



Model Railway Engineering in 1/4" Scale AAR Prototype Standards



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Protocraft was established in 1994 as a company designed specifically to provide the O scale model railroad enthusiast with accurately scaled components to complete the otherwise fine O scale models available. With new O scale models being brought in every day, hundreds of fine O scale models that were made in both Japan and Korea years ago, and now in China, are to be found readily available at both trade shows and over the internet, there exists a wide range of opportunities and needs for the modeler who desires and appreciates an accurately scaled model. Achieving this goal is now possible with the many finescale components now available.

Protocraft's emphasis is on wheels, but it also provides trucks, diesel conversion kits, steam locomotive tires, the only finescale working coupler available, rail, and many of the tools necessary to accomplish various conversions from O Scale to Finescale, also known as Proto:48. Protocraft has sold over 23,000 Grabowski wheelsets and has over 200 different patterns in finescale dimensions.

The principal aim behind Protocraft is always build everything at 1:48 from the prototype drawings, and not only will it look realistic, the parts will work and they will be interchangeable, just as much as parts work and be interchangeable in the real railroads. Protocraft's most popular Bettendorf truck model has working brakes.

Protocraft is not alone in developing and producing finescale components. It has patterns made by well known master craftsman such as Oscar Neubert III and Bill Clouser, tools designed by Paul Martineau, CAD drawings by Carl Jackson, diesel conversion patterns by Pat Mitchell, accurately scaled track components by John Pautz, wheel patterns by Jay Criswell, and many different wheels and stampings designed by Steve Grabowski.

Many HO modelers have shifted to a larger scale in order to achieve a more detailed and realistic operating model because it's much easier to detail, view, and has significantly better operating characteristics. O Scale is the natural choice for these modelers.

Protocraft presents a further option - that of 1/4 inch finescale/Proto:48.

Protocraft's wheels are based on engineered CAD drawings of Standard Steel of Pennsylvania's 33" and 36" truck wheels, and 36", 40" and 42" diesel wheels used throughout the teens to the 1950's. These drawings have been used to set up tooling to provide accurate replicas of the prototype 40-ton, 50-ton, 70-ton and 100-ton hub and axle dimensions used throughout the railroad in-



dustry.

Protocraft is the only manufacturer in the modeling hobby that provides a three-part machining operation to achieve both accurate front and back-side and hub profile dimensions and axle contour. The wheel profile is an accurate .115" with 20:1 taper, correct fillet with a .021" wheel flange and tread as per AAR prototype dimensions. All wheels are made in the USA.



Over 24,000 Grabowski wheelsets have been sold

33" wheelsets

- PC #329 - 30-ton single insulated, one wear
- PC #330 - 40-ton double insulated, one wear
- PC #331 - 40-ton single insulated - one wear
- PC #332 - 50-ton double insulated - one wear
- PC #333 - 50-ton single insulated - one wear
- PC #334 - 70-ton double insulated - multi wear
- PC #335 - 70-ton single insulated - multi wear
- PC #336 - 100-ton dbl insulated - multi wear
- PC #337 - 100-ton single insulated - multi wear

36" wheelsets

- PC #360 - 40-ton dbl insulated, multiple wear
- PC #361 - 40-ton single insulated, multi wear
- PC #362 - 50-ton dbl insulated, multi wear
- PC #363 - 50-ton single insulated - multi wear
- PC #364 - 70-ton dbl insulated - multi wear
- PC #365 - 70-ton single insulated - multi wear
- PC #366 - 100-ton dbl insulated - multi wear
- PC #367 - 100-ton single insulated - multi wear
- PC #368 - 100-ton double insulated, multi wear for roller bearing

Wheelsets are heat-oxide blackened to prevent corrosion and increase paint adherence, then coated with an oily wax for shipping.

\$20.00/set of 4 axles - \$475.00/25 sets - \$900.00/50 sets

bulk order shipping cost and insurance will vary with distance and value - call or email to determine cost

PROTOCRAFT'S 1/4" scale working Type "E" coupler. Comes complete with coupler boxes designed to replace the Kadee coupler box. Kit includes air hoses, glad hands and air valves. Patterns by master pattern maker Bill Clouser.



PC 1080G \$10.00/5 pr.

