

Assembly Instructions for the ARHS Baldwin DR-4-4-1500 Babyface A and B units

The ARHS Baldwin DR-4-4-1500 Babyface A and B units have been a long time in coming. They were a group effort spanning some five years of research and development. The A unit represents the basic configuration of engines 74 and 75. The B unit represents No. 12L. The kits include:

| | |
|------------------------------------|--|
| Main body shell | Jacking pads |
| Laser-cut glazing | Air horn extension brace (A unit only) |
| Dynamic brake grid covers | End wall diaphragms |
| .015 diameter phosphor bronze wire | Etched brass steps |

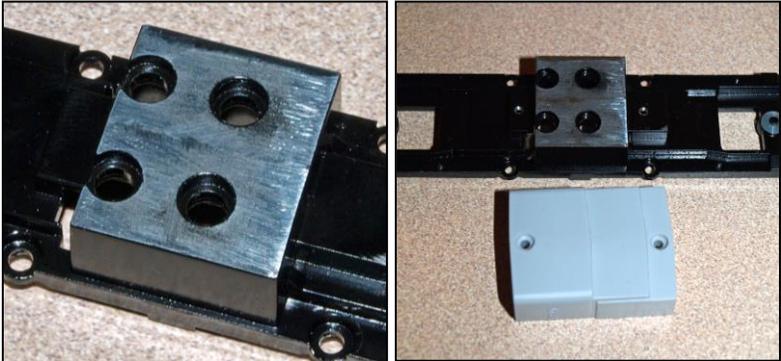
The modeler will must supply a Proto 2000 Alco FA2 locomotive drive and additional details as he or she sees fit to add. Recommended details include:

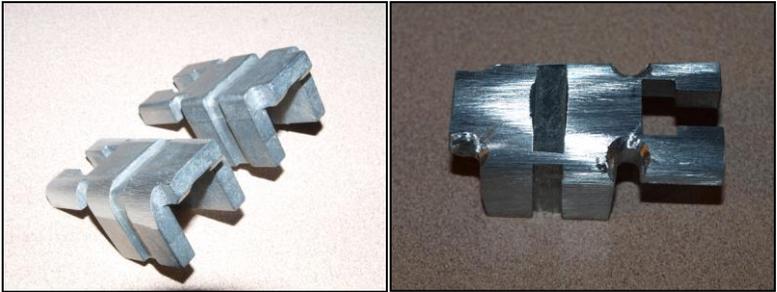
| Description | Manufacturer | Mfr Number |
|-----------------------------------|---------------------------------|---------------|
| WABCO Type E horns | Details West | 174 |
| back-up light | | 162 |
| windshield wipers | A-Line | 29201 |
| | Utah Pacific | 94 |
| | Cal-Scale | 419 |
| pilot brake hose | Cal-Scale | 319 |
| eye bolts | Detail Associates | 2206 |
| drop grab irons with NBW castings | | 2201 |
| .012 dia. brass wire | | 2504 |
| .015 by .030 flat brass wire | | 2524 |
| .015 dia. brass wire | Tichy Train Group | 1102 |
| .032dia. brass rod | K&S Precision Metals | 8160 |
| .032" dia. brass tubing | | 815035 |
| rivet transfers | Archer Fine Transfers | AR88016 |
| speed recorder | Utah Pacific | 61 |
| back-up light lens | M.V. Products | 25 or 280 |
| marker light lenses | | 22 |

You will also need the usual modeler's tools such as a hobby knife with a sharp No. 11 blade, assorted jeweler's files, a pin vise, numbered drill bits (80, 78, 50, 43, and 19), a small Philips screwdriver, needle nose and chain nose pliers, tweezers, and others that you probably have already.

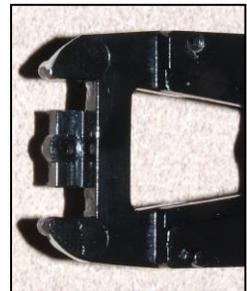
Since the assembly of both the A and B units is similar, I'll only differentiate between the two when necessary.

