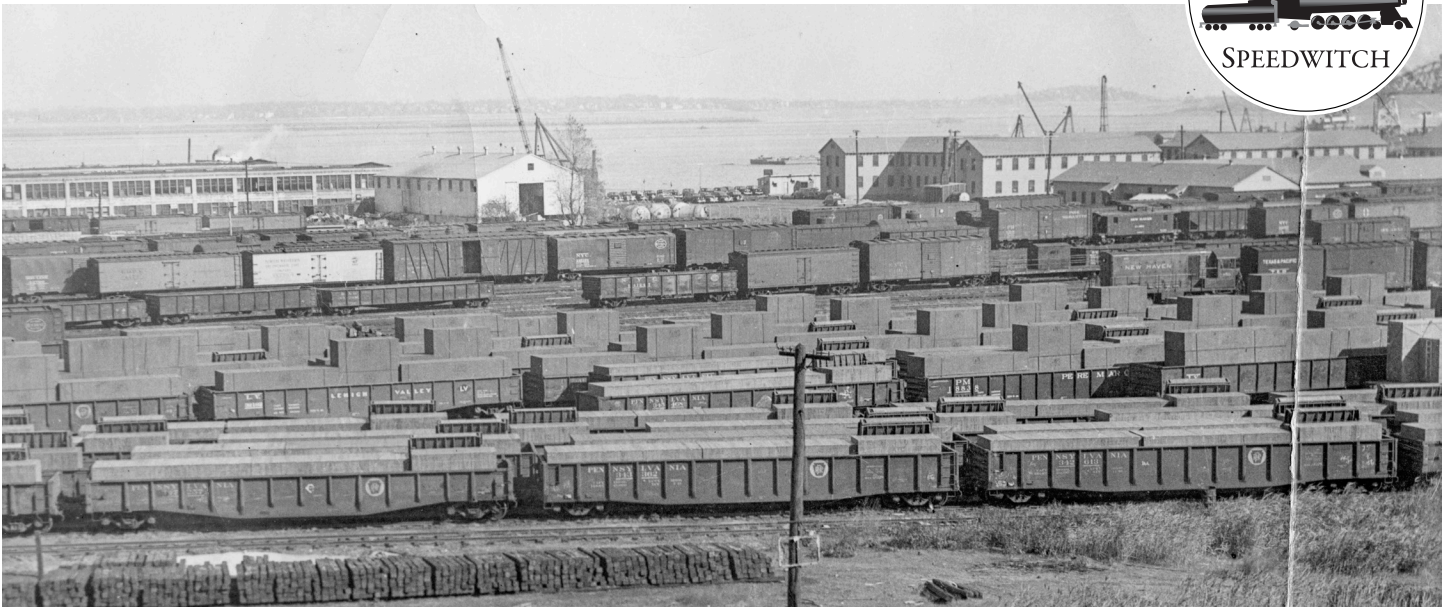
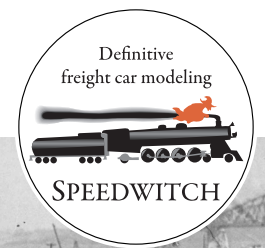


## K129 – Pennsylvania Railroad Class G28 Gondolas



The first row of cars in this image illustrates the Pennsy's two 52'6" gondola designs of the prewar era, the G27 at left, with its lower height, and the two G28 class cars at right. These cars are in general service and are loaded with crates. Port of Boston, October 29, 1941

### History

In 1940-1941, the Pennsylvania Railroad built 1,900 52'6" gondolas and assigned them to class G28, car nos. 342600-344499. While the Pennsy already had a large fleet of class G27 gondons of identical length, the G28 had higher sides and capacity, compared to the G27. The G28 class featured Dreadnaught drop ends, Universal or Equipco lever-style power hand brakes, a unique welded underframe with accompanying brake arrangement, and either National Malleable Type B 70-ton trucks (car nos. 342600-343549) or 70-ton cast sideframe with spring planks and a spring package featuring three springs arranged side-by-side below the outer portion of the truck bolsters.

As delivered, the cars were painted the Pennsy's light oxide red on all surfaces, except the wood floor and the trucks, which were black. They were decorated in the simple Keystone scheme. In 1954, the Pennsy introduced the short-lived 'Calendar' style lettering. If a car was repainted between April and June 1954, it presumably received that scheme, although I have not seen any examples. In mid-1954, the 'shadow Keystone' scheme that persisted for the majority of the remainder of the 50s was used. In the late 1950s, the 'plain Keystone,' used until the end of the Pennsy, was introduced.