Complimenting the scale couplers are scale body bolster bushings with rivet plate to replace the oversize truck mounting screws that are often provided with many O scale brass cars. Many of these screws will not fit in the scale truck bolster. The bushing fits neatly into the scale truck bolster



PC #1070C \$62.50/5 pr



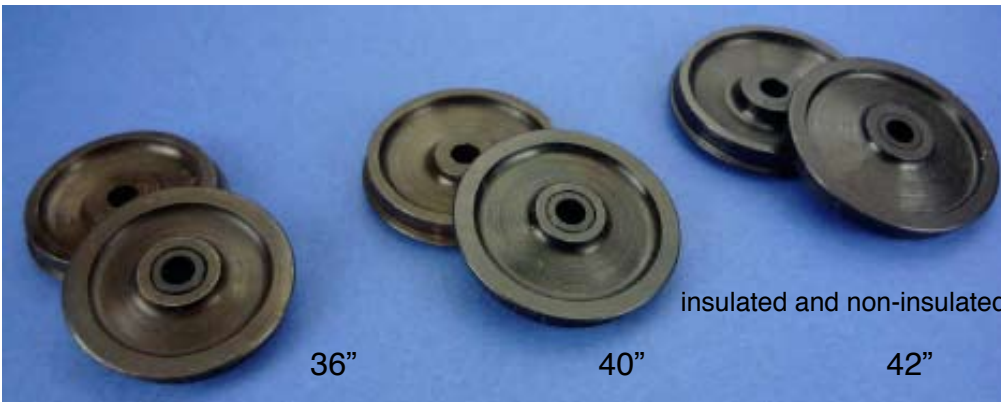
Coupler box and striker plate with lid is available in all brass castings where the application requires soldering. Add \$2.50 to each pair of couplers for the substitution within a package of 5 pair.



Engine Wheels



Diesel Wheels: Protocraft's wheels are developed and engineered by Steve Grabowski using 1950's prototype drawings supplied by Standard Steel of Pennsylvania, manufacturers of almost all diesels wheels produced during the past 50 years. The drawings are converted to CAD drawings by Carl Jackson. Wheels have the correct tire, fillet, taper, hub and flange profile. You can see the backside of the wheels when looking at the model on the rails.



PC #F36, #C40, #D42:

\$19.95/set of 8
\$29.95/set of 12

Steam Locomotive Engine Wheels: Protocraft's wheels are developed and engineered by Steve Grabowski using Baldwin Locomotive Works prototype drawings. The drawings were converted to CAD drawings by Carl Jackson. Wheels have the correct tire, fillet, taper, hub and flange profile, and come with insulators installed. Drawings are included to shoulder axle ends of the model.



PC #BX-30, DX-33, EX-36:

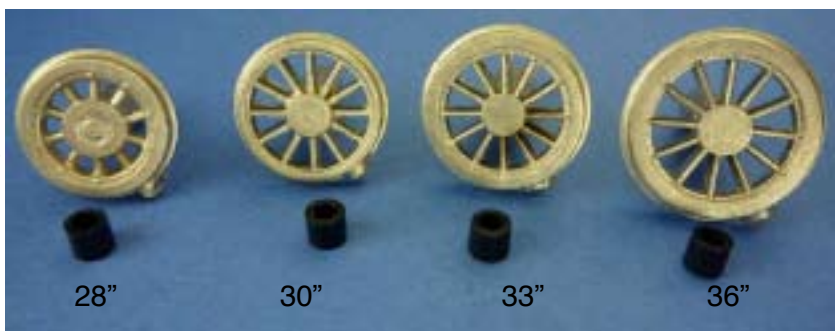
\$10.00 pair with insulators installed. Includes drawing for shouldering model's axle.

Steam Locomotive Leading Spoked wheels:



Cast in nickel silver with patterns by Jay Criswell. Tires are integrally cast. Castings require machining.

PC #SP-28, 30, 33, or 36
\$11.95/ pair w/insulators





Engine Trailing Truck Wheels



PROTOCRAFT'S 40" and 45" spoked engine trailing truck wheels in nickel silver with bolt detail, machining is required. Patterns by Jay Criswell. Includes axle and insulators:

PC #SP-40 or 45 \$16.95



PC #50G

50" trailing truck wheels:
\$15.00 mounted
\$10.00/pr w/o axle



machined example - tire separate

PROTOCRAFT'S 45" electric locomotive 12 spoke driver wheel centers for use converting NJ Custom Brass GN Y-1, PRR FF-2 and Oriental Limited GN Z-1.

