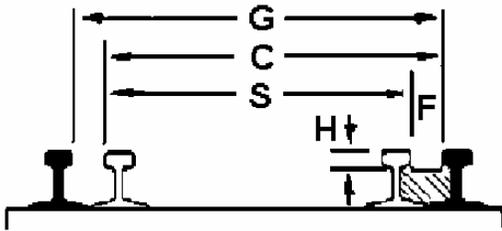


S3.2 with TARGET Specifications

NMRA STANDARDS (IMPERIAL)
S-3.2 STANDARDS, TRACK, STANDARD SCALE



NMRA STANDARD	
Imperial Standards	
Scale Track For Guarded Work	
Approved: July 2009	S-3.2

The Span, S, is derived by knowing $S = C - F$.
C is the primary controlling dimension.

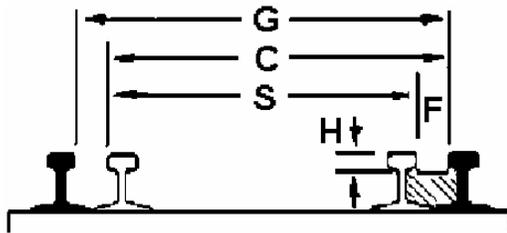
Scale	Scale Ratio	Standard S3.2 Guarded using Target and Asymmetric Imperial (inch) Tolerance													
		G			C			S			F			H	Wheel
		Gage at Frog			Check Gage			Span			Flangeway				
		Target	Plus	Minus	Target	Plus	Minus	Target	Plus	Minus	Target	Plus	Minus	MIN	CODE
1"	1:12	4.752	0.056	0.002	4.584	0.013	0.002	4.364	0.002	0.002	0.218	0.002	0.065	0.140	1/2"
3/4"	1:16	3.502	0.034	0.002	3.351	0.016	0.002	3.170	0.002	0.002	0.179	0.002	0.046	0.094	13/32"
F	1:20.32	2.783	0.003	0.002	2.681	0.016	0.002	2.580	0.002	0.002	0.099	0.002	0.015	0.090	256
Fn3	1:20.32	1.768	0.004	0.002	1.662	0.007	0.002	1.556	0.002	0.002	0.104	0.002	0.007	0.090	256
1:22.5	1:22.5	1.768	0.004	0.002	1.662	0.007	0.002	1.556	0.002	0.002	0.104	0.002	0.007	0.090	256
1:24	1:24	1.768	0.004	0.002	1.662	0.007	0.002	1.556	0.002	0.002	0.104	0.002	0.007	0.090	256
1:24n3	1:24	1.127	0.016	0.002	1.060	0.016	0.002	0.981	0.002	0.002	0.077	0.002	0.028	0.045	175
1:29	1:29	1.768	0.004	0.002	1.662	0.007	0.002	1.556	0.002	0.002	0.104	0.002	0.007	0.090	256
#1	1:32	1.768	0.004	0.002	1.662	0.007	0.002	1.556	0.002	0.002	0.104	0.002	0.007	0.090	256
#1n3	1:32	1.127	0.016	0.002	1.060	0.016	0.002	0.981	0.002	0.002	0.077	0.002	0.028	0.045	175
O	1:48	1.252	0.012	0.002	1.181	0.013	0.002	1.102	0.002	0.002	0.077	0.002	0.021	0.045	175
On3	1:48	0.752	0.012	0.002	0.707	0.010	0.002	0.654	0.002	0.002	0.051	0.002	0.018	0.026	116
On30	1:48	0.651	0.010	0.002	0.607	0.007	0.002	0.557	0.002	0.002	0.048	0.002	0.013	0.025	110
On2	1:48	0.502	0.009	0.002	0.457	0.007	0.002	0.407	0.002	0.002	0.048	0.002	0.012	0.025	110
S	1:64	0.885	0.010	0.002	0.841	0.007	0.002	0.791	0.002	0.002	0.048	0.002	0.013	0.025	110
Sn3	1:64	0.565	0.010	0.002	0.521	0.007	0.002	0.471	0.002	0.002	0.048	0.002	0.013	0.025	110
Sn2	1:64	0.415	0.008	0.002	0.379	0.004	0.002	0.339	0.002	0.002	0.038	0.002	0.008	0.023	88
OO	1:76.2	0.752	0.009	0.002	0.707	0.007	0.002	0.657	0.002	0.002	0.048	0.002	0.012	0.025	110
HO	1:87.1	0.651	0.010	0.002	0.607	0.007	0.002	0.557	0.002	0.002	0.048	0.002	0.013	0.025	110
HOn3	1:87.1	0.415	0.008	0.002	0.379	0.004	0.002	0.339	0.002	0.002	0.038	0.002	0.008	0.023	88
HOn2	1:87.1	0.278	0.007	0.002	0.248	0.004	0.002	0.215	0.002	0.002	0.031	0.002	0.007	0.020	72
TT	1:120	0.473	0.006	0.002	0.439	0.003	0.002	0.403	0.002	0.002	0.034	0.002	0.005	0.023	79
TTn42	1:120	0.355	0.004	0.002	0.325	0.001	0.002	0.295	0.001	0.002	0.028	0.002	0.001	0.020	72
TTn3	1:120	0.302	0.004	0.002	0.272	0.002	0.002	0.242	0.002	0.002	0.028	0.002	0.002	0.020	72
N	1:160	0.355	0.004	0.002	0.325	0.001	0.002	0.295	0.001	0.002	0.028	0.002	0.001	0.020	72
Nn3	1:160	0.258	0.003	0.002	0.232	0.003	0.002	0.207	0.002	0.002	0.023	0.002	0.002	0.016	54
Nn2	1:160	0.179	0.002	0.002	0.152	0.006	0.002	0.127	0.002	0.002	0.023	0.002	0.004	0.016	54
Z	1:220	0.259	0.008	0.002	0.238	0.004	0.002	0.213	0.002	0.002	0.023	0.002	0.008	0.016	54

