

Parts Set P127 – Pennsylvania Railroad X32A Part Set



PRR X32A 58829 was photographed by the New York Central on December 14, 1938 to document patent infringement of NYC devices. Photographed at the 72nd Street yard in Manhattan. NYCSHS identifier WR240395

Note

Before starting construction, inspect the castings carefully. The surface may have some "slick" areas that are residual mold release. This can be removed by washing with dishwashing detergent. If the floor casting is not entirely flat, the following technique can be employed to flatten it: heat an oven to 175 degrees Fahrenheit and then turn the oven off. Place the part on a flat surface such as a piece of glass (flat side down and detail up.) After 15 minutes remove the casting from the oven and let cool completely. It should have flattened. If there are any bubbles in the casting, they should be on the "back" surface of the casting and will not be visible once the model is assembled. If you wish, you can fill them with ACC or putty and sand smooth. If there are any castings that are defective or cannot be used, please contact us for a replacement.

History

The iconic "round roof" cars of the Pennsylvania were constructed in two lengths and as box and automobile cars. The X32 class included the X32 with inset roofs, the X32B with wider door openings and different side sheathing as well as the subject of the is kit, the X32A with "flush" roofs and narrower door openings of 12'0". They were constructed by the PRR in 1936 and assigned to series 58800-59449.

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.) You may find some of the modeling to be challenging. 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. Anywhere that I am certain that order is important will be noted in the strongest terms. There are also few things that are optional and require items not included in the kit. These are noted throughout the instructions.

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 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



X32A PRR 59418, siding near Maclay Street, Harrisburg, Pennsylvania, July 20, 1947, Bob Charles Collection, NMRA Kalmbach Memorial Library



This is a sibling X33 with end doors at the Southern Railway Spencer, North Carolina yards, in 1947. negative no. 45882, Standard Oil of New Jersey, Ekstrom Library, University of Louisville

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 [the 195mm Piranha](#), 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



This is another sibling, X32B no. 49029. The B variant had a wider door opening and different side sheathing arrangement. San Francisco, ca. 1938, courtesy of Bill Welch, Arnold Menke Collection



PRR X32A 59168 was photographed by John Vachon for the FSA-OWI at Minneapolis, Library of Congress

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 (floor/underframe, detail castings)
- Decals (for P127.1)
- Trust plate lettering
- Etchings

Extra Parts and other optional items (not included):

• [National Scale Car D122](#) (ex-Speedwitch) decals

Rapido, Bowser or other PRR-design trucks

- 0.008" wire
- 0.010" wire
- 0.012" wire
- 0.015" wire
- 0.020" wire
- Retainer valve
- Screws (2-56 and whatever you use for your draft gear)
- Washers
- Tichy AB brake set (or similar)
- Kadee couplers, pair (or your preferred option)
- Coupler pockets (draft gear)
- Moloco angle cock/air hose, pair
- Chain
- Nut-bolt-washer (NBW)
- Branch pipe tee
- [Scale Hardware 0.4mm brass rivets](#)
- [Plastruct 0.010" styrene rod](#)
- Paint
- Weathering media
- Chalk mark decals

• ... and, of course, an X32A kit. I used an undecorated Bowser model although I believe that there was a resin offering under the West Shore Line banner. There were at least two “versions” of the Bowser carbody. It appears that at some point the body was re-tooled. The later version has a narrow inset (0.005-0.010" approximately) in the center of the body, along the side sill, inside the carbody.

Assembly Sequence

◇ Remove the ends and replace with the resin end sections. I have described the technique I used at my blog. That post can be found [via this link](#). Note that my model was a kitbash using Details Associates Dreadnaught ends, which was a compromise. Yours uses the resin ends included in this parts set, which are far closer to the actual prototype and should result in a subtly nicer and more accurate outcome. A couple other useful tips: while working to remove the end sections, it is advisable to insert the Bowser kit's floor/underframe to lend structural stability (do not glue it in place since you will

be removing it later; there are tabs that lock it into place to help as you work on the ends.) The other tip is that the best filler for the joint between the top resin end section and the bottom edge of the remaining styrene end section (at the top of the end) is ACC. However, when fully set up and cured, ACC is harder than styrene or resin, meaning that sanding the joint would remove the materials at dissimilar rates. I do the following: I add the ACC and while it is still wet, I run beads of water over it. This acts as a moderate accelerant. I then sand while the ACC has hardened some, but is not fully cured. This technique works better for me since traditional fillers, such as putties, do not generally “bond” to resin and easily flake away during sanding. Foreshadowing helpful tip: once they are all installed and glued in place the “pad” on the car floor for the draft gear/coupler box should be the same height as the bottom of the end. The placement of the ends is dictated by the carbody, so it is important to place the ends on the carbody as carefully as possible. Consult the photos, including those of the prototype, for guidance.