FA2 FRAME MODIFICATIONS

1. You don't need to disassemble the FA2 drive to the bare frame if you cover up moving parts with a plastic bag when you are drilling, tapping, or filing. You will, however, have to remove the motor from the frame. Regardless of what you do, do it carefully so you don't damage any of the components. File off the words "Life-Like Made in China" from the bottom of the fuel tank. Test fit the Babyface fuel tank casting and remove any mold vestiges from the inside of the casting to get it to fit properly. Then drill through the spotted holes with a No.43 bit, making sure you drill just a bit into the frame to spot the locations for drilling fuel tank mounting holes with a No. 50 bit. Drill through the casting and then tap the holes with a 2-56 tap. Make sure the ends of the screws don't interfere with the motor. Counterbore the clearance holes in the fuel tank casting with a No. 19 bit to recess the 2-56 mounting screw heads.

2. You will need to file, sand, or grind a bevel or radius on the top corners of the weight between the mounting post recesses. With a small sanding drum in a motor tool (i.e., a Dremel), grind a tapered relief at the tops of the slots the mounting posts go through to accommodate any build-up of resin at the base of the posts.

3. File a bit of a taper on the front legs of the frame so they don't interfere with the A unit shell. While you're there, drill out the coupler mounting holes (both front and back) with a No. 43 drill bit. This will provide clearance holes for attaching the coupler mounting pads that we'll add later.



CLEAN UP THE SHELL AND JACKING PAD CASTINGS

1. The first step in the assembly of any resin kit is to carefully remove any flash. You will also need to clean up the castings – generally by filing – to ensure the fit of all the parts. Work carefully so you don't remove more material than necessary.

NOTE

Do not glue anything in place until the instructions so indicate.

2. Examine the inside of the shells closely. On the A unit particularly you might find flash in the recessed areas where the clear styrene glazing goes. Eliminating it at the start and test fitting the glazing will save a lot of frustration later on. The step wells below the A unit dab doors should be opened up as well. File away any excess material around the four internal mounting posts so the locomotive weight seats in the top of the shell.

3. With the shell temporarily attached to the frame, test fit the four jacking pads. On the A unit only, you will have to reduce the thickness of the front jacking pad castings. These have foot well pockets cast into them. File the thickness of the back of the bottom foot well pocket until it clears the frame.



4. Below the lower foot well on the inside of the shell is a small web of material that forms the bottom of the foot well. You need to thin the back of this web until the surface is flush with the shallow pockets that the brass step tabs go into.



YOU KNOW THE DRILL

1. With a No. 50 drill bit and 2-56 tap, drill and tap the four mounting posts in the shell.

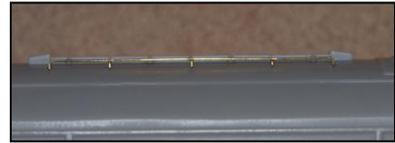
2. With a No. 79 bit, drill all the holes you will need for the grab irons you want to add to your model. Use prototype photographs as a guide, keeping in mind that over their service lives, the Babyface Baldwins had grab irons in various places which at some time or other were removed by the CNJ shop forces, only to be added again in slightly different locations and in different configurations. Using No. 74 as an example, in 1954 the unit had grab irons on the engineer's side of the nose that were slightly staggered toward the front of the engine as they progressed downward from even with the top of the number board. There was also a short grab iron below the right number board just in front of the right side classification light. Note in the photo the long grab iron in front of the engineer's windshield and the absence of grab irons above the windshields. Some time later, these original grab irons were removed and replaced by others. Now is also a good time to drill holes for windshield wipers and the grab irons to either side of the nose door. Notice in the photo that I added nut/bolt/washer castings at the ends of each of the grab irons. Sure, drilling the extra holes takes some time, but they will really add to the appearance of your model. If you intend to use Detail Associate drop grab irons and NBW castings, make sure you follow their directions for how far the holes are spaced apart.



NOTE

Unless you **really** want to make things difficult for yourself, **DON'T** add any grab irons or hand rails to your model now. **WAIT** until after you have painted and decaled your model. I glued all those details on my model so I could take the photos you see in these instructions, and I paid the price when I applied decal stripes.