### Instructions

**General - please, please, please read first, even if you are an experienced resin freight car modeler**

This kit includes some extremely detailed etched parts. They can be fussy and may be fragile if not handled as directed or assembled in a different order than laid out herein. It is recommended in the strongest possible terms that you pay attention to the order of operations and also follow the suggestions for tools (as noted at

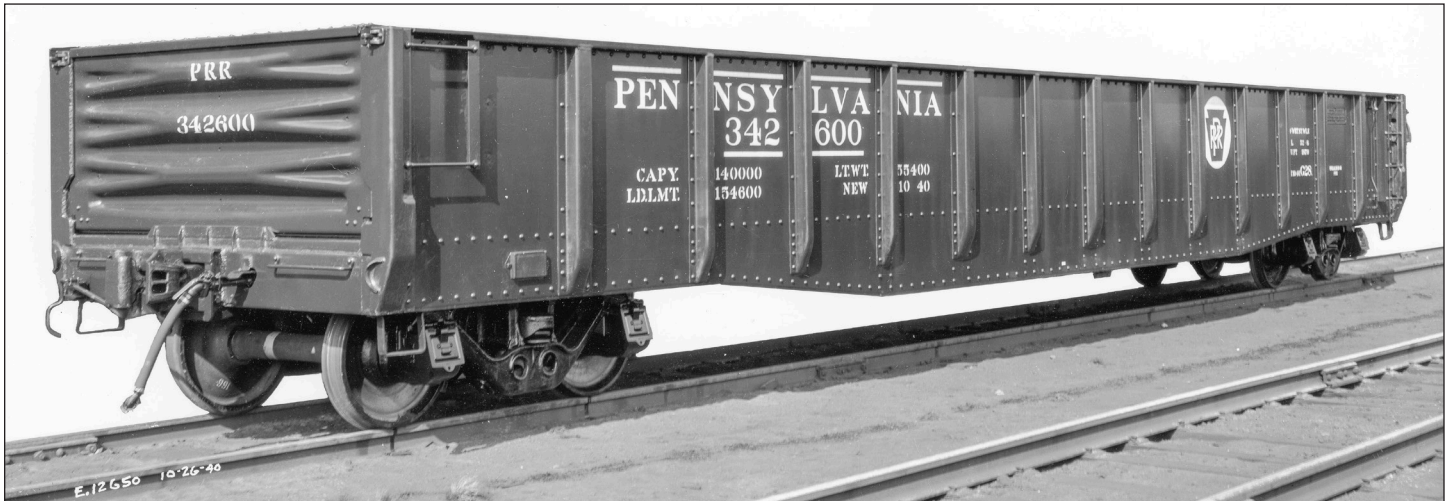
the end of this section.) Rest assured that the challenge is worth it. Exercise care and patience and you will be rewarded with one of the finest models in your fleet.

The instructions contain high resolution images. You can print the file or zoom in quite a lot to aid in understanding assembly.

The general order of the assembly is in many ways up to the preferences of the modeler. There are also a few things that are optional and require items not included in the kit. These are noted throughout the instructions.

Resin casting can generate air bubbles. If everything goes according to plan, the ones that do exist in the castings are small and not on an outer surface. Should you have a bubble that causes you concern, you can fill it with some ACC. [full disclosure: my pilot model was constructed using "defective" castings and I would challenge you to find any defects on the finished model.] If after cleaning up the vent gates on the top of the sides, you find that your casting is slightly torqued or off-kilter, you can heat an oven to 150° F and turn off. Immediately place the casting, resting on the top of the sides or "upside down" (on a piece of glass or other heat-resistant flat surface) in the oven and leave for at least 30 minutes. It should straighten out.

*Important* note about working with the etched metal parts... many of the etched metal parts have half-etched "score" lines. These are to be used to aid in folding the parts. *Unless specifically instructed to fold "away" from the score line*, always fold *into* the score lines, meaning that the angle formed by the subsequent bend will "contain" the score line, which will "disappear" into the fold in most instances, such as 90° bends. Also, the etched parts in this kit are quite thin and easy to cut or trim. I recommend the following method: lay the parts fret on a cutting mat and



These three builder's images show many of the details of the G28 class, including two sizes of side structural members, tall(ish) sides, Dreadnaught drop ends, Universal power hand brake, National Malleable Type B 70-ton trucks, as well as the trademark Pennsy scheme with circle keystone emblem. Hagley Museum and Library



Negative no. PA204743, Merrilees Collection, National Archives of Canada



Robert Dudley Smith photo

overlay that with a steel ruler. Trim straight down using a chisel blade like an X Acto no. 17. When overlaying with the steel ruler, leave the excess "gate" that joins the parts together exposed and the actual part under the ruler. Yes, this leaves you a little "blind" in terms of what you are cutting, but there are extra parts and you will get the hang of it! If a part bends, you can flatten it by "crushing" it between the mat and steel ruler. Also, while I did not encounter any un- or underfilled holes, it does happen and they can be cleaned out with a drill bit (as referenced in the tools section below).