◇ Clean up the floor casting. It can be rubbed on a piece of medium grit (220 or 320) sandpaper on a flat surface. Carefully file the edges to clean them up as well. Compare the floor to the opening inside the car body to assess the fit. If anything, you may have to remove material from the ends and perhaps a small amount from the sides. The ideal tool for removal of material from the ends of the floor/underframe casting is a tool like the True Sander, which squares up the edges. When satisfied with the fit, you can move to the next step. Do not glue the floor in place yet! It is possible that the floor fits into the body better one way than the other. If so, use something to mark the orientation (I often mark an 'X' on both the floor and the body so I maintain that orientation.) Drill through the center sills to allow the trainline to pass between the center sills. Use the photos as a guide in locating the holes.

◇ Remove the floor and drill the underbody for the truck screws, if you are using “traditional” HO scale trucks (*if using Rapido trucks, skip ahead in this section.*) The truck screw holes should be drilled with a no. 50 or 51 bit. 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. If you tap your holes, do so at this time. If you are using Rapido trucks, you likely know that Rapido’s trucks do not follow “standard” mounting protocols, e.g., the holes in the truck bolsters are larger diameter, the bolster height is different, etc. I used Rapido trucks and used the following solution, although you may have a better approach. I created a “boss” by drilling an xx” hole and inserting styrene tube into the hole and securing with ACC. Let the ACC dry and then add a segment of xx” styrene tube over the other tube (they are designed to have a “telescoping” fit) and glue it in place with liquid styrene cement, such as Tamiya, will do. I did ensure that the height of the couplers would be within scope during this process. Add desired amount of weight to the floor. Glue the floor in place. I started in the center of the carbody and worked towards the ends, using ACC.

◇ Add the draft gear (coupler pockets). We suggest securing these with screws.

◇ Begin detailing the underframe by adding the etched upper crossbearer cover plates to the floor. They are wider nearer to the center sills and have a slight angled "flareout" near the side sill that is oriented closer to the car ends. I attached these etchings with a solvent-Goo/Barge cement mix. Continue with the crossbearers. These are etched parts that must be folded to create the "flanges"; they are comprised of two separate etchings: an angle and a pressed steel shape. The flanges of the pressed steel shape (that is bent from the etchings) face towards the nearest car end. *Note that there are holes in some of the crossbearers to allow the trainline to pass through, make sure you put the correct crossbearers in the right locations!* There is also a separate angle (etched part, as well) that abuts the "flat" unflanged face of the crossbearer, closer to the center of the car. Consult photos. Lastly, add the bottom cover plate, which is a resin part with rivet detail, narrower at the ends and wider in the middle. You may need to trim the ends to fit between the side sills.

◇ Add the crossties. Note that all of the crossties face the same way on each side of the center sills. Put another way, the flanges on the crossties all face the same end on one side of the center sills and face the other end on the other side of the center sills. Some of the crossties have holes to accept the trainline. Ensure that you add the correct crossties in the proper locations for this. The flanges must be bent from the etched parts. The crossties nest under the flange of the center sill and against the side sill, close to the floor. They can be tacked in place with the solvent-Goo/Barge cement mix and solidified with ACC. Consult the included drawing for guidance in locating the crossties.

◇ Begin detailing the underframe. Add the cylinder mounting bracket and the AB ("triple") valve mounting bracket. The cylinder bracket is bent to create the shape as shown in the photos and is mounted against the center sill. The AB valve bracket is created from two etchings and is again bent to match the photos. The surface that the AB valve is attached to is actually two parallel legs of adjacent angles. Consult photos. Add the trainline using 0.020" wire. It should pass through the holes in the crossbearers, crossties, center sills, and bolsters. It is easiest to create from two pieces, each ending where they pass into the center sills. If you are using a "tee" across from the dirt collector, it should be threaded onto the trainline at this point, opposite where the AB ("triple") valve will be located.