3. Again using prototype photos as a guide, drill holes with a No. 79 bit for four lift rings. And while you're "up on the roof," drill holes with the No. 79 bit for the roof railing next to the access hatches. The five holes are located 10 scale inches from the engineer's side of the hatch edges. Each hole is to be parallel to the hatch edges and in line with the "joints" between the hatches and the ends of the front and rear hatches.



4. Although classification lights are molded into the A unit shell, adding MV Product No. 22 clear lenses is easy and will enhance the appearance of your model. Mark the center of the molded class lights with a needle and drill with a No. 52 bit. You don't want to drill through the shell; just make enough of an indentation so the MV lens will sit in it. File away any remaining portion of the molded class light.

5. With a No. 77 bit, drill holes for the hand rails. There are cab door hand rail "ends" cast into the shell. If you carefully locate the holes for the hand rails, they will be 6'-6" apart vertically and two scale inches apart horizontally. Careful placement of the holes will allow you to use the illustrated hand rail bending fixture to form those that are located to either side of the A unit cab doors. Don't forget to drill the top holes for the engine room door hand rails.

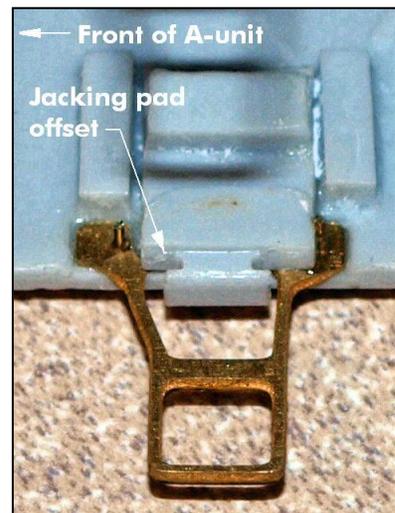


6. Two of the "straight" steps on the A unit and four of them on the B unit need holes drilled in them for the hand rails beside the engine room doors. These holes are located in the web between the top step and the vertical members and are drilled with a No. 77 bit.

7. Let's wait to drill the holes for the A unit's horns until we're ready to install them.

BUILDING BITS AND PIECES AND ATTACHING THEM

1. Glue the rear jacking pads in place between the molded bosses on the inside of the A unit shell. The jacking pads on the B unit are all the same, so you can glue them all in place, too.
2. Separate the etched brass steps from their sprue and attach the straight ones with CA. All of the B unit steps are the same, but since you drilled holes in four of them for the engine room door hand rails, make sure you put



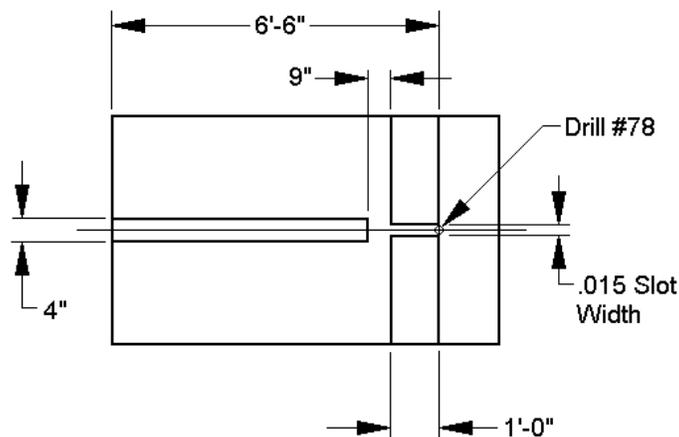
them all in the right place. The same thing goes for the straight steps on the A unit.

3. The angled steps beneath the A unit cab doors and the front jacking pads are glued in place at the same time. That's because the step tabs are partially covered by the jacking pads. Note that the A unit front jacking pads are offset a bit. The accompanying photo shows how they are oriented. Also notice that after I attached the steps, I drilled through their tabs for the bottom ends of the hand rails. That helps hold everything together. Be sure that you have the angled side of the steps facing forward.