Suitable for steam locomotive trailing truck wheel where insulated tires are required.

PC #4512 \$6 each

Locomotive Tires



PROTOCRAFT'S Tires - Ready to press-on @ \$5 each, blanks ready to press on @ \$4 each

PROTOCRAFT'S ready to use Proto:48 tires are available in 8 different diameters and are ready to press on. Blanks with finished I.D. are also available for those who wish to machine the finished product. Sizes vary from 45" engine trailing truck wheels and 45" small locomotive drivers such as NWSL's 2-8-2 tank engine to 81" tires for a large Northern Type locomotive.

45" locomotive wheel: tire I.D. of 0.7912"
51" locomotive wheel: tire I.D. of 0.9163"
57" locomotive wheel: tire I.D. of 1.0415"
63" locomotive wheel: tire I.D. of 1.1663:

73" locomotive wheel: tire I.D. of 1.3748"
77" locomotive wheel: tire I.D. of 1.4582"
79" locomotive wheel: tire I.D. of 1.5000"
81" locomotive wheel: tire I.D. of 1.5400"

All tire O.D.s are designed to have an approximate running thickness of 2-1/2" (+.102" measured from the I.D. to the fillet) This is within normal condemning limits of U.S. Class 1 railroads. All blanks have the above I.D.'s. Blank O.D.'s are I.D.+100" x .125" wide. (note: 81" blanks have an I.D. of 1.520" and an O.D. of 1.7450") All tires are made in the USA using 12L14 (Ledloy) steel.



Locomotive Driver Centers



PROTOCRAFT'S 44" driver kit for NWSL's Sugar Pine Tank engine. Redesigned by Jay Criswell from Sugar Pine photographs, the centers have the correct counterweight and spoke pattern.

Sold separately, driver center castings are \$6.00 ea, and 44" tires are \$5.00 each

Complete kit: PC-#3744 \$88.00



PROTOCRAFT'S 54" driver kit for Max Gray/KTM SP type TW-8 engine. Designed Roy Pietschmann from SP erection plans, the centers have the correct counterweight and spoke pattern. (premade tires are not available for this size)

Sold separately, driver center castings are \$6.00 ea

Complete kit: PC-#4854 \$48.00



PROTOCRAFT'S 51" driver kit built specifically for the Westside SP 0-6-0's that came in from ADDM/Westside in 1978 with 16 spoke HO wheel centers - there are many of them around. The prototype drivers were built by Baldwin and as such are also a generic 51" driver. The correct 13-spoke and heavier counterweights were designed by Jay Criswell.

Sold separately, driver center castings are \$6.00 ea, and 44" tires are \$5.00 each.

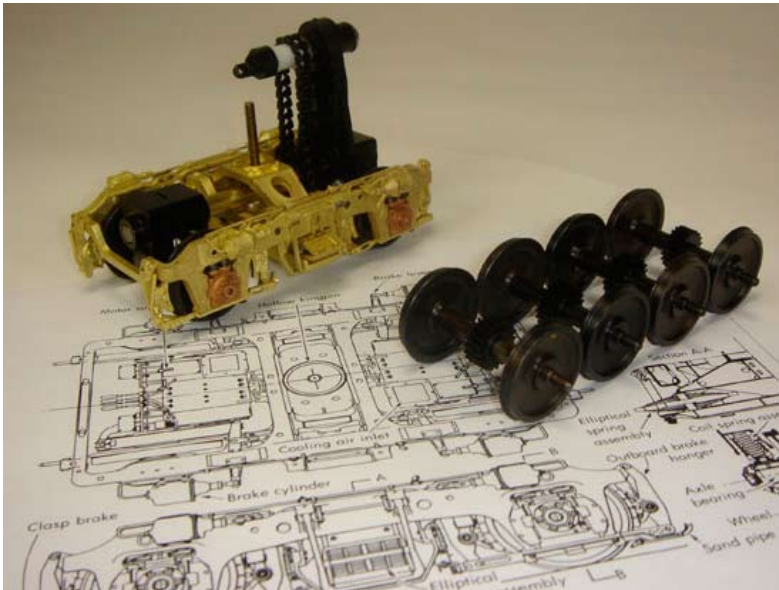
Complete kit: PC-#4451 \$66.00



PROTOCRAFT'S 63" driver kit built specifically for the Kemtron Wabash Mogul. These patterns were made by master pattern maker Bill Clouser. The counterweight design enabled balancing by adding lead from the backside, hence all the counterweights were the same.