NOTES:

1. When wheels are used with deeper flanges - see **STANDARD S3.3**.
2. The F limit applies only to the wing rail, and the C limit applies only to the guard rail. Both apply to the same rail only in special work such as a crossing.
3. For a full discussion of minimum radius, minimum turnout and radius equivalents of degrees of curvature. etc., see **S-8** and **RP-11**.
4. Guard and wing rails shall be flared to a minimum dimension across the flared flangeway end of 1.5 x Fmax. Flare angle shall not exceed 10 degrees, and the Flare must disappear before reaching the working area of its rail.
5. **These track dimensions are more restrictive with Gmax for guarded trackwork, for general track - see STANDARD S3.1.**
6. **Metric measurements are found on page 2.**
7. Please see S4.2 and RP-25 Wheel Contour for the appropriate wheel size.

S3.2 with TARGET Specifications

NMRA STANDARDS (METRIC)
S-3.2 STANDARDS, TRACK, STANDARD SCALE



NMRA STANDARD	
Metric Standards	
Scale Track For Guarded Work	
Approved: July 2009	S-3.2

The Span, S, is derived by knowing $S = C - F$.
C is the primary controlling dimension.

Scale	Scale Ratio	Standard S3.2 Guarded using Target and Asymmetric METRIC (mm) Tolerance													
		G			C			S			F			H	Wheel
		Gage at Frog			Check Gage			Span			Flangeway				
		Target	Plus	Minus	Target	Plus	Minus	Target	Plus	Minus	Target	Plus	Minus	MIN	CODE
1"	1:12	120.70	1.42	0.05	116.43	0.33	0.05	110.85	0.05	0.05	5.54	0.05	1.65	3.56	1/2"
3/4"	1:16	88.95	0.86	0.05	85.12	0.41	0.05	80.52	0.05	0.05	4.55	0.05	1.17	2.39	13/32"
F	1:20.32	70.69	0.08	0.05	68.10	0.41	0.05	65.53	0.05	0.05	2.51	0.05	0.38	2.29	256
Fn3	1:20.32	44.91	0.10	0.05	42.21	0.18	0.05	39.52	0.05	0.05	2.64	0.05	0.18	2.29	256
1:22.5	1:22.5	44.91	0.10	0.05	42.21	0.18	0.05	39.52	0.05	0.05	2.64	0.05	0.18	2.29	256
1:24	1:24	44.91	0.10	0.05	42.21	0.18	0.05	39.52	0.05	0.05	2.64	0.05	0.18	2.29	256
1:24n3	1:24	28.63	0.41	0.05	26.92	0.41	0.05	24.92	0.05	0.05	1.96	0.05	0.71	1.14	175
1:29	1:29	44.91	0.10	0.05	42.21	0.18	0.05	39.52	0.05	0.05	2.64	0.05	0.18	2.29	256
#1	1:32	44.91	0.10	0.05	42.21	0.18	0.05	39.52	0.05	0.05	2.64	0.05	0.18	2.29	256