Suggested tools:

- Tweezers such as [these with serrated jaws](#) or [these with diamond tips](#) - etchings can be difficult to handle and plain tip tweezers, no matter how high quality, are not the best tool for the job... avoid flying pieces of metal followed by colorful language!

- Etched part bending tool - these devices make bending etched metal parts, especially long narrow ones like ladder stiles, much easier - I use [this one](#) and *highly, highly* recommend it, but [UMM-USA](#) carries many types.

- Drill bits - all drill bits are not created equal. I purchase mine from [McMaster-Carr](#) for quality and durability. I also recommend [this specific one](#) to have on hand to "ream" holes in etchings in case you find one that is not etched completely. Yes, it is an expensive bit, but I use it only for this purpose.

- Square - I recommend having a [tool grade combination square](#) in your arsenal, but for this model, I use it to "finish" the bends in the ladder stiles. Yes, it's expensive, but I use it all the time!

Parts List:

- Resin castings (body, doors, floor, detail castings)
- Decals
- Tichy AB brake set
- Bowser AB reservoirs
- Moloco angle cock/air hose, pair
- Etchings
- 0.008" wire - 1

- 0.010" wire - 2
- 0.012" wire - 1
- 0.015" wire (small piece)
- 0.020" wire - 1
- Screws (2-56 and 00-80)
- Couplers
- Chain

Extra Parts and other optional items (not included):

- Trucks (Plate C offers the correct National Malleable Type B 70-ton trucks)

Tangent Scale Models Equipco lever-style hand brake, should you build a model that doesn't use the Universal type included in this kit

- Branch pipe tee
- Paint
- Weathering media
- Chalk mark decals

### Assembly Sequence

◇ Let's start with a weighty issue (apologies for that humor!) since it is a consideration. These castings are light, meaning even if you run your cars light, as I do, you still need to add weight somewhere. There are two long areas on the floor that are intended to be "filled" with weight. The design of the kit is meant to accommodate 1/64" thick lead sheet (available from [rotometals.com](#).) You could double that to 1/32", knowing that the floor will sit slightly higher. I used 1/64" thick lead sheet secured with Liquid Nails "Projects" adhesive and am working on a load that will also include additional weight. Regardless, add this to your planning as you build the model.

◇ Begin by examining the castings. The inside of the car body will require some cleanup work. There are specific A and B ends to the body casting. The B (brake) end has an angled extension while the A end is closer to "flat." If you are adding a train line/



Negative no. PA204744, Merrilees Collection, National Archives of Canada

pipe, drill the center sills (at an angle) to receive the wire "pipe." Use a no. 65 to 68 (or similar) drill bit as the wire is 0.020". This will require a little finesse as it must be done by drilling down and at an angle. I created large starter dimples using a bulletin board push pin.

◇ Add the draft gear (coupler pockets.) if using the ones provided in the kit, you may need to file slightly until they fit in the openings in the end sills. If using other coupler parts, you will need to modify the coupler pockets, the end sills or both to suit your parts. I attached the kit's draft gear using a 50/50 mix of Barge cement and solvent (I used MEK.) I augmented that with ACC around the edges (being careful to stay away from the mating lines of the "boxes" and "covers." The covers are secured with 00-80 screws. If using these, be careful to tighten only enough to secure the covers and not so much that the center posts become distorted.

◇ If (*and only if*) your kit has a segment of 0.060" x 0.188" styrene strip, add a segment of that across the body bolsters, where the truck screws will be mounted. (this is a solution to an oversight by me and I added it to my model, too.) Glue with the Barge cement mix (or similar) followed by ACC at all the edges.

◇ Drill the underbody for the truck screws. The truck screw holes should be drilled with a no. 50 bit. The screws provided should be self-tapping if gently screwed into the holes. Do not do anything at this time to adjust the bolsters vis-à-vis truck and coupler height. That will be addressed later in the build.

◇ Add the crossies that are located between the four sets of crossbearers (the crossbearers are already part of the floor, except for their bottom cover plates. As you proceed, note that some of these have holes to accommodate the trainline; make sure that when you add them to the car, you place the ones with holes where they should be located to accommodate the trainline (*consult the photos!*) The crossies are etchings and require assembly. The top and bottom flanges must be added. The crossies on the prototype were H-beams that were split and "forked" where they met the sides. They were welded to the center sills using a plate that incorporated "slots" to accommodate the H-beams. These plates are included in the etchings and should be used not only to facilitate attachment to the center sills, but also as assembly jigs. My technique was to slide the plate over the main portion of the H-beam. I then made bends in one of the other parts of the H-beam. I then slid this through the plate, making sure that the "slot" (etched line) was oriented so that the main H-beam part "nested" into the etched slot. The bends should follow the shape of the main part of the H-beam. Secure by adding sparing amounts of ACC into the joint. I used a pin for this. I started gluing near the two bends, holding the piece "into" the bends with tweezers, ensuring that the main part was nested in the "slot." I then repeated for the opposite part of the H-beam, following the same technique, to complete the H shape. At this point, slide the plate with the H-shaped opening



