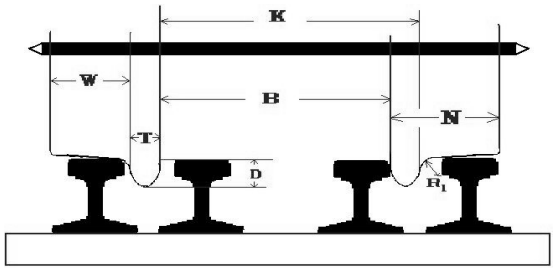
NMRA STANDARDS
S-4.2 STANDARDS, WHEELS, STANDARD SCALE



NMRA STANDARD	
Standards Scale Wheels	
Proposed: July, 2007	**S-4.2**

Proposed – Released For Comment

NOTE: Both B and W are DERIVED. K is primary controling dimension.

Scale	Scale Ratio	Standard S4.2 Wheels using Target and Asymmetric Tolerance									
		K			B			N	D	T	
		Target	Plus	Minus	Target	Plus	Minus	(Nom.)	Max	Nom	Tol
1"	1:12	4.579	0.002	0.016	4.454	0.002	0.016	0.505	0.156	0.125	+/- .002
3/4"	1:16	3.347	0.002	0.034	3.253	0.002	0.034	0.410	0.125	0.094	+/- .002
F	1:20.32	2.679	0.002	0.019	2.616	0.002	0.019	0.282	0.090	0.063	+/- .002
Fn3	1:20.32	1.658	0.002	0.028	1.595	0.002	0.028	0.256	0.090	0.063	+/- .002
1:22	1:22.5	1.658	0.002	0.028	1.595	0.002	0.028	0.256	0.064	0.063	+/- .002
1:24	1:24	1.658	0.002	0.028	1.595	0.002	0.028	0.256	0.064	0.063	+/- .002
1:29	1:29	1.658	0.002	0.028	1.595	0.002	0.028	0.256	0.064	0.063	+/- .002
#1	1:32	1.658	0.002	0.028	1.595	0.002	0.028	0.256	0.064	0.063	+/- .002
#1n3	1:32	1.056	0.002	0.008	1.008	0.002	0.008	0.175	0.047	0.048	+/- .002
O	1:48	1.177	0.002	0.011	1.129	0.002	0.011	0.175	0.047	0.048	+/- .002
On3	1:48	0.703	0.002	0.006	0.672	0.002	0.006	0.116	0.030	0.031	+/- .002
On30	1:48	0.603	0.002	0.007	0.573	0.002	0.007	0.110	0.028	0.030	+/- .002
On2	1:48	0.453	0.002	0.007	0.423	0.002	0.007	0.110	0.028	0.030	+/- .002
S	1:64	0.837	0.002	0.007	0.807	0.002	0.007	0.110	0.030	0.030	+/- .002
Sn3	1:64	0.517	0.002	0.007	0.487	0.002	0.007	0.110	0.030	0.030	+/- .002
Sn2	1:64	0.375	0.002	0.005	0.350	0.002	0.005	0.088	0.023	0.025	+/- .002
OO	1:76.2	0.703	0.002	0.007	0.673	0.002	0.007	0.110	0.028	0.030	+/- .002
HO	1:87.1	0.603	0.002	0.007	0.573	0.002	0.007	0.110	0.028	0.030	+/- .002
HOn3	1:87.1	0.375	0.002	0.005	0.350	0.002	0.005	0.088	0.023	0.025	+/- .002
HOn2	1:87.1	0.244	0.002	0.004	0.224	0.002	0.004	0.072	0.022	0.020	+/- .002
TT	1:120	0.435	0.002	0.008	0.415	0.002	0.008	0.079	0.026	0.020	+/- .002
TTn3	1:120	0.321	0.002	0.004	0.301	0.002	0.004	0.072	0.022	0.020	+/- .002
N	1:160	0.321	0.002	0.004	0.301	0.002	0.004	0.072	0.022	0.020	+/- .002
Nn3	1:160	0.222	0.002	0.002	0.208	0.002	0.002	0.054	0.020	0.014	+/- .002
Nn2	1:160	0.145	0.002	0.002	0.131	0.002	0.002	0.054	0.020	0.014	+/- .002
Z	1:220	0.228	0.002	0.007	0.214	0.002	0.007	0.054	0.020	0.014	+/- .002

NOTES:

1. For information on both minimum and maximum manufacturing limits please see NMRA Tech Note: **TN-1.2.1 (In Work)**
2. Fn3 was designed to work on #I scale track so the same track and wheel geometry was used. This results in a minimum tire width that is much narrower than the prototype. Models designed to work in dual gauge track with F scale need to use the F scale tire width of .271 in order for the wheels to properly navigate the frogs in the turnouts.
3. Note: HO standard wheels will work on HO fine track but HO fine wheels are not standards on HO standard track.
4. See **RP-25** for recommended Wheel Contour. With Deeper Flanges - see **STANDARD S4.3**.
5. Wheels shall have a scale reduction in tread diameter from the prototype.
6. Metric measurements are removed from standards, designers and pattern makers are responsible for metric conversions.
7. To avoid difficulty with long wheelbase locomotives in curves sharper than 20 degrees, and where guard rails are used on both sides as in special trackwork, the following are suggested: See **RP-8**
   - Allow lateral movement in driver axles of 1 percent of the rigid wheelbase length.
   - Remove flanges from center drivers.