway at the Guardrail, F2, is defined the equation G-C=F2, with C the primary controlling dimension. Depending on the specific trackwork, F1 and F2 may or may not be equal value, but both will fall within the value range specified for F in the table.

3 For a full discussion of minimum radius, minimum turnout and radius equivalents of degrees of curvature, etc., see **RP-7, Track Centers and Obstacle Clearances** and **RP-11, Curvature and Rolling Stock.**

4 For Proto / Fine Scales, see Standard **S-3.1, Proto and Fine Scales.**

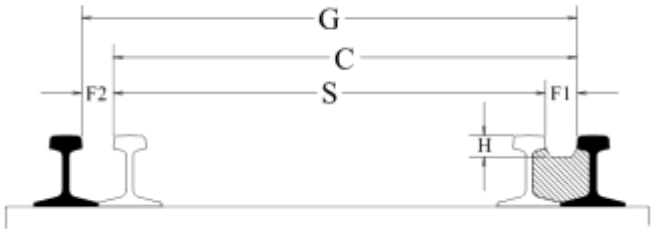
5 For deep flange wheels, see Standard **S-3.3, Deep Flanges for Guarded Track.**

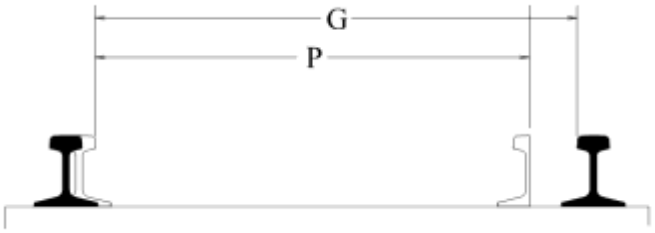
6 See **S-4.2, Scale Wheels** and **RP-25, Wheel Contour** for appropriate wheel contours.

70

2.9 TT Scale (Ratio 1:120)

2.9.1 Standard Scale: Imperial Data Governs





G			C (See Note 2)			S			F (See Note 2)			P			H	
Track Gauge			Check Gauge			Span			Flangeway at Frog			Switchpoint Spread			Flg Dpt	Wheel Width
Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Code**
TT Standard Gauge																
Imperial (Inch)																
0.471	0.473	0.479	0.437	0.439	0.442	0.401	0.403	0.405	0.029	0.034	0.036	0.424	0.426	0.428	0.022	79
Metric																
12.0	12.0	12.2	11.1	11.2	11.2	10.2	10.2	10.3	0.7	0.9	0.9	10.8	10.8	10.9	0.6	79
TTn42 (42") Narrow Gauge																
Imperial (Inch)																
0.353	0.355	0.359	0.323	0.325	0.326	0.293	0.295	0.296	0.027	0.028	0.030	0.312	0.314	0.316	0.026	72
Metric																
9.0	9.0	9.1	8.2	8.3	8.3	7.4	7.5	7.5	0.7	0.7	0.8	7.9	8.0	8.0	0.7	72
TTn3 (36") Narrow Gauge																
Imperial (Inch)																
0.300	0.302	0.306	0.270	0.272	0.274	0.240	0.242	0.244	0.026	0.028	0.030	0.258	0.260	0.262	0.022	72
Metric																
7.6	7.7	7.8	6.9	6.9	7.0	6.1	6.1	6.2	0.7	0.7	0.8	6.6	6.6	6.7	0.6	72

Notes:

1 The Span, S, is derived from the equation S=C-F. C is the primary controlling dimension.

2 The Flangeway at the Frog, F1, is defined by the equation S=C-F1, with C the primary controlling dimension. The Flangeway at the Guardrail, F2, is defined the equation G-C=F2, with C the primary controlling dimension. Depending on the specific trackwork, F1 and F2 may or may not be equal value, but both will fall within the value range specified for F in the table.