A G28 equipped with racks for transporting automobile frames. Bob Charles Collection, NMRA Kalmbach Memorial Library

down near the end of the H-beam that will abut the center sill. Carefully determine if the H-beam will fit between the center sills and the sides. If not, you can file material from the end of the H-beam that will abut the center sill, filing parallel to the two "flanges" of the H-beam (parallel to the two pieces you added to the main H-beam piece.) Once you are satisfied with the fit, slide the plate near the end of the H-beam. I added some of the Barge cement mix to the face of the plate that will be attached to the center sill. I positioned the H-beam and then pushed the plate against the center sill with tweezers, with the Barge cement tacking it in place. I then added ACC at the center sills and back of the sides. Repeat for the other seven H-beams. This sounds a *lot* more difficult than it is; the plates provide a significant aid in assembly and there are extras, so you can use two or even three and remove them as you glue the H-beam together, with only one remaining once the part is assembled. Consult the photos for guidance!

◇ Now that you are an expert in assembling these, create the four that are adjacent to the bolsters. These must be "freestyled" or you can use one of the extra H-beam plates, as long as you don't use it to glue the part to the car body. Make four. These use a T-section plate to attach to the center sills. Add these to the underframe, again using the photos as reference. Congratulations... you're through with the most difficult part.

◇ Add the bolster cover plates. These are resin parts. You need four and there are extras. Glue in place using ACC, matching the contours of the bolsters and also secure at the ends where the bolsters meet the sides. The photos will be helpful.

◇ Add the trapezoidal webs located between the bottom (if on the rails) of the crossbearers and crossties and the flange of the side sill. There are many of both "long" and "short" versions of these plus some extra "long" ones. The long ones are used for the crossties and the short ones are for the crossbearers. You will likely need to trim one or two of the extra long ones to use as short. This is on purpose to ensure that you have sufficient quantity of these parts. The crossties adjacent to the body bolsters do not use these webs.

◇ Drill the appropriate crossbearers for the trainline using a no. 65-68 drill bit. Align the holes with the height of the holes in the crossties and also the same distance from the center sills as the holes in the crossties to ensure a straight trainline.

◇ Add the train line using 0.020" wire. Use the photos as a guide for the bends. We added it in two pieces with the "break" between the center sills. Note that where the train pipe passes between the center sills, it "skirts" but does not pass through those crossbearers. I terminated the ends of the trainline at the bolsters, but did not have it pass through the bolsters, as much of this detail is hidden anyway. You might also see that I added an aftermarket branch pipe "tee" from David Jobe, Sr. This is where the pipe between the AB valve dirt collector and the train line is connected, should you wish to add such a detail. Secure with ACC.

◇ Assemble the brake cylinder from parts AB-3, AB-8, and AB-9, using liquid solvent cement. When the parts have dried, drill the rear nipple with a no. 78 or 79 drill bit. You can use the Tichy clevis (AB-25 or AB-29.) However, I choose to fill in the front opening of the cylinder with styrene rod and then drilled an opening and used wire, plus an etched "clevis" to simulate the brake arrangement. If following my lead, you should fill, drill, and test fit a piece of 0.020" into the opening *before* attaching the cylinder to the car. ◇ Add the brake cylinder bracket. It is comprised of three etchings that are assembled prior to add to the car. There is an angle that is attached to the bottom of the side, a zee bar that is attached to the inside face of the side, and a plate that spans these two and is the surface that the cylinder is glued to. Assemble these three parts using ACC (or tack first with some of the Barge cement mix, followed by ACC.) Attach them to the car, consulting the photos for placement. Attach the cylinder using contact cement followed by some ACC.

◇ Clean the Bowser reservoir part, including removing the stub. Drill holes to accept wire, like shown on the model in these instructions, using a no. 78 or 79 drill bit. Set the reservoirs aside. Drill three holes in the AB valve (part AB-5) with a no. 78 or 79 drill bit. Set this aside, as well.

◇ Add the etched metal mounting brackets for the reservoirs as shown in the photo. The parts that support the lugs of the reservoirs must be bent as shown; one is attached to the flange of the center sill and the other to the back side of the side. The method I used was to attach the one that mounts to the center sill first. I then added that to the center sill. In both instances I used the Barge cement mix followed by ACC. I then completed the assembly by adding the bracket for the single lug that is also attached to the inside face of the side, again with Barge cement followed by ACC. Add the "platform" for the AB valve as well, as shown, which is a piece of 0.010" x 0.080" styrene, spanning the stringers. Add the AB valve.