Sold separately, driver center castings are \$6.00 ea, and 63" tires are \$5.00 each.

Complete kit: PC-#5763 \$66.00



PROTOCRAFT'S Proto:48 10 piece conversion kit for P&D Hobbies Blomberg power truck. Designed by Pat Mitchell, the kit resizes the power truck to prototype dimensions. 40" Grabowski geared wheelsets included.

kit: **PC #6650MG - \$89.95**

PROTOCRAFT'S 36" and 40" geared Standard Steel's Grabowski wheelsets are available separately for use in any Weaver geared diesel power truck. Fits P&D, Car Works, and Central Locomotive Works gearbox.

PC #WF-36 or PC #WC-40 - \$37.50 set of 4 axles - \$62.95 set of six axles



PROTOCRAFT'S 63" driver set for Sunset's SP 2-10-2. Ready to install with a minimum of effort. Leading and trailing truck wheels are available on page 3 and 4 of this catalog.

PC #63SS - \$199.95 set



PROTOCRAFT'S finescale Grabowski wheels enhance all models





Freight Truck Kits



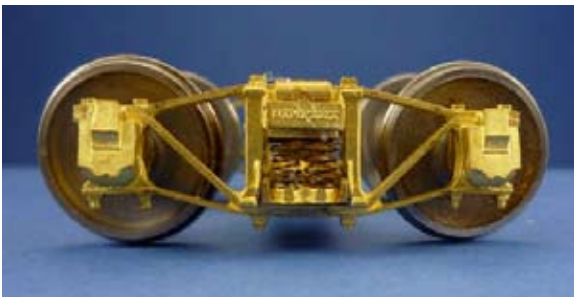
1930's plankless Bettendorf 50-ton freight truck. Probably the most common utilized freight truck in railroad history. Patterns by master pattern maker Oscar Newbert III, the kit has 60 parts and working brakes. Complete with Grabowski 50-ton single wear 33" insulated wheelsets. The finest model truck available.

Kit # PC-112 - \$59.95/pr



1937 Andrews Arch-bar conversion 50-ton freight truck. Wheelbase: 5' - 6". Grabowski 50-ton "D" axle double insulated wheelsets included.

Kit # PC-116 \$42.50/pr



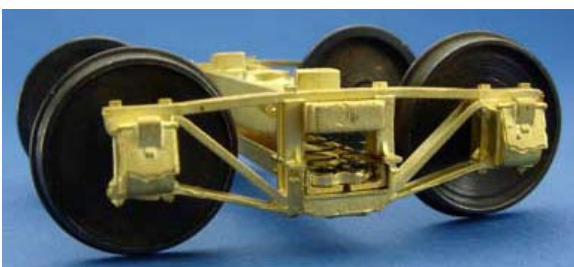
Simplex Diamond Arch-bar 40-ton freight truck. Wheelbase: 5' - 6". Grabowski 40-ton "C" axle double insulated wheelsets included.

Kit # PC-114 \$42.50/pr



Simplex Diamond Arch-bar 40-ton caboose truck. Wheelbase: 5' - 6". Grabowski 40-ton "C" axle single insulated wheelsets included.

Kit # PC-118 \$42.50/pr

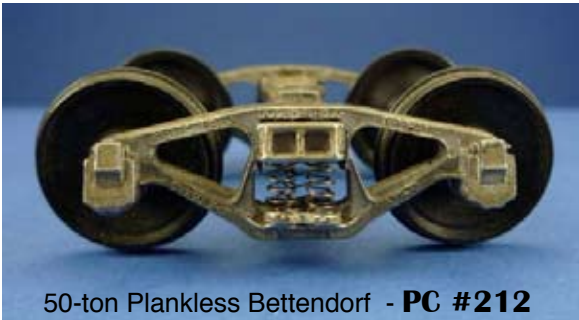


Barber Arch-bar 40-ton freight truck. Wheelbase: 5' - 4". Grabowski 40-ton "C" axle double insulated wheelsets included.