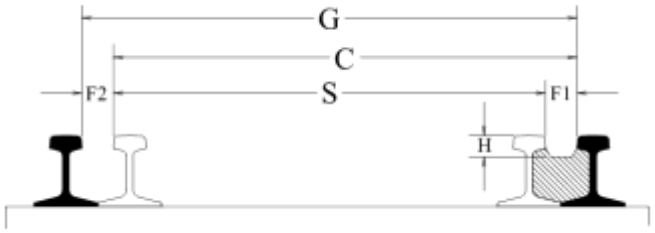
3 For a full discussion of minimum radius, minimum turnout and radius equivalents of degrees of curvature, etc., see **RP-7, Track Centers and Obstacle Clearances** and **RP-11, Curvature and Rolling Stock.**

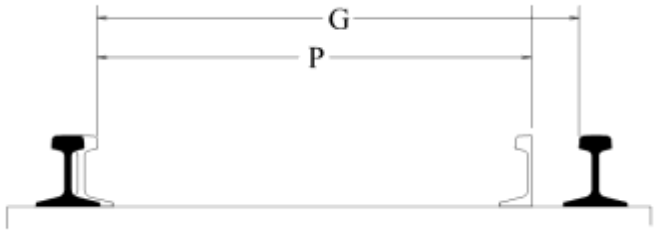
4 For Proto / Fine Scales, see Standard **S-3.1, Proto and Fine Scales.**

5 See **S-4.2, Scale Wheels** and **RP-25, Wheel Contour** for appropriate wheel contours.

2.10 N Scale (Ratio 1:160)

2.10.1 Standard Scale: Imperial Data Governs





G			C (See Note 2)			S			F (See Note 2)			P			H	
Track Gauge			Check Gauge			Span			Flangeway at Frog			Switchpoint Spread			Flg Dpt	Wheel Width
Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Code**
N Standard Gauge																
Imperial (Inch)																
0.353	0.355	0.359	0.323	0.325	0.326	0.293	0.295	0.296	0.027	0.028	0.030	0.312	0.314	0.316	0.022	72
Metric																
9.0	9.0	9.1	8.2	8.3	8.3	7.4	7.5	7.5	0.7	0.7	0.8	7.9	8.0	8.0	0.6	72
Nn3 (36") Narrow Gauge																
Imperial (Inch)																
0.256	0.258	0.261	0.230	0.232	0.235	0.205	0.207	0.209	0.021	0.023	0.025	0.217	0.219	0.221	0.022	54
Metric																
6.5	6.6	6.6	5.8	5.9	6.0	5.2	5.3	5.3	0.5	0.6	0.6	5.5	5.6	5.6	0.6	54
Nn2 (24") Narrow Gauge																
Imperial (Inch)																
0.177	0.179	0.181	0.150	0.152	0.158	0.125	0.127	0.129	0.019	0.023	0.025	0.134	0.136	0.138	0.020	54
Metric																
4.5	4.5	4.6	3.8	3.9	4.0	3.2	3.2	3.3	0.5	0.6	0.6	3.4	3.5	3.5	0.5	54

Notes:

1 The Span, S, is derived from the equation S=C-F. C is the primary controlling dimension.

2 The Flangeway at the Frog, F1, is defined by the equation S=C-F1, with C the primary controlling dimension. The Flangeway at the Guardrail, F2, is defined the equation G-C=F2, with C the primary controlling dimension. Depending on the specific trackwork, F1 and F2 may or may not be equal value, but both will fall within the value range specified for F in the table.

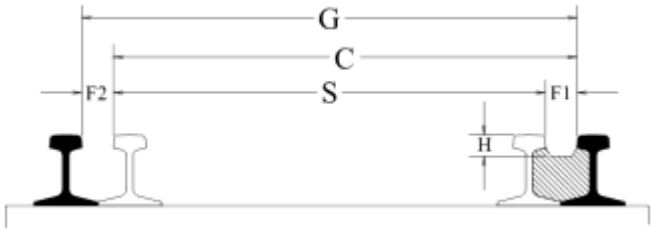
3 For a full discussion of minimum radius, minimum turnout and radius equivalents of degrees of curvature, etc., see **RP-7, Track Centers and Obstacle Clearances** and **RP-11, Curvature and Rolling Stock.**