◇ Add brake piping. Using 0.012" wire, create the piping between the reservoirs and the AB valve and cylinder and the AB valve. Beading pliers with round jaws are particularly good for this task. Mimic the piping as shown in the photos. Trim the dirt collector (part AB-6) from the Tichy parts sprue and drill a hole (no. 77 or 78) in the front of the dirt collector, glue the dirt collector into the AB valve and then add 0.015" wire between the dirt collector and train line (or branch pipe tee, if you added one,) bending as shown, and secure the end of the wire "pipe" to the train pipe by joining both with a blob of ACC.

◇ Add the brake levers and rods. The following describes the use of etched brake levers and clevises. First, for the clevis/lever assembly on the front of the cylinder, I threaded 0.010" wire through the etched clevis and brake lever. For the other assemblies, it is far easier to just fold the etched clevis and glue in place over the lever and frankly, is generally strong enough. To bend the clevises, I thread wire through the center hole in the clevis and then bend the two "halves" over the wire. Then I slide the clevis until it is just at the end of the wire. You do need to ensure that the hole in the center of the etched clevis will accept the wire brake rod. I "open" the holes a little before bending the etched clevises. See photos. If using Tichy styrene levers or creating your own, please disregard and proceed in your own fashion. Use 0.010" for the rods, as shown. The chain at the clevis on the cylinder can be added using the included chain; just be sure to leave sufficient chain for the hand brake on the B end. The rods are attached to holes drilled between the center sills or the bolster cover plate. Secure all parts with ACC. There are photos from many different angles to help clarify these assemblies.

◇ Add the hand brake [*note: if you choose to mode la car that received an Equipco hand brake, you can substitute a part from Tangent.*] Begin by creating the sheave wheel. This is simulated with several round etched parts glued together in a "sandwich." I threaded 0.010" wire through a large etched circle, three smaller etched circles and another large etched circle. I glued these together with ACC. I then flowed some ACC into the "groove" in the circle sandwich. Again threading the parts over the wire, I added a trapezoidal support (not exactly trapezoids, but close) on either side, ensuring that the supports mirrored each other on each side of the circles. Glue this entire assembly to the B end, with the circles nested in the depression in the end and the supports against the end, around the depression. The

hole in the trapezoid for the wire is closer to one side than the other. The "short" side is oriented "up" while the long side with the small "squared" edge is oriented down. I secured the circles in the depression with the Barge/solvent mix and then secured the trapezoids with ACC. Next, drill two holes (no. 78 or 79) in the hand brake housing, one in the upper center and the other at extreme upper right; there are dimples in the face of the housing to help locate the location for these holes. Drill a third hole in the bottom of the housing going "up" into the housing. Create a small loop in a piece of 0.010" (like an eye bolt) and thread through the end link in the chain and crimp closed over that chain link. Take the "free" end of this makeshift eyebolt and insert into the hole you drilled in the bottom of the hand brake housing and secure in place with ACC. Let dry. Add the hand brake to the end, securing with ACC, leaving the chain dangling.

◇ Detail the hand brake. Drape the chain hanging from the hand brake housing over the sheave wheel ("circles") that you installed. Identify which links are necessary and cut the remaining links off. The chain should drape around the wheel and nest in the groove. Glue the chain into the groove in the wheel. Add the "guard" that goes over the chain and wheel. It is an etching and must be bent to wrap "around" the wheel and trapezoid brackets. Glue in place. I tacked it in place with Barge cement and secured further with ACC. Add a segment of 0.010" into the upper center hole that you drilled in the housing and secure with ACC. Add the lever to the hand brake housing. The etching must be bent slightly. Use the photos as a guide. Next add a circle etching over the lever, centered around the wire and glue in place. Lastly, add the tiny etched circle over the wire and glue in place at the hand brake lever. Next, glue a segment of wire into the hole at the upper right of the housing. Thread a small release lever over the wire and secure in place with ACC, being sure to orient as shown in both the model and prototype photos.

◇ Add the brake step. The front lip of the step must be bent against (as opposed to into) the etched score line (I goofed on the etching artwork!) Take your time and make the bend gently and do not bend back and forth. Note that the legs to support the step are different lengths. The leg that will be closer to the car side is longer. The step is glued to the upper surface of the end adjacent to the triangular webs. I did trim the ends of the legs at a slight angle to match the end surface. Glue the step to the model. I used the Barge/solvent mix followed by ACC. I then pushed the support legs down to touch the surface of the end and secured them in place with ACC.