◇ Add the brake components. The cylinder and AB valve are attached to the brackets added in the previous step. It is advisable to tack them in place using something like the solvent-Goo/Barge cement mix followed by ACC. The cylinder is assembled from the Tichy parts. The AB valve is from the Tichy set, as well. The reservoirs are from the Bowser kit's parts set, although the Tichy parts could be used, as well. The reservoirs are mounted between two crossties using the etched parts, as shown.

◇ Add piping between the brake components. Use 0.012" wire between the three components, as shown, and 0.015" wire between the dirt collector (from the Tichy set) and the trainline/

branch pipe tee (if you added one.)

◇ Add the bolster bottom cover plates. These are resin parts, trapezoidal in shape with "teardrop" cutouts. The ends of these plates should be glued to the bottom of the side sills.

◇ On my model, I did not add the brake levers and rods until later. I cannot recall my rationale, but if you decide to add those at this time, you may skip ahead to that part of the instructions.

◇ If you removed the detail from the upper part of the end, where the roof overlaps the top of the ends, now would be a good time to add that back. I used 0.030" wide strips of 0.005" styrene that I created for this application. To follow the curve I had to use several pieces. I followed by adding tiny HO scale rivets after the model was blasted, but before painting.

◇ Fabricate the ladders. You have a couple choices to make in this step. The ladders are an exact match to those of the X32A in terms of stile details and tread (rung) width and spacing. There are jigs to aid in assembly of the ladders. We use the following technique, although you may find that you work better with another. At the end of this section, we also offer a couple suggestions should you wish to pursue a different avenue. Ensure that the holes in the jig are free and clear. We use a drill bit for that: I recommend [this specific one](#) to have on hand to "ream" holes in etchings in case you find one that is not etched completely. [at this time, you may also drill through the half-etched holes on the side of the stile should you choose to pin the ladder brackets to the stiles. On our model we did not do this. We instead made these half-etched holes in the mounting brackets "visible" when we attached the ladders to the carbody, thereby simulating the rivets used to mount the ladders without the fuss of actually doing so (see photos; should you choose to make these half-etched holes in the brackets visible on the model, it requires violating the rule of bending into the fold of the etching, so care is required.)] Then glue a strip of styrene (0.060" x 0.080" is what we used, but something similar that you have on hand will work, too) using the solvent-Goo/Barge cement mix followed by ACC. Then glue that assembly to a piece of sheet styrene with your favorite solvent cement, e.g., Testors, Tamiya, Tenax, MEK, etc. Add 0.010" wire into the four holes (top and bottom on each stile = four total) and secure these wire segments in place with ACC. Leave about 1/8" wire extending from the face of the jig. Ensure that the holes in the ladder stiles and treads (rungs) are free and clear, as described above. Consult photos. Trim a pair of opposing stiles free from the fret and bend along the score line ([a bending tool like this one](#) will make this job infinitely easier and the bends will be more square and true.) Thread the stiles over the pieces of the wire in the jig, with the "leg" formed by the angle in the stile facing out and "over" the edge of the jig, with the two stiles forming mirror images of each other. Using a piece of Plastruct 0.010" styrene rod, add the rod and a rung to the jig. Flood the stile/rod/rung combo with solvent cement. Do the same for the other side of the rung, gently pushing both rungs against the faces of the stiles. Repeat for the remainder of the rungs, except top and bottom since those holes in the stiles are filled with the wire from the assembly jig. Let dry. Once dry,

add *very* sparing amounts of ACC to the stile/rod/rung joints using the fine point of a pin or needle. Let dry. Carefully trim the rods almost flush with the rung – we use P-B-L Swiss-made sprue nippers for this. Carefully remove the ladder assembly from the jig and flip it over on to a work surface. Add more sparing amounts of ACC to the back of the rod/stile joint. Let dry and trim with the sprue nippers. The back need not be entirely flush cut. Set aside and repeat for the other ladders. *Remember that the top and bottom rungs have still not been added to the ladder at this point.*

◇ Add the ladders to the car body. Please read carefully as this could be confusing. The brackets attach to both the car side (or corner on the right) as well as to the side face of the ladder stiles. See photos. In addition, the ladders are "pinned" through both rung holes at the top and bottom, meaning a piece of wire is passed through the hole in the rung and stile, as well as the car body providing a hard to see yet solid form of attachment. The holes in the car body need to be pre-drilled and should be slightly larger than necessary, allowing for a little play in locating the ladders in the proper spot and orientation on the carbody. The "pins" are glued in place with ACC, while the stiles and rungs are still free to "float" over the wire. The brackets referenced before are glued to the stiles with the solvent-Goo/Barge cement mix. Next, the stiles are carefully pushed down until the ladder brackets rest against the car side and then the rung/stile is secured in place with ACC. Voila! Realistic brackets and solid attachments. Repeat for the end ladders. Note that on our pilot model the ladders are slightly too low on the carbody. Consult photos and adjust yours accordingly.

