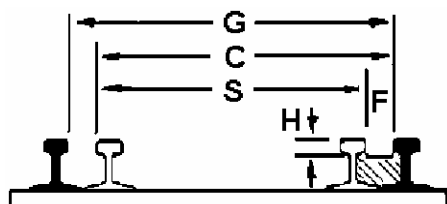


NMRA STANDARDS
S-3.3 STANDARDS, TRACK, HI FOR DEEP FLANGES



*Proposed – Released
For Comment*

NMRA STANDARD	
Standards	
Hi Track For Guarded Track	
Proposed: July, 2007	S-3.3

Scale	Scale Ratio	Standard S3.3 Hi Turnouts using Target and Asymmetric Tolerance										
		G		C		S		F		Rail	H	
		Gage at Frog		Check Gage		Span		Flangeway				
		Target	Tolerance	Target	Tolerance	Target	Tolerance	Target	Tolerance	Min	Min	
G	1:20.3											
	1:22.5											
	1:24	1.768	+0.04 -0.02	1.662	+0.07 -0.02	1.558	+0.04 -0.02	0.104	+0.02 -0.07	225	0.118	
	1:29											
	1:32											
O _{HI}	1:48	1.252	+0.12 -0.02	1.181	+0.13 -0.02	1.104	+0.04 -0.02	0.077	+0.02 -0.21	175	0.094	
O ₂₇	1:48	1.252	+0.12 -0.02	1.181	+0.13 -0.02	1.104	+0.04 -0.02	0.077	+0.02 -0.21	175	0.094	
S _{HI}	1:64	0.885	+0.10 -0.02	0.841	+0.07 -0.02	0.793	+0.04 -0.02	0.048	+0.02 -0.13	175	0.094	
HO _{HI}	1:87.1	0.651	+0.10 -0.02	0.607	+0.07 -0.02	0.559	+0.04 -0.02	0.048	+0.02 -0.13	100	0.047	
N _{HI}	1:160	0.355	+0.04 -0.02	0.325	+0.01 -0.02	0.297	+0.01 -0.02	0.028	+0.02 -0.01	80	0.035	
Z _{HI}	1:220	0.252	+0.08 -0.02	0.238	+0.04 -0.02	0.215	+0.04 -0.02	0.023	+0.02 -0.08	60	0.024	

Scales with deep flanges were developed to accommodate the needs of modelers who wish to operate model trains on very sharp curves or on track that has twists which is common in outdoor environments. Compromises are often made to both selectively compress the model and/or develop mechanisms that have the ability to navigate very sharp curves. In general models in this class use wheels with larger flanges and usually use track with a larger code size

NOTES:

- For information on both minimum and maximum manufacturing limits please see NMRA Tech Note: TN-1.2.1 (**In Work**).
- 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.
- For Gauge widening in curves for long wheelbase equipment see RP-8.
- For a full discussion of minimum radius, minimum turnout and radius equivalents of degrees of curvature etc., see **S-8** and **RP-11**.
- 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.
- These track dimensions are more restrictive with Gmax for guarded trackwork for general track - see STANDARD S3.1.**
- Metric measurements are removed from standards, designers and pattern makers are responsible for metric conversions.
- Models built to the deep flange standards typically do not operate on track built to the S-3.1 or S.3.2 standards unless the trackwork has been built to accommodate the deeper flanges. Models built to the S-1.3 standards shall be clearly labeled in order to not confuse the modeler.
- The term G scale is used to refer to range of scales developed to be able to be operated together, typically in an outdoors setting, for example a garden. G models all use the same wheel and track profiles to facilitate interchange.