◇ Add the three straight end sill grab irons (those below the step require a little different handling and will be added after these.) Drill holes below the mounting details using a drill from no. 80 to 78, depending upon the size wire in the grabs you use. These are straight grab irons. I bent mine from 0.008" wire to match the fineness of the ladder rungs, using the etched grab "bender" jig. Make a 90° bend in wire and insert that leg into the jig and orient the wire into the "slot" in the jig. Bend the other leg at the point where the slot ends. [you can substitute commercial grab irons, such as Tichy, if you prefer.] The grab that is attached

to the brake step supports is the same size as these others and can be bent accordingly. It is inserted into the two "inner" holes that are closest together (each mounting location has two holes right next to each other; the two "inner" ones are for the grab legs and the outer ones are as follows.) Add wire in the "outer" holes adjacent to the grab legs. Once these ACC for these bits has dried, trim the outer wire, "non-grab" legs almost flush, leaving just a bit to simulate the mounting detail of the grab. The grab below the brake step support straps that mounts to the car end is a hybrid. The right leg is a traditional drop shape while the left leg angles up at 90° and mounts to the bottom of the end. Obviously this grab must be manually bent. Consult the photos for clarification. The right leg does have mounting detail to aid in locating the hole and grab leg. Again, please consult the photos.

◇ Add the uncoupling devices. Begin by gluing an uncoupling rod bracket to the end. These are etchings that must be bent. Next, bend uncoupling rods, as shown. I used 0.010" wire, which is fairly easy to bend into the correct shape, including the crescent-like shape at the end where the rod would have been operated. Thread these wire parts through the holes in the brackets and secure with ACC, with the wire terminating below the coupler boxes/draft gear.

◇ Add the door locking mechanisms. These are two part etchings. The main part must be glued to the face of the upper frame of the end. The second, smaller part, with the hole is glued one edge in the slot of the first part. A piece of wire completes the detail. The wire can be added as part of attaching the piece that is added on edge or after the other two pieces have been added, to complete the assembly. The should be trimmed as shown in the photos.

◇ Add the angle cock/air hose brackets to the ends, adjacent to the draft gear/coupler pockets. You must drill two side-by-side holes (I used a no. 64 drill bit) and then "clean out" the resin remaining between the holes, creating a roughly rectangular shape clear through the end sills (why the \*#@! didn't he make this opening part of the pattern, you ask? Depending upon whether you use my coupler boxes or your own, which may be wider, the location of the angle cock/air hose parts will be different...) The main bracket passes through the opening you created and touches the upper surface of the opening. There is also a small brace that connects to the bracket and the end sill. There are holes in both the bracket and brace. Use 0.010" through these holes to create an assembly that you add to the end sill, through the opening you created and with the brace against the face of the end sill, above the opening. I secured the main bracket to the model using the Barge/MEK mix augmented with ACC and ACC for the brace to end sill joint. The angle cock/air hose can then be inserted through the opening, below the bracket. I secured that in place with the Barge/MEK mix plus some ACC, more from behind the end sill than in front. I created "u-bolts" from 0.006" (you can use the 0.008" included in the kit, as well) that passes through the holes in the bracket, to secure the angle cock. I used ACC for this. Consult photos for clarification.

◇ Add the pressure retainer valve and pipe. The retainer valve

is a styrene part. Drill a small hole in the bottom of the pressure retainer valve using a no. 80 drill (or slightly larger if you are not comfortable with an 80 or you only have a no. 78 or 79.) There is a "dimple" in the spot where you should drill. Drill a no. 75 or 76 hole in the car side in the location shown in the photos. Using ACC, attach the retainer valve by putting the "post" on the part into the hole you drilled in the car side, taking care to orient properly with the hole pointing directly down to the bottom of the car side. Add the etched metal bottom retainer pipe bracket to the side in the location shown in the photos. The part includes two bends that you must make, using the half-etch lines as a guide. I secured this part to the side using the Barge/MEK mix augmented by ACC. Take the 0.008" and temporarily insert into the hole in the retainer valve. On the wire, mark the locations where bends should be made, using a marker like a Sharpie. Note that the wire "pipe" has two bends (below the valve and above the bracket) so it can run right against the side for most of its length; also drill a hole in the side and make the 90° bend where the pipe passes through the side. When satisfied with the bends and routing of the wire, insert into the valve and glue at the valve and at the hole in the side (from the back!) using ACC.

◇ Add the side grab irons. As on the prototype, these are actually treads (rungs) that are attached to the zee bars on the car side. I drilled holes to "pin" the rungs in place with 0.010". There are etched pieces with the correct hole spacing for both the right four-rung setup as well as the left two-rung arrangement. I secured the rungs with 0.010" that was trimmed almost flush once these assemblies had dried.

◇ If your model replicates a car still under the trust, add the etched trust plates (save the decals for later.) I attached mine with the Barge cement/MEK mix. Once on the model, I added more solvent to ensure that it flowed under the entire etching.