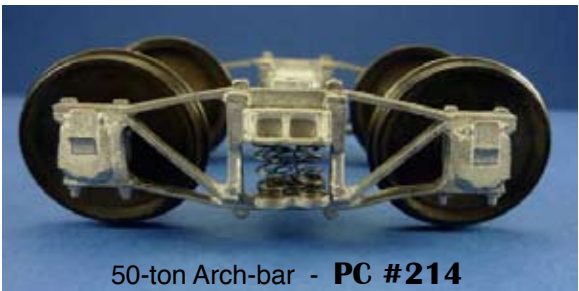
Kit # PC-115 \$42.50/pr



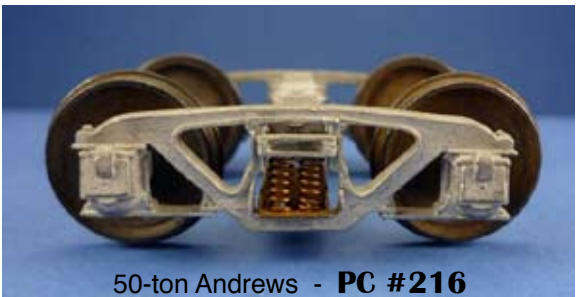
Freight Truck Kits in Duracast



50-ton Plankless Bettendorf - **PC #212**



50-ton Arch-bar - **PC #214**



50-ton Andrews - **PC #216**

PROTOCRAFT's line of freight trucks in Duracast. Complete with Grabowski 50-ton "D" axle one-wear insulated freight wheelsets:

Kits are \$27.50/pr



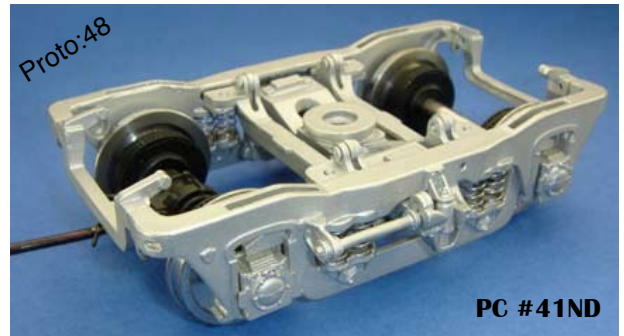
PROTOCRAFT's bolsters are available in pairs for use in general Proto:48 truck conversion.

Cast brass: PC #112bol \$6.50/pr

Duracast: PC #212bol \$2.75/pr

PROTOCRAFT'S Proto:48 model of General Casting Corp's 41-N passenger truck with clasp brakes, and 41-ND with disk brakes. Spicer generator drive and shaft. All wheels run smoothly on ball bearings. Truck castings, machining and wheels are made in Korea and fully assembled and ready to run.

\$109.95/pair





Passenger Truck Kits



PROTOCRAFT'S 1890 era Pullman-Standard wood beam 4-wheel passenger truck. Used under passenger, express refrigerator, mail and baggage cars throughout the railroad industry up until the 1920's. Includes Grabowski 40-ton "C" axle 36" wheelsets.

Specify insulated or non-insulated wheelsets for electrical pickup in lighted cars.

Kit #PC - 150 - \$42.50/pair



PROTOCRAFT'S 1920's era Pullman-Standard cast steel beam 4-wheel passenger truck. Used under passenger, express refrigerator and mail and baggage cars throughout the railroad industry up until the 1950's. Includes Grabowski 40-ton "C" axle 36" wheelsets.

Specify insulated or non-insulated wheelsets for electrical pickup in lighted cars.

Kit #PC - 151 - \$42.50/pair



PROTOCRAFT'S 1890's era Pullman-Standard wood beam 6-wheel passenger truck. Used under passenger, and some mail and baggage cars throughout the railroad industry up until the 1950's. Includes Grabowski 40-ton "C" axle 36" wheelsets.

Specify insulated or non-insulated wheelsets for electrical pickup in lighted cars.