◇ *Alternate ladder strategies:* You can use the ladder stiles included in the kit, open the holes a bit more and use commercial wire grabs instead of the rungs. The ladders, either "full" kit assemblies or wire grab ones can be attached by "pinning" without the brackets, easing that part of the detailing process, yet still providing a solid attachment. It's your model and the choices are yours!

◇ Add the brake levers and rods. The pilot model shown herein used clevises that were formed by bending etchings. These "clevises" have holes that can be aligned with holes in the brake levers through which wire can be inserted, glued, and trimmed to create a secure and highly realistic arrangement, as shown in the photos. The dead lever (the one not attached to the cylinder) employed a bracket that was attached to the center sill. There is an etching to replicate this arrangement. The brake "rods" and the wire to secure the "clevises" in the brake levers are 0.010" wire. Create brake lever hangers from wire grabs or bend your won (as we did) as shown. These are three hangers attached to the center sills, below the levers, that look like grab irons.

◇ Add the angle cock/air hoses at this time if you are adding these parts. These are secured into the model with 0.010" wire in holes that were drilled into the bottom of the end sill. On our model we added a bit of styrene, but that is because we used kitbashed ends. Your resin ends should be the correct "height" precluding the need for this. The brackets are etched metal parts

and the angle cock/air hoses are "rubberized" parts from Moloco. They are secured into the brackets using 0.006" flexible wire.

◇ Add the bracket grab irons to the ends. These are created from etchings folded to simulate the brackets with "rungs" attached to the brackets. It is easiest to attach one bracket and then use that bracket and the rung to locate the second bracket. Each bracket requires drilling two holes and we recommend using a no. 78 drill to allow "play" which makes it easier to align everything. We secure the brackets to the carbody with 0.010" wire and the rungs to the brackets with 0.010" styrene rod. One bit of advise: add the bracket grabs before the retainer valve pipe, as reversing these two could make for a "crowded" spacing of these items (ask how we know!) Note that the brackets on all three of the grabs on each end are oriented horizontally, except for the right bracket, adjacent to the edge of the side, which is vertically arranged.

◇ Add the hand brake housing using the bracket included in the etched parts. The bracket is actually two etched parts, one for each vertical edge of the housing. The housing may be secured to the car body with 0.010" passing through the holes in the bracket. The hand brake housing we used is a Equipco part offered by Resin Car Works on Shapeways that is no longer available. You can ask around to see if anyone has spares. Some Intermountain steel reefers (ART) included the correct Equipco power hand brakes, as well. You may find it easier to add chain (if you are using that) to the housing and the corresponding rod (0.012") wire to the chain before adding the housing to the carbody. One area where we did not replicate the prototype is in the this rod. The prototype had a "two-piece" connection at the bottom where the rod connected to the bell crank. In the interest of simplicity, we chose to ignore this detail. Lastly, the bell crank is mounted to the bottom of the end sill, again using a bracket created from an etching. This bracket features several folds to replicate the prototype.

◇ Add a retainer valve and pipe, plus bracket. The etching sheet includes brackets for the retainer valve, at the top of the car end, and for the pipe, at the bottom of the car end. Both should be bent and attached with 0.010" through holes drilled into the car. We used a Precision Scale styrene part to simulate the retainer valve. The "pipe" is 0.008" wire and the "U-bolt" that secures the pipe into the bracket at the bottom of the car end is 0.006" flexible wire.

◇ Add the brake step. Begin with the etched brackets. Bend as shown and attach to end using 0.010" wire that passes through the holes in the brackets and the ends. Secure with ACC. Create the step from 0.015" x 0.100" styrene. The wood step on the prototype was 24" across. However, we made ours 27" as that appeared to "look" more like the photos of the prototype.

◇ Add the grab irons to the top left of the end. These are 16 scale inches wide. I bent mine from 0.008". The mounting for these was simulated with 0.7mm discs punched from 0.005" styrene with a rivet added to the middle. The [punch tool](#) is available from UMM-USA (as are several other punch tools.)

◇ Add the resin placard boards to the ends using the brackets/straps included in the etchings. Again attach to end using 0.010"

wire that passes through the holes in the brackets and the ends.