NOTE

Vertical hand rails were thicker than grab irons, so use .015 diameter wire for hand rails and, if desired, use .012 wire for grab irons that you need to fabricate. Depending on the prototype you are patterning your model after, you may be able to use commercially available grab irons.

4. Now that you've drilled all the holes for grab irons and lift rings, glue them in place with cyanoacrylate adhesive (CA). Bend those that are not commercially available from .012 diameter wire, and glue them in place, too. Here are a couple of tricks I use to make grab iron bending a bit easier. Using the grab irons on either side of the A unit nose door, bend one end of the wire and insert it into one of the holes adjacent to the door. With needle nose pliers, hold the straight end of the wire so the edge of the pliers jaw is just in line with the edge of the other hole. While holding the wire in the pliers remove the bent end from the other hole and bend the straight end against the edge of the pliers. *Voila* – a grab iron that fits in its mounting holes without bowing one way or the other. Oh, and if it does bow, it's no big deal to toss it and make another one. Another way to make uniform grab irons is to use the serrations in the jaws of your needle nose pliers as a guide. First determine which serration is the approximate length of the grab irons you need. Place your wire in that serration, close the pliers, and bend the protruding ends of the wire down. Make as many as you need, and they will all be of uniform length.
5. The A unit cab hand rails have a dog-leg in them, but you'll find them easy to make by first making the simple bending fixture illustrated below. It is constructed from dimensional styrene strips that are glued to a piece of .040 thick styrene sheet. After you have built your bending fixture, follow the accompanying instructions.



Cab Door Hand Rail Bending Fixture
(no scale)

Hand Rail Bending Instructions Using the Bending Fixture

- Step 1** Cut a sufficient length of straight .015 dia wire.
- Step 2** Bend 1/8" of the end 90 degrees, and place the end in the hole.
- Step 3** Bend the wire at the end of the 1'-0" block diagonally until it just clears the long 4-inch-wide piece. Bend in one direction for hand rails on one side of the door; bend the other way for the other side of the door.
- Step 4** Bend the wire against the long 4-inch-wide piece. Make sure the long and short offset parts of the wire are parallel to each other.
- Step 5** Bend the remaining length of wire down at the edge of the fixture.
- Step 6** Cut the bend ends to length and insert into drilled holes.

6. So where is the bending fixture for the engine room doors of the A and B units? To be honest, you don't need one. Take a length of .015 diameter wire and bend one end of it 90 degrees. Then with a chain nose pliers (in a pinch, a needle nose pliers will work, too) bend a small curved section right above the 90 degree bent part. For the left side of the engine room doors, the bend goes in one direction; for the other side of the doors, make the bend in the other direction. Once you have made these two bends, insert the end in one of the holes in the steps below the door. Then using the "Voila tip" I told you about above, bend the other end of the hand rail to match the location of the upper hole.



With all of the hand rails, you may have to tweak the bends to get the ends to properly line up with their mounting holes. But remember, sometimes it's easier to throw a hand rail away and make another one than spend a lot of time trying to adjust one that isn't "just right."

7. The dynamic brake grid covers castings that come with kit are suitable for the "as-built" configuration. File them sufficiently so they fit in their respective pockets without bowing upward. You may want to file the inside openings of the covers thinner to appear more prototypical. If you are modeling a locomotive in the later stages of its service life, you will have to make cover extensions which match prototype photos. (Since I chose to model No. 74 in 1953, I fabricated simple extensions from Evergreen 1x6 and 2x6 styrene strips.)