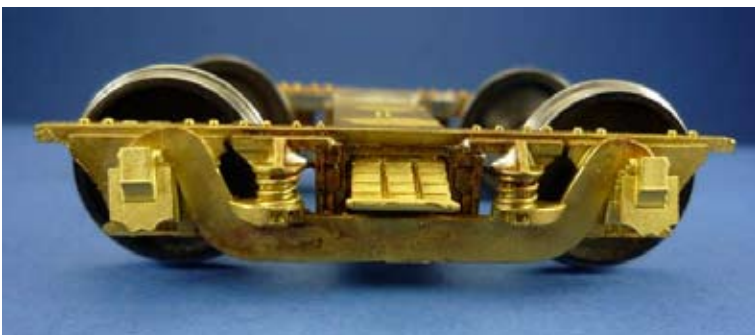
Kit #PC - 175 - \$69.95/pair



PROTOCRAFT'S 1920's era Pullman-Standard cast steel beam 6-wheel passenger truck. Used under passenger, and some mail and baggage cars throughout the railroad industry up until the 1950's. Includes Grabowski 40-ton "C" axle 36" wheelsets.

Specify insulated or non-insulated wheelsets for electrical pickup in lighted cars.

Kit #PC - 176 - \$69.95/pair



PROTOCRAFT'S high speed cast steel beam 4-wheel express refrigerator truck using 33" wheels. Used by the C&O, F.E.C. under 40 foot boxcars in head end service, and by the N.P. under 50' express refrigerator cars up through the 1950's. Includes Grabowski 50-ton "D" axle 33" wheelsets.

Kit #PC - 160 - \$42.50/pair



- Rail is a Model Too -

Great looking trackwork enhances the models operating on it to the degree that it is an important factor in any layout. In finescale modeling, accurate and well detailed trackwork is as important as the wheels running on it. Five different rails are available to the O scale modeler. **Code 148**, which is 131 to 136 pound per yard rail measuring 7-1/8 inches in height has been used extensively with the O Scale crowd. That size rail came into use in the early 1930's primarily on some Eastern Class I railroads. However, due to supply constraints as a result of WWII, a lot of Class 1 railroads ran on 100 pound rail laid during the 1930's which measured between 5-13/16" to 6" in height. This is close to **Code 125**. Some notable exceptions were the Pennsylvania, Nickel Plate (NYC), and the Southern Pacific/Union Pacific which used 112-130 pound rail averaging 6-1/2" in height, or **Code 138**, in their mainline trackage; the difference being the thickness of the web which resulted in the weight variation. During the pre-war period and up through the 1970's, much of the branch line rail used throughout the US and Canada was 75 pound, 4-3/4" high rail - or **Code 100**. Much of this ended up in yards after being removed for upgrading right of ways for heavier tonnage usage. And finally, **Code 83**, or 52 pound, 3-13/16" high rail was used extensively for the narrow gauge railroads all over North America. And if it was laying around as excess or used rails, it found itself being reused in sidings and loading spurs on standard gauge railroads.

Engineered by Steve Grabowski and carefully converted to CAD drawings by Carl Jackson, **PROTOCRAFT** has produced **Code 138**, the 6-1/2" rail used during the pre-war years up through the 1950's by the Pennsylvania, NKP 130# rail and SP/UP's 112# rail. **PROTOCRAFT'S** Code 138 rail is one of the most accurately scaled rail profiles available, and comes in either of two lengths of 39 foot multiples: 48-3/4" (5 - 39' lengths) and 68-1/4" (7 - 39" lengths)

All the above rail is available from Right-O-Way. Code 138 in either Nickel Silver: \$73.00/100 ft or Mild Steel: \$44.00/100 ft

Track Components

Turnout components have been accurately produced in nickel silver castings by master pattern maker John Pautz in Code 100, 125 and 138.



- Code 100: 16'-6" switch points
11" guard rails
#7 bolted rigid frog
#9 bolted rigid frog
- Code 125 16'-6" switch points
11' guard rails
#7 rail bound manganese insert frog
#7 self guarded frog (\$12.00)
#8 rail bound manganese insert frog
#10 rail bound manganese insert frog
- Code 138 16'-6" switch points
16' guard rails
#10 rail bound frog

**Components are \$10.00 each or \$25.00 for 3-part kit
Available through American Switch & Signal, Right-O-Way or Protocraft**