◇ Add the running boards. These are styrene parts included in the kit and augmented with etched metal parts. Add the angles to the bottom of the ends of the running boards. The holes in these parts should be on the "leg" of the angle that hangs down from the end of the running boards. Since the styrene parts simulate individual boards, including spaces between the boards, we recommend completely adding one of the angle supports to the underside of the latitudinal before working on the second. It is necessary to remove material from the underside of the latitudinal before adding the angle. Consult the photos. The end of the angles transitions to straps (as on the prototype) that are secured with 0.010" wire. The running boards themselves are secured to the roof using solvent cement. Lastly, add the straps that support the ends of the running boards (at the top of the car ends.) These straps have holes to join the angles on the underside of the ends of the running boards as well as to attach to the upper part of the car ends. Secure with wire in the top of the ends and wire or 0.010" styrene rod for the joint under the running board ends.

◇ The grabs between the end of the latitudinals and the top of the side ladders are etched parts. First, you must remove the cast-on grabs from the depressions. Then drill holes and secured the grabs with 0.010" wire and ACC, as shown in the photos.

◇ Add the placard boards to the doors. These are resin parts. One note: the route card boards along the side sill (below the far left side panel near the left end of the car sides) are not in the correct locations for the X32A. On our model, we did not choose to address this. However, if you wish to do so, the correct route card boards are included as parts in the Red Caboose X29/1923 ARA box car kits.

◇ Add the etched metal trust plates to the top of the rightmost side panel, to the left of the ladders. The raised portion of the plate was added after blasting on our model to prevent any damage from the blasting process. The plates were secured with the MEK/Barge cement mix.

◇ Add the sill steps. These are added at this point in assembly because they are vulnerable to damage. These are etched parts that must be folded and they are secured with wire used as "pins" or brass rivets from Scale Hardware. The inner "leg" must be twisted to simulate the prototype. We accomplished this by using two sets of small pliers (beading pliers work) and twisting 90 degrees. To mount the steps, our preferred technique is to drill one hole in each of the four corner locations of the sill steps. Then insert wire in place and thread a step over the wire and orient so that a dimple for the second hole can be marked. Repeat for the other three locations and then drill the holes. Secure the steps in place with wire or rivets and glue with ACC.

◇ Add the brake wheel and secure in place.

◇ If you are blasting your model you can return to this step later; if you will not be blasting your model, you can add any rivets, nut-bolt-washers or other fine details as shown in the photos. *Note that on your model, the rivets on the car's ends are part of the resin castings, unlike on our kitbashed pilot model.* After

you have applied setting solution and everything has dried, it is highly recommended that you brush on a coat of Future, Quick Shine or a similar protective coating besides paint to ensure that rivets are not accidentally flicked off at some point.

◇ Construction is complete! Before painting the model, we 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.

◇ We highly recommend painting using an airbrush. Prime the model with your choice of primer. The pilot model shown was primed with grey primer from the Badger Stynylres line. The sides, roof, ends, and underframe (as well as trucks) were painted with Polly Scale Light Freight Car Red, followed by a lighter oxide color as "shading" in the center of the panels on the car sides (you do not need to do this, but I chose to experiment a little to see how I liked the effect.). Add [a gloss coat](#) to aid in decal adhesion.

◇ For decaling, our 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!

◇ Note: I will add a blog post describing how I finished and weathered the model. You can find it by [visiting my blog](#) and entering "X32A" in the search field.

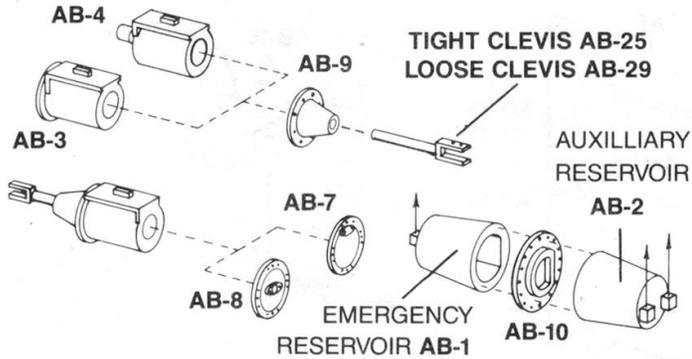
Thank you to:

- ▶ [Moloco Trains](#)
- ▶ [National Scale Car](#)/Ryan Mendell
- ▶ [PDC](#)
- ▶ [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

