

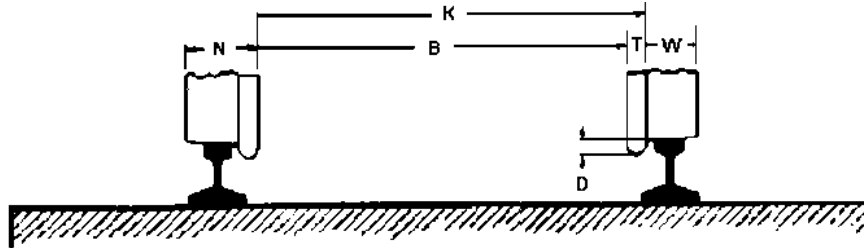
**NMRA STANDARDS**  
**S-4.2 Standards, Wheels, Standard Scale**

NMRA STANDARD

**Wheels**  
**Standard Scale**

Approved: July 2004

S-4.2



Name of Scale	K Check Gage Max.	B Back-to- Back Of Flanges Min.	N Tire Width Min.	D Flange Depth Max.
1"	4.581 116.4 mm	4.438 112.7 mm	.500 12.7 mm	.156 3.96 mm
3/4"	3.349 85.1 mm	3.219 81.8 mm	.406 10.3 mm	.125 3.18 mm
F	Except as noted, F uses the same wheel geometry as Proto 20.3 Gauge wheels (see S-4.1)			.090 2.18 mm
Fn3	Except as noted, Fn3 uses the same wheel geometry as No.1 Gauge wheels		(see Note 2) .235 5.97 mm	.090 1.614 (2.29 mm)
#1	1.660 42.16 mm	1.567 39.80 mm	.235 5.97 mm	.064 1.63 mm
#In3	1.058 26.9 mm	1.000 25.4 mm	.172 4.37 mm	.047 1.19 mm
O	1.179 29.9 mm	1.118 28.4 mm	.172 4.37 mm	.047 1.19 mm
On3	.705 17.9 mm	.666 16.9 mm	.115 2.92 mm	.030 0.76 mm
On30	On30 uses the same wheel geometry as HO Gauge wheels			
On2	.455 11.6 mm	.416 10.6 mm	.108 2.74 mm	.028 0.71 mm
S	.839 21.31 mm	.800 20.32 mm	.108 2.74 mm	.030 0.76 mm
Sn3	.519 13.18 mm	.480 12.19 mm	.108 2.74 mm	.030 0.76 mm

Name of Scale	K Check Gage Max.	B Back-to- Back Of Flanges Min.	N Tire Width Min.	D Flange Depth Max.
OO	.705 17.9 mm	.666 16.9 mm	.108 2.74 mm	.028 0.71 mm
HO	.605 15.4 mm	.566 14.4 mm	(see Note 3) .108 2.74 mm	.028 0.71 mm
HOn2	.246 6.25 mm	.220 5.59 mm	.071 1.80 mm	.022 0.56 mm
TT	.437 11.1 mm	.407 10.3 mm	.077 1.96 mm	.026 0.66 mm
N	.323 8.20 mm	.297 7.54 mm	.071 1.80 mm	.022 0.56 mm
Nn3	.228 5.78 mm	.208 5.28 mm	.053 1.35 mm	.020 0.51 mm
Nn2	.149 3.78 mm	.131 3.33 mm	.059 1.50 mm	.020 0.51 mm
Z	.236 5.99 mm	.218 5.54 mm	.053 1.35 mm	.020 0.51 mm

**NOTES:**

1. For information on both minimum and maximum manufacturing limits please see NMRA Tech Note: TN-1.2.1
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 trackage 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 fine wheels will work on HO standard track but HO standard wheels will not work on HO fine track.
4. See **RP-25** for recommended Wheel Contour. Deeper Flanges conforming to **STANDARD S4.3** are permitted for existing wheels when used with Track **STANDARD S3.3**, but wheels manufactured for this **STANDARD S4.2** should not exceed the limits as shown above.
5. Wheels shall have a scale reduction in tread diameter from the prototype.
6. 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.