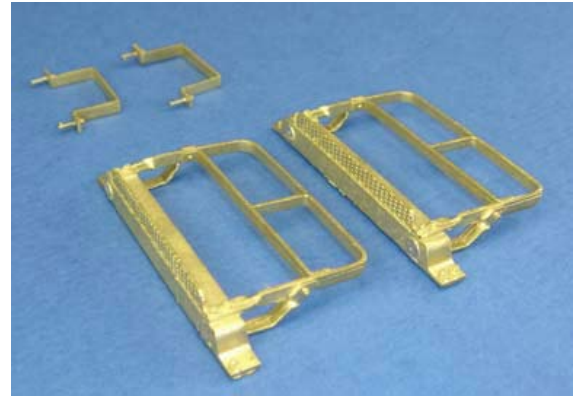
Proto:48 Castings -



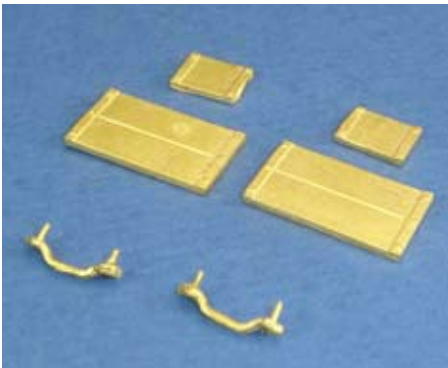
AB handbrake set
PC #1201 - \$7.00/set



Grabowski AB brake wheel set
PC #1203 - \$6.00



RPO step set - PC #1202 - \$12.00/set



boxcar door placard set -
PC #1204 - \$8.00/set



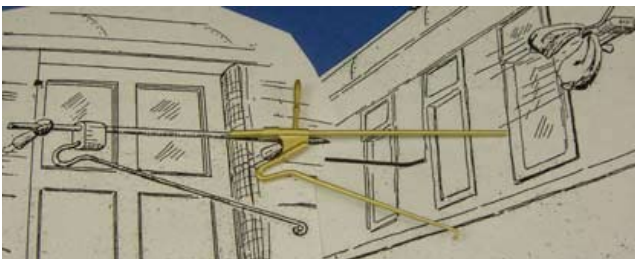
lift bar set - PC #1205 - \$6.00/pr
\$5/pr without brackets



ladder set w/step pads - PC #1206 - \$9.00/set



15-piece queenpost set - 10 queenposts +
specify 5 large or 5 small turnbuckles
PC #1207 - \$9.00/set