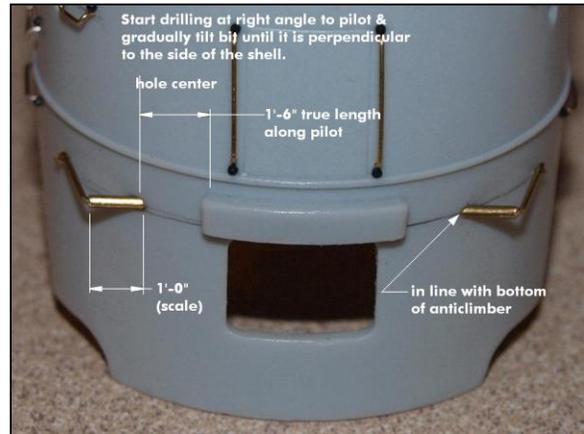


8. Now, just suppose you want to model No. 75 as it appeared in the 1960s. It had a set of cockamamie dynamic brake grid covers that were semi-cylindrical and completely covered up the openings. Presumably, the CNJ shop forces, ever experimenting



on how to get the most reliable service from their Babyface units, routed the heated air from the dynamic brake grids into the carbody and out through the top of the rear air intake screens. If No. 75 is the unit you're modeling, all you need to do is to take some 7/32" diameter styrene tubing (Evergreen No. 227), split it as shown in the accompanying photo, close off the ends with some sheet styrene, and glue them all in place.

9. While the front uncoupling levers look complicated, they really aren't hard to make. To make them, you will need some **K&S Precision Metals 815035** .032" brass tubing and .015 diameter wire. Using the dimensions shown in the accompanying photo, lay out the location of the holes and drill them with a No. 66 bit. Start drilling at a right angle to the pilot surface and gradually tilt the drill bit until it is perpendicular to the side of the model. Insert the tubing and allow one scale foot to protrude from each side. Now make the uncoupling lever from .015 diameter wire to the dimensions shown in the next photo. Note that the overall length of the lever includes the small bend right at the very end. The .025 diameter wire with flats filed on both sides is inserted into a hole on the same center line as the 1/32" tubing. Laterally, it just has to be under the end of the uncoupling lever.



10. In this same photo are the dimensions for the pilot step. Again, while this little detail looks complicated, it isn't all that difficult to make. Bend it to shape from Detail Associates No.2524 .015 by .030 flat brass wire. Before you make any of the bends however, drill a small hole in the lower end with a No. 78 drill bit. Then, after you have bent the step to shape, drill the top hole. Then with the same No. 78 bit, drill holes in the edge of the pilot matching the locations of the holes in the step. Glue in short lengths of .012 diameter wire in the holes in the pilot edge and then trim them to about 1/32" long. Now attach the step and glue it in place with CA. These little steps will have your model railroading buddies sit up and really take notice of your Babyface Baldwin. (And you didn't have to spend four figures to get one of Overland's brass Babyfaces.)

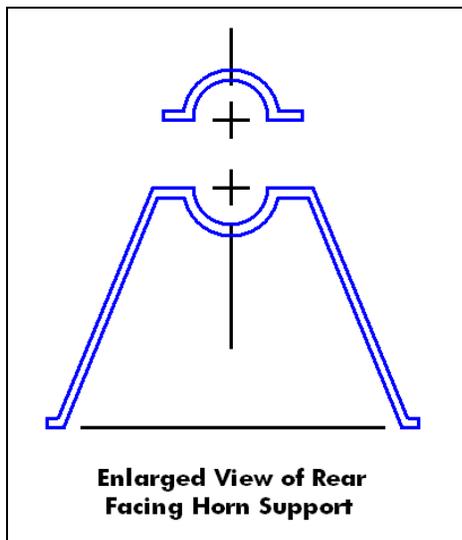
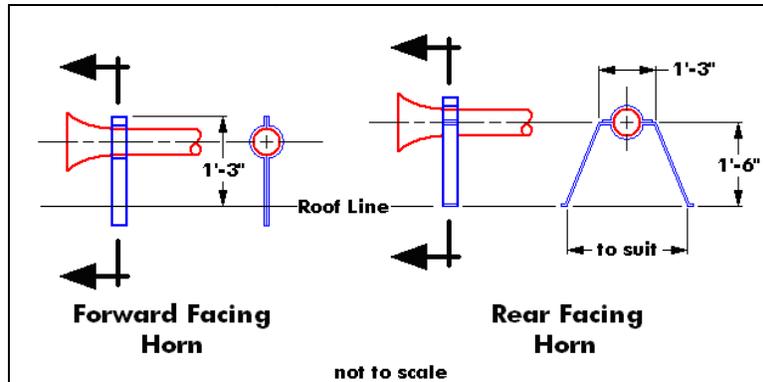