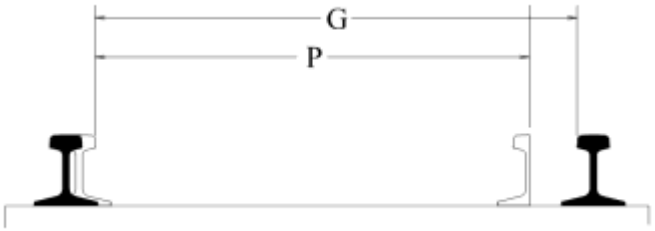
4 For deep flange wheels, see Standard **S-3.3, Deep Flanges for Guarded Track.**

5 See **S-4.2, Scale Wheels** and **RP-25, Wheel Contour** for appropriate wheel contours.

2.11 Z Scale (Ratio 1:220)

80 **2.11.1 Standard Scale: Imperial Data Governs**





G			C (See Note 2)			S			F (See Note 2)			P			H	
Track Gauge			Check Gauge			Span			Flangeway at Frog			Switchpoint Spread			Flg Dpt	Wheel Width
Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Tgt**	Max	Min	**Code**
Z Standard Gauge																
Imperial (Inch)																
0.257	0.259	0.267	0.236	0.238	0.242	0.211	0.213	0.215	0.015	0.023	0.025	0.222	0.224	0.226	0.020	54
Metric																
6.5	6.6	6.8	6.0	6.0	6.1	5.4	5.4	5.5	0.4	0.6	0.6	5.6	5.7	5.7	0.5	54

Notes:

1 The Span, S, is derived from the equation S=C-F. C is the primary controlling dimension.

2 The Flangeway at the Frog, F1, is defined by the equation S=C-F1, with C the primary controlling dimension. The Flangeway at the Guardrail, F2, is defined the equation G-C=F2, with C the primary controlling dimension. Depending on the specific trackwork, F1 and F2 may or may not be equal value, but both will fall within the value range specified for F in the table.

3 For a full discussion of minimum radius, minimum turnout and radius equivalents of degrees of curvature, etc., see **RP-7, Track Centers and Obstacle Clearances.**

4 For deep flange wheels, see Standard **S-3.3, Deep Flanges for Guarded Track.**

5 See **S-4.2, Scale Wheels** and **RP-25, Wheel Contour** for appropriate wheel contours.

3 Document History

Date	Description
Feb 2010	Previous release provided a target rather than limits. Several previous releases of unknown dates. The first Standard was adopted in 1936.
17-May-2026	Revision to migrate to new template. Each scale on an individual page. Provided maximum and minimum dimensions rather than previous plus and minus to avoid errors where they may be calculated mentally. There were no changes to any dimensions.  2026-04-26 NMRA Scale Track Tables fc NOTE: Tables shown for each scale are images taken from the above embedded spreadsheet. These images are static; they will not update when the spreadsheet is updated. New images will have to be made from the spreadsheet and pasted in place of the existing tables.

Important Notices and Disclaimers Concerning NMRA Standards Documents

The Standards (S), Recommended Practices (RP), Technical Note (TN), and Technical Information (TI) documents of the National Model Railroad Association ("NMRA Standards documents") are made available for use subject to important notices and legal disclaimers. These notices and disclaimers, or a reference to this page, appear in all standards and may be found under the heading "Important Notices and Disclaimers Concerning NMRA Standards Documents."

Notice and Disclaimer of Liability Concerning the Use of NMRA Standards Documents

NMRA Standards documents are developed within the Standards and Conformance Department of the NMRA in association with certain Working Groups, members, and representatives of manufacturers and sellers. NMRA develops its standards through a consensus development process, which brings together volunteers representing varied viewpoints and interests to achieve the final product. NMRA Standards documents are developed by volunteers with modeling, railroading, engineering, and industry-based expertise. Volunteers are not necessarily members of NMRA, and participate without compensation from NMRA.