#1n3	1:32	28.63	0.41	0.05	26.92	0.41	0.05	24.92	0.05	0.05	1.96	0.05	0.71	1.14	175
O	1:48	31.80	0.30	0.05	30.00	0.33	0.05	27.99	0.05	0.05	1.96	0.05	0.53	1.14	175
On3	1:48	19.10	0.30	0.05	17.96	0.25	0.05	16.61	0.05	0.05	1.30	0.05	0.46	0.66	116
On30	1:48	16.54	0.25	0.05	15.42	0.18	0.05	14.15	0.05	0.05	1.22	0.05	0.33	0.64	110
On2	1:48	12.75	0.23	0.05	11.61	0.18	0.05	10.34	0.05	0.05	1.22	0.05	0.30	0.64	110
S	1:64	22.48	0.25	0.05	21.36	0.18	0.05	20.09	0.05	0.05	1.22	0.05	0.33	0.64	110
Sn3	1:64	14.35	0.25	0.05	13.23	0.18	0.05	11.96	0.05	0.05	1.22	0.05	0.33	0.64	110
Sn2	1:64	10.54	0.20	0.05	9.63	0.10	0.05	8.61	0.05	0.05	0.97	0.05	0.20	0.58	88
OO	1:76.2	19.10	0.23	0.05	17.96	0.18	0.05	16.69	0.05	0.05	1.22	0.05	0.30	0.64	110
HO	1:87.1	16.54	0.25	0.05	15.42	0.18	0.05	14.15	0.05	0.05	1.22	0.05	0.33	0.64	110
HOn3	1:87.1	10.54	0.20	0.05	9.63	0.10	0.05	8.61	0.05	0.05	0.97	0.05	0.20	0.58	88
HOn2	1:87.1	7.06	0.18	0.05	6.30	0.10	0.05	5.46	0.05	0.05	0.79	0.05	0.18	0.51	72
TT	1:120	12.01	0.15	0.05	11.15	0.08	0.05	10.24	0.05	0.05	0.86	0.05	0.13	0.58	79
TTn42	1:120	9.02	0.10	0.05	8.26	0.03	0.05	7.49	0.03	0.05	0.71	0.05	0.03	0.51	72
TTn3	1:120	7.67	0.10	0.05	6.91	0.05	0.05	6.15	0.05	0.05	0.71	0.05	0.05	0.51	72
N	1:160	9.02	0.10	0.05	8.26	0.03	0.05	7.49	0.03	0.05	0.71	0.05	0.03	0.51	72
Nn3	1:160	6.55	0.08	0.05	5.89	0.08	0.05	5.26	0.05	0.05	0.58	0.05	0.05	0.41	54
Nn2	1:160	4.55	0.05	0.05	3.86	0.15	0.05	3.23	0.05	0.05	0.58	0.05	0.10	0.41	54
Z	1:220	6.58	0.20	0.05	6.05	0.10	0.05	5.41	0.05	0.05	0.58	0.05	0.20	0.41	54

NOTES:

1. When wheels are used with deeper flanges - see **STANDARD S3.3**.
2. The F limit applies only to the wing rail, and the C limit applies only to the guard rail. Both apply to the same rail only in special work such as a crossing.
3. For a full discussion of minimum radius, minimum turnout and radius equivalents of degrees of curvature. etc., see **S-8** and **RP-11**.
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5. **These track dimensions are more restrictive with Gmax for guarded trackwork, for general track - see STANDARD S3.1.**
6. **Imperial measurements are found on page 1.**
7. Please see S4.2 and RP-25 Wheel Contour for the appropriate wheel size.