◇ Add the sill steps. These are etched parts. I pinned mine to the car using 0.010 wire. You must drill holes to the underside of the body at the corners. I used the following technique. I drilled the hole closest to the end first and inserted a piece of wire with some of the Barge/MEK mix on it to hold it in place. I bent the step and slid it over the wire using the appropriate hole and then marked and drilled the second hole. I then added a piece of wire into that hole, again using Barge/MEK and slid the steps over both pieces of wire and secured in place with ACC. Once dry, I trimmed the wire almost flush. Repeat for the other three steps. Note that the steps on the right are different than the left. It is possible that only the step that is at the hand brake corner is angled and that the other three are u-shaped. I am not 100% certain, but there are three of each step in case you choose to go the three u-shaped step route.

◇ The floor... this casting is slightly long and wide (on purpose.) You will need to carefully shorten and narrow to fit. Remove from both sides and both ends as there is detail to match up (little circles in the surface of the boards to simulate bolthead holes.) The prototype boards did have small gaps at both sides.. they were not flush right up against the inside of the carbody. For the ends, the bottom of the ends should touch the body

casting, not rest on the floor boards. This is not prototypical, but I endeavor to keep things as thin as possible, but the thickness of the sides, floor, etc., can't be anything but unprototypically thick in HO scale. I believe

◇ Construction is complete! *The sill steps and other details are fragile. If you or anyone else is handling the model, I strongly suggest that you grasp by the doors, from the top, with fingers on one side and thumb on the other. Pick up before tipping to prevent any damage to the sill steps. The parts are quite durable if the model is handled correctly.*

◇ Before painting the model, I recommend lightly [sandblasting](#) all metal and engineering plastic surfaces with [aluminum oxide](#) to ensure that the paint will not chip or flake. This should be followed by a washing using liquid dishwashing detergent and a soft toothbrush, taking great care to avoid delicate parts and assemblies. Rinse thoroughly and allow to dry completely.

◇ I highly recommend painting using an airbrush. Prime the model with your choice of primer. After priming, brushed on some Quick Shine floor polish over the trust plate etchings. Once that dried, I added the trust plate decals. I added a few applications of decal solution to make them snuggle down. My model represents an early 50's repaint. The body, interior, trucks and wheelsets were all painted Ammo Dark Rust A.Mig-0041 with a few drops of Ammo Medium Rust A.Mig-0040 mixed in. If building an as built car, I recommend an even lighter oxide color (perhaps a more significant amount of the medium rust) and also that the trucks be painted black. Add [a gloss coat](#) to aid in decal adhesion.

◇ For decaling, my recommended approach is to apply the decals with only water. After sliding them in place (with a dull object) let them dry *mostly*. Apply decal setting solution by touching the edge of the decal with a brush that has the solution on it and letting capillary action pull the solution under the decal. Again, let the decals dry thoroughly. After they have dried again, add setting solution over the entire decal and let that dry (and don't panic if the decals wrinkle or pucker a little when wet). After they have dried yet again, using a sharp knife, slit any areas where there are bubbles or silvering. Add setting solution. Keep repeating until all traces of air are gone. Add a gloss coat to seal the decals and hide the edges of the film. Add a flat coat. Weather to your preference, add reweigh and repack stencils, and [chalk marks](#), and your model is ready. Congratulations!

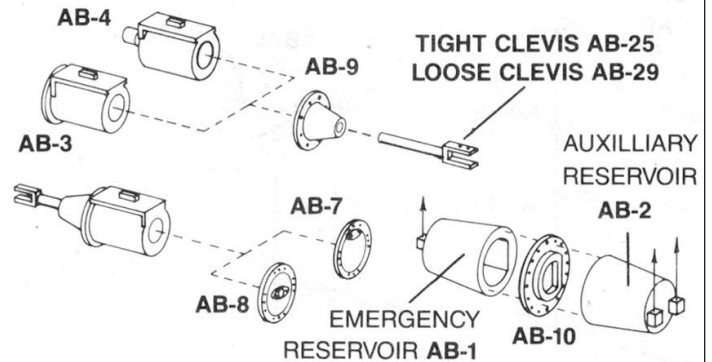
Thank you to:

- ▶ Ron de Pierre
- ▶ [Moloco Trains](#)
- ▶ [PPD](#)
- ▶ [Tichy Train Group](#)