NMRA does not warrant or represent the accuracy or completeness of the material contained in NMRA Standards documents, and expressly disclaims all warranties (express, implied and statutory) not included in this or any other document relating to the standard or recommended practice, including, but not limited to, the warranties of: merchantability; fitness for a particular purpose; non-infringement; and quality, accuracy, effectiveness, currency, or completeness of material. In addition, NMRA disclaims any and all conditions relating to results and workmanlike effort. In addition, NMRA does not warrant or represent that the use of the material contained in NMRA Standards documents is free from patent infringement. NMRA Standards documents are supplied "AS IS" and "WITH ALL FAULTS."

Use of NMRA Standards documents is wholly voluntary. The existence of an NMRA Standard or Recommended Practice does not imply that there are no other ways to produce, test, measure, purchase, market, or provide other goods and services related to the scope of the NMRA Standards documents. Furthermore, the viewpoint expressed at the time that NMRA approves or issues a Standard or Recommended Practice is subject to change brought about through developments in the state of the art and comments received from users of NMRA Standards documents.

In publishing and making its standards available, NMRA is not suggesting or rendering professional or other services for, or on behalf of, any person or entity, nor is NMRA undertaking to perform any duty owed by any other person or entity to another. Any person utilizing any NMRA Standards document, should rely upon their own independent judgment in the exercise of reasonable care in any given circumstances or, as appropriate, seek the advice of a competent professional in determining the appropriateness of a given NMRA Standards document.

IN NO EVENT SHALL NMRA BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO: THE NEED TO PROCURE SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE PUBLICATION, USE OF, OR RELIANCE UPON ANY STANDARD OR RECOMMENDED PRACTICE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE AND REGARDLESS OF WHETHER SUCH DAMAGE WAS FORESEEABLE.

Translations

NMRA's development of NMRA Standards documents involves the review of documents in English only. In the event that an NMRA Standards document is translated, only the English version published by NMRA is the approved NMRA Standards document.

Official Statements

A statement, written or oral, that is not processed in accordance with NMRA policies for distribution of NMRA communications, or approved by the Board of Directors, an officer or committee chairperson, shall not be considered or inferred to be the official position of NMRA or any of its committees and shall not be considered to be, nor be relied upon as, a formal position of NMRA.

Comments on Standards

Comments for revision of NMRA Standards documents are welcome from any interested party, regardless of membership. However, **NMRA does not provide interpretations, consulting information, or advice pertaining to NMRA Standards documents.**

Suggestions for changes in documents should be in the form of a proposed change of text, together with appropriate supporting comments. Since NMRA standards represent a consensus of concerned interests, it is important that any responses to comments and questions also receive the concurrence of a balance of interests. For this reason, NMRA, its departments, Working Groups or committees cannot provide an instant response to comments, or questions except in those cases where the matter has previously been addressed. For the same reason, NMRA does not respond to interpretation requests. Any person who would like to participate in evaluating comments or in revisions to NMRA Standards documents may request participation in the relevant NMRA working group.

Laws & Regulations

Users of NMRA Standards documents should consult all applicable laws and regulations. Compliance with the provisions of any NMRA Standards document does not constitute compliance to any applicable regulatory requirements. Implementers of the standard are responsible for observing or referring to the applicable regulatory requirements. NMRA does not, by the publication of NMRA Standards documents, intend to urge action that is not in compliance with applicable laws, and NMRA Standards documents may not be construed as doing so.

Copyrights

NMRA Standards documents are copyrighted by NMRA under US and international copyright laws. They are made available by NMRA and are adopted for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of modeling, structural and engineering practices and methods. By making NMRA Standards documents available for use and adoption by public authorities and private users, NMRA does not waive any rights in copyright to the NMRA Standards documents.

IMPORTANT NOTICE

NMRA Standards documents do not guarantee or ensure safety, security, health, or environmental protection, or ensure against interference with or from other systems, devices or networks. NMRA Standards documents development activities consider research and information presented to the standards development group in developing any safety recommendations. Other information about safety practices, changes in technology or technology implementation, or impact by peripheral systems also may be pertinent to safety considerations during implementation of the standard. Implementers and users of NMRA Standards documents are responsible for determining and complying with all appropriate safety, security, environmental, health, and interference protection practices and all applicable laws and regulations.