

# NorthWest Short Line

## WHEELSETS

### Welcome to fine modeling choices from NWSL

The following wheelset and component specification information is provided for modelers and designers who need to go beyond knowing what wheelset fits an Athearn or ATLAS boxcar. To aid your modeling or product design efforts, we have endeavored to provide here all necessary interface specification information to aid you in determining what your specifications should be if you plan to use precision quality, economical NWSL components and/or what you should design your product for to provide you with optimum economy in assembly and operation of your finished product.

We have endeavored to provide the information in a manner that will enable you to determine combinations of components that can achieve your desired requirement when a non-stock wheelset is required without incurring custom manufacturing costs. For instance, the WHEELS specifications in addition to providing the wheel diameter in bold type for the scale of such wheel also provides, in small type, the diameter in other nearby scales where it may meet your specific requirement. Thus, for example, if your model is 'S' scale and you desire a 30" wheel, you will find that an HO scale 40"/110 wheel is comparable to 29" in 'S' scale. If this minor size discrepancy were satisfactory, substantial custom (size) manufacture costs and time delays could be avoided by using this regular production wheel.

The three AXLE STYLE charts show the various stock axles used in various NWSL wheelsets. This information aids in determining what will fit your existing models as well as what journal and spacing dimensions to use in building a model.

If your need is for a different combination of components other than our stock wheel/axle combinations, you can order custom assembly service for an additional charge of \$10 for matching components with a \$15 minimum order per specification (must be ordered direct). Costs for custom wheelsets that require components to be modified or custom machined will be quoted on request.

**Gauges, Scales and Ratios.** When you proceed beyond the toy train that provides satisfaction merely as a toy, you enter the world of scale models. Even here there are numerous 'shades' and choices that modelers choose to satisfy each particular interest. Some modelers interest is fulfilled when a train runs on the track; another modeler may not be satisfied until the consist of that train is exactly correct; a third modeler could care less what the prototype train looked like, just taking pleasure from what looks good to him, etc. The ability to accommodate these various individual interests makes railroad modeling a great hobby - actually it is a form of artistry that enables modelers to express themselves in a pleasurable and self satisfying manner. In general, gauge and scale are synonymous, but not always. O gauge for instance is not actually the proper scale gauge for 1/4"=1'0". O gauge derives from the toy trains. In recent years, more interest has been emerging to build models in proper exact gauge in addition to more accurate scaling of components in order to provide models with proportions more accurately depicting the prototype. These efforts have generally been termed 'finescale' but as a result of recent efforts to further formalize this movement and to alleviate confusion that had arisen, the term "Proto" has been borrowed from the British efforts in recent years to refine modeling authenticity. In practice, the designation Proto:48 (abbreviated P:48) is applied to 'O' scale modeling using proper track gauge and correctly scaled wheels (previously termed '1/4AAR'). This derives from the ratio (48:1) of O scale. In S scale, a similar movement generally termed NASG appears to be moving to the P:64 designation. In HO, the P:87 (Proto:87) movement has a large number of adherents in the UK, France, the USA and elsewhere. The scale width of the P:87 wheel improve the scale appearance of HO cars and diesels remarkably.

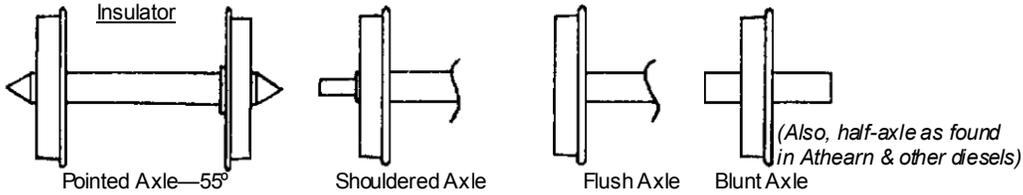
NWSL, in efforts to aid more accurate modeling, has worked with modelers over the years to provide better looking wheel treads that operate well. For example, we did not offer the typical

'O' gauge /172 width wheel because its oversize width detracts from model appearance unnecessarily (the /172 tread was added in late 1992 at the request of a number of 'O' modelers). Instead, NWSL makes a better looking (NWSL/145) tread that operates well on 'O' gauge track laid to NMRA standards (but operates unsatisfactorily on some older, 'large flangeway' or worn 'O' gauge trackage) yet is much closer to scale width and thus less obtrusive to model appearance without encountering the severe difficulties of going to a completely scale (/115 - P:48) wheel tread. In a larger scale, our /270 tread is much better appearing than the typical LGB (and compatibles) wheel yet operates reliably on LGB (and compatible) track.

Whether your objective is upgrade, repair, or manufacture of fine railroad models, NWSL will be pleased to be of assistance with fine quality, precision manufactured, economical components.

Throw away that modeling 'straight jacket', you've got options that help you achieve a higher level of modeling creativity and pleasure. Best wishes from the people at NWSL who make these products in the USA for your enjoyment.