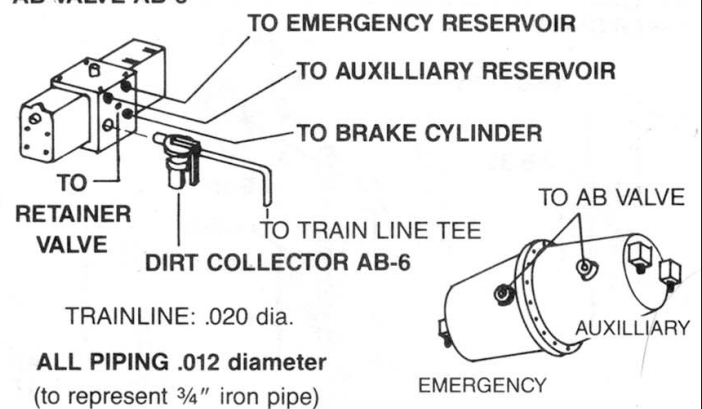
## TYPE "AB" BRAKE SYSTEM PART #3013

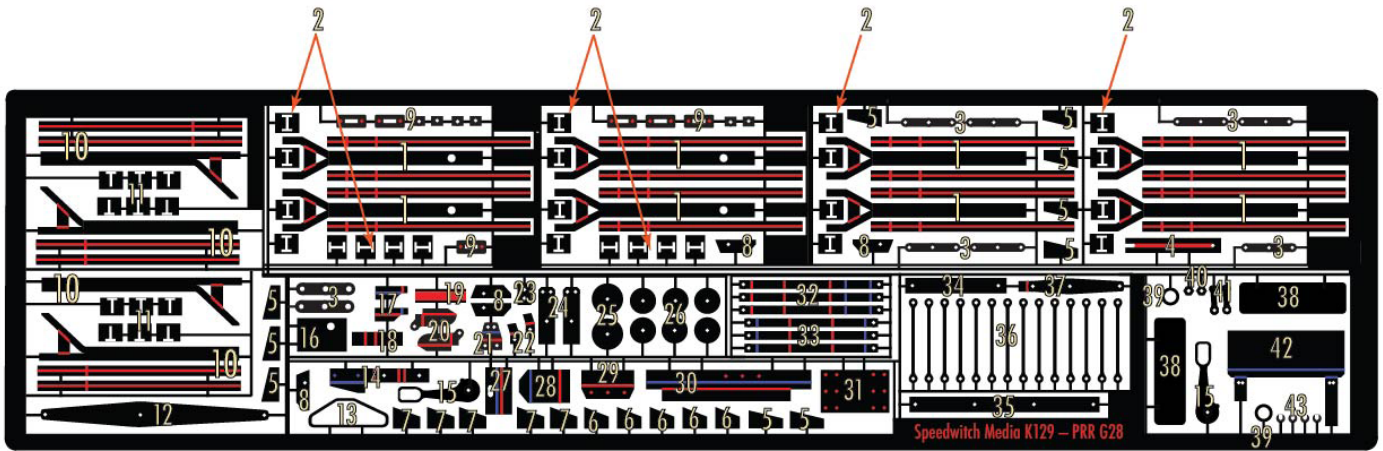
The major components are provided as multi-part assemblies to best represent the detail of the prototype, as well as allow you options to suit your specific application. The illustrations are a guideline only — refer to drawings and photos for your prototype. Several parts are included that are unique to specific TICHY TRAIN GROUP kits, and are referenced in the kit instructions.

Choose either **FLANGED AB-3 or CAST AB-4 (modern) BRAKE CYLINDER**



### AB VALVE AB-5





- |  |                                     |
|--|-------------------------------------|
| 1 - Crossties (parts to make into "H") | 23 - Not used                       |
| 2 - Crosstie brackets                  | 24 - Angle cock brackets            |
| 3 - Clevises (two sizes)               | 25 - Sheave wheel circles (large)   |
| 4 - Grab bending jig                   | 26 - Sheave wheel circles (small)   |
| 5 - Crosstie webs ("tall" or "long")   | 27 - Reservoir bracket (two lug)    |
| 6 - Sloped crossbearer webs ("short")  | 28 - Reservoir bracket (single lug) |
| 7 - Main crossbearer webs ("short")    | 29 - Brake cylinder rbracket angle  |
| 8 - Sheave wheel bracket               | 30 - Brake cylinder bracket zee bar |
| 9 - Door locks (two types of parts)    | 31 - Brake cylinder bracket         |
| 10 - End crosssties                    | 32 - Angled sill steps              |
| 11 - End crosstie brackets             | 33 - Straight sill steps            |
| 12 - Main brake lever                  | 34 - Left rung hole jig             |
| 13 - Main lever support                | 35 - Right rung hole jig            |
| 14 - Dead lever bracket                | 36 - Treads (rungs)                 |
| 15 - Hand brake lever                  | 37 - Dead lever                     |
| 16 - Trainline drill jig               | 38 - Trust plate                    |
| 17 - Not used                          | 39 - Hand brake lever "washer"      |
| 18 - Not used                          | 40 - Hand brake lever nuts          |
| 19 - Brake chain shield                | 41 - Hand brake release             |
| 20 - Uncoupler rod brackets            | 42 - Brake step                     |
| 21 - Retainer valve pipe bracket       | 43 - Not used                       |
| 22 - Angle cock bracket braces         |                                     |