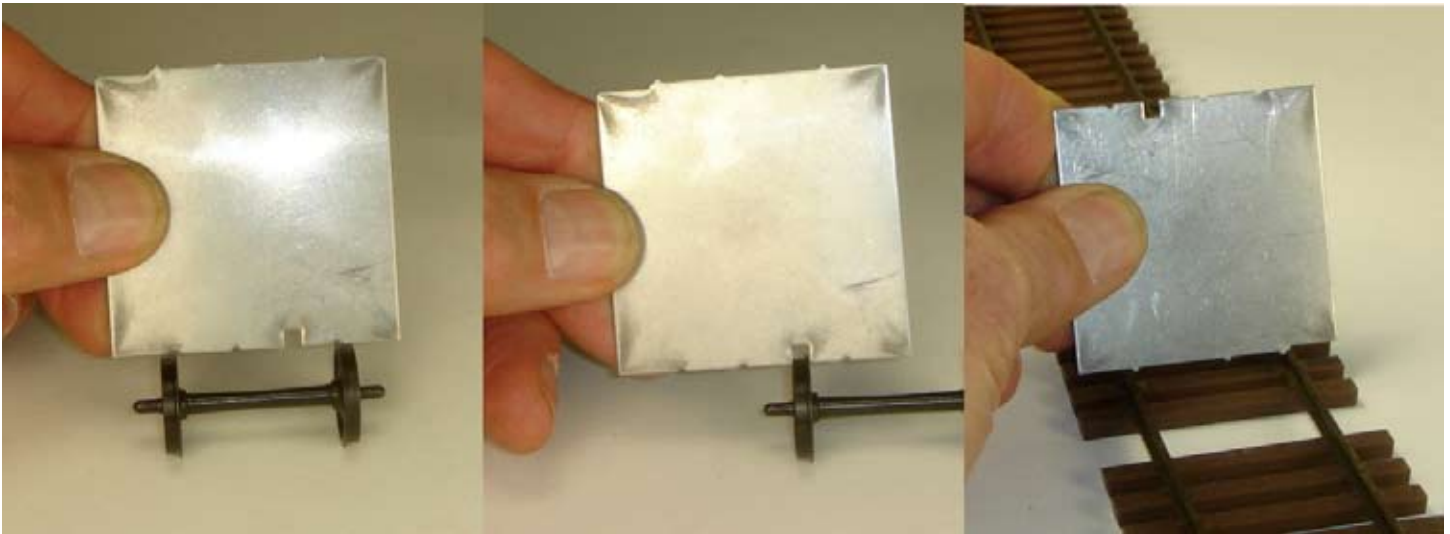


RPO mail hook - PC #1208 - \$6.00/pr

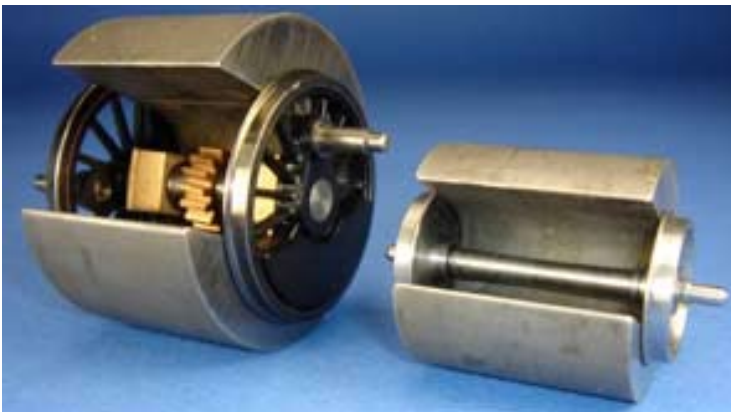


1890's endbeam set - PC #1209 - \$9.00/set

Tools for Proto:48



Proto:48 and P:48n36 standards gauge - designed by Paul Martineau
PC-48 \$7.00



Proto:48 Gage Blocks - important in remounting new wheels on axles. Made of hardened heat treated tool steel - back to back machined tolerance of 1.106+/-0.002" Designed by Steve Grabowski. Specify large or small block.

PC-106G \$60.00



Proto:48 contour form tool made from M-2 hardened tool steel. AAR 1/48 profile dimensions: .115" x .0257" flange, fillet and 20:1 taper. Available in 3/8" or 1/4" shank.

PC-268G \$57.50 single end \$72.50 double end



Track laying gauge - Code 100 - Code 125 - Code 138 designed by Paul Martineau

PC-1025M \$16.00



PSC finescale track gage
PC-950 - \$4.00



Ordering Information

For information regarding **PROTOCRAFT** products contact us at: norm@protocraft.com

For ordering Protocraft Proto:48 products, print out the following order form, fill in the items and enclose a check or money order in US funds payable to Protocraft. We do not have a credit card account. Please do not send cash.

Please Note:

All of our products are in scale and are designed to convert O scale models to finescale operating models. We believe Proto:48 to be the 1/4" modeling standards of the future - almost none are compatible with the O gauge of today - wheels will not operate in O gauge track parts, track gauge is at 4' 8'1-2" rather than O scale's 5' gauge, scale couplers will not clasp with Kadee's.



The Proto Journal

The **Proto Journal** was last printed and published with the 1997 issue. Today the prototype modeler can stay abreast of the 1/4 inch finescale hobby by opening the "**Proto48 Modeler**", edited by Gene Diemling, on the web at www.proto48.org

The early printed version of the Proto Journal, was published by Norm Buckhart through 1997. Much of the information contained in these issues is still quite relevant, including interesting articles on the origins of Proto:48 and Proto:48n3. The complete set of back issues can be ordered directly by mailing a check for \$39 for years (1994-1995-1996-1997) including first class postage, to

The Proto Journal
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Order Date: _____

Ship To: _____
name

_____ street address

_____ city - state - 9-digit zip

_____ evening contact phone

Proto:48 Product Line Order Form

S & H - shipping, handling, packaging, postage costs:
 add \$3.00 first 1-2 items, \$5 for 3-5 items, \$8 for 6-10.
 Call or email for wheel orders and larger shipments and outside US.

Sub-Total

S & H

SalesTax: (California residents

Total

for office use

Order Received: _____
Date Shipped: _____
Shipped via: _____

Make payable to **Protocraft** (U.S. funds only)

Orders must be prepaid by check or money order. We do not accept credit cards or cash.