# WHEELSETS



## WHEEL DESIGN

Wheel tread and flange design is important to satisfactory train operation. NMRA members have spent much effort refining concepts and designing preferred tread design for railroad modeling purposes which is laid out in NMRA specification as RP (Recommended Practice)-25 sheet. The specification provides dimensions for a series of tread sizes without indicating applicable scales or gauges. In general, the 110 sizes is used for HO gauge, the /88 for HOn3 and the /172 for O gauge. These treads scale out to somewhat larger than true-to-scale wheel, in some cases almost twice scale width. An over-wide wheel is detrimental to the appearance of a model that is built closely to scale and in fact requires substantial compromise in modeling the operating components (trucks, brakes, etc.) related to the wheels. On the other hand, attempting to operate scale tread wheels can cause serious difficulties in track construction, requiring tolerances undesirable or unattainable from some modelers. NWSL manufactures a broad range of wheel treads generally but not exactly following the RP-25 specification to permit each modeler to make their own choice as appropriate to meet their individual modeling objectives. NWSL's preference is for scale model products—it is up to you to make the choice necessary to meet your own modeling desires. The RP-25 fillet radius is considered by some modelers to be detrimental to tractive effort. Therefore the radius has been minimized in the NWSL wheel to provide better tractive effort for power units such as the PDT, Athearn (and other) replacement wheels, Magic Carpets, etc.

WHEEL TREAD DIMENSIONS								
NMRA Code	NWSL designation	DIMENSIONS (inch-mm)			GENERAL GAUGE Usage	scale width	also used for these scale/gauges	Tread Legend
		D	T	N				
	NWSL/270	.100-2.5	.100-2.5	.270-6.7	1:32, LGB, G, #1	8-5/8"	1/2", F, A,	
	NWSL/236	.062-1.6	.062-1.6	.236-6.0	1:32, #1 semi-finescale	7-1/2"	1/2"n3, F, A,	
	NWSL/210	.110-2.8	.080-2.0	.210-5.3	O tinplate	7-1/2"	1/2"n3, F, A,	
175	NWSL/172	.062-1.6	.054-1.4	.172-4.4	O	8-1/4"	#1finescale, #1/2"n3	
	NWSL/145	.045-1.1	.035-0.9	.150-3.8	O semi-finescale	7"		
	NWSL/135	.035-0.9	.035-0.9	.135-3.4	O traction	6-1/2"		
	NWSL/115	.027-0.7	.026-0.7	.115-2.9	P.48, On3	5-1/2"	S	
110	NWSL/110	.027-0.7	.027-0.7	.110-2.8	HO	9-5/8"	S, P.64, OO	
88	NWSL/88	.025-0.6	.025-0.6	.088-2.2	HOn3	7-2/3"	Sn3, On2, HO, TT	
87	NWSL/87	.025-0.6	.025-0.6	.087-2.2	P.64	5-1/2"	P.64	
72	NWSL/72	.020-0.5	.020-0.5	.072-1.8	N	11-1/2"	HOn3 (6.3")	
64	NWSL/64	.013-0.3	.013-0.3	.064-1.6	P.87	5-1/2"	N semi-finescale (10.2")	
	NWSL/50	.013-0.3	.013-0.3	.050-1.3	N finescale	8"		
mainline Prototype tread width— 5-1/2"					traction 4-1/2", some as narrow as 3-1/2"!!			

## WHEEL SIZES—General applications on the prototypes

Diameter	Commonly found on:	Diameter	Commonly found on:
15–20"	Mine, industrial railroads	33"	Typical freight car, early streetcars, interurbans
20–26"	Narrow gauge, light railroads (18", 2', etc. gauges)	36"	Freight cars of 70 Ton and up capacity, interurbans, passenger cars, some diesel and electric locomotives
22–36"	Streetcars, Interurbans	38"	High capacity double stack container cars (125+ ton cap'y)
26"	Modern streetcars, narrow gauge freight cars	40"	most EMD diesels, some circa 1900 passenger cars
28"	Trailer trains, modern interurban, N.G. passenger cars	42"	Baldwin, ALCO, Athearn HO diesels, dash 8-40CM, AC44-9, AC4400
30"	Streetcars (some US, many European)	45"	SD80MAC, SD90MAC
31"	North Shore Electroliner		

Note: It was not uncommon for a prototype wheel size to be changed over the years. Many interurbans were delivered with 37-1/2" wheels that were later allowed to wear to or were replaced by 36" (or even 33") wheels. Most early 3' gauge equipment had 24" wheels that were later replaced with 26" wheels in the early 1900s.

## AXLE STYLES

**FLUSH** The axle end is flush with the hub face. This style is used to represent inside journal (bearing) type wheelsets such as many steam locomotive lead (and some trail) trucks, PCC streetcar wheels, etc. It is commonly used in models where the truck sideframe is 'dummy' with no weight carrying function or journals (in some instances—such as some KMT diesels—not quite flush so that the axle end keeps sideframes from shorting to wheels).



**POINT** Fits a cone shape bearing. Commonly used in HO, S, O, N, etc. scale model non-powered cars. Usually provides lower friction and easier rolling than other styles. Cone angle is 55 degrees. Not recommended for ballasted or heavy cars due to small bearing area and therefore high bearing loading and wear rate. Axle length is very critical, must be closely matched to journal (cone) spacing—watch for variations from one production batch to the next.



**BLUNT** The axle end is square and the same diameter as the axle body. This style, and the following one, is very easy to use because of the simplicity of the journal (bearing) required—just drill a hole slightly larger than the axle end diameter.



**SHOULDER** The axle end is square (except for chamfering, if any - some examples with a pointed end that is non-functional) and smaller than the axle body. The bearing diameter is usually slightly smaller than the given dimension so that a hole drilled to the given dimension can serve as a journal bearing. For better life, use Insert journal bearings such as #354-6, #366-6, etc.