11. I almost forgot – add a brake hose to the pilot of the A unit. A Cal-Scale No 319 is appropriate. Also **add a Utah Pacific speed recorder to the right front bearing cap of the lead truck.**



HORN INSTALLATION

All CNJ Babyface Baldwins with the stepped roof line had the rear facing horn mounted higher than the forward facing one. Those used by the CNJ were WABCO Type E2 horns. Details West makes a good example of these with their No. 174 casting. These horns do not have a front support, so you'll have to fabricate them for yourself. For the forward facing horn, take a bit of Detail Associates No. 2524 .015 by .030 flat brass wire, anneal it in a flame (a match or Butane lighter will do), and bend it around the horn just behind the flare. Take a look at the illustration below.



You'll need to make your own support from Detail Associates No. 2524 .015 by .030 flat brass wire according to the illustration above. Chain nose pliers will do the trick of forming the curved parts of the support. Use CA to hold everything together. Oh by the way, I cut the mounting post off the horn casting and replaced it with some .032 diameter brass wire. In that way, I could cut it longer than needed and trim it off from the inside of the body when everything else was in place. It really is easier to do than it sounds, but as I've always said, if you're not satisfied with your first try, toss the part and try again. You shouldn't have any trouble getting your horns to look like this.

LADDER RAILINGS

By the early 1960s, A units 74 and 75 had ladder railings. No. 74 had railings with 14 posts per side – 11 in front of the dynamic brake grid covers and three behind them. No. 75 had only 9 in front and three in back. (I model 1953, so I didn't add them to my models.) And as far as I can tell, B unit 12L never had ladder railings. I guess some of you would like to have an idea about how to make them for your models. Well, you can drill holes in a bunch of pieces of Detail Associates .015 by .030 flat brass wire and thread .015 diameter wire through them. Another possibility – and I say “possibility” because you will have to check their suitability – are Detail Associates No.1104 roof and hood side lifting tabs.

ADDING THE BUG DEFLECTOR

Adding the bug deflector above the headlight on the A unit is so easy, I wonder why I saved it for last. All you need to do is to use a thin, fine tooth saw to cut a small slot four scale inches back from the front edge of the headlight housing and cut the slot to be one scale foot long. I used a Micro-Mark No. 14346 .010” x 40 tooth per inch saw blade in an X-ACTO™ No. 1 handle. Be careful to keep your cut level. Then glue in a one scale foot length of Evergreen 1 by 4 strip styrene in place. After painting and decaling your model, glue a 4” by 24” piece of clear styrene to it.



COUPLER MOUNTING

By now you've noticed that the ARHS Babyface Baldwin shells are somewhat longer than the Proto 2000 Alco FA2 under frame. Actually, that's a plus because it gives us plenty of room to mount couplers. (You did increase the size of the coupler mounting holes in the frame with a No. 43 drill bit when you were doing the frame modifications, didn't you?) The coupler mounting pads are made from .080 styrene sheet. The base piece – the one that is attached to the top of the cast coupler pad on the frame – is 5/8” wide by 7/16” long for the rear, and 5/8” wide by 5/16” long for the front. The second piece – which is glued to the bottom of the rear base – is 5/8” wide by 9/32” long. File a concave hollow in the back edge of this piece to match the boss convex on the cast coupler pad. Drill and tap a 2-56 hole through both pieces of styrene for the coupler of your choice. I used a Kadee No. 33s all around for close coupling. My A and B units couple together with about three and a half scale feet between them, but you probably can get yours closer together by using flat head screws to mount the new coupler mounting pads and locate the coupler draft gear boxes farther under the ends of your models. (I simply didn't have any flat head 2-56 screws in my stock of fasteners.)



For the front coupler, the second piece – the one that is glued to the one you've already cut – is 5/8” side and 11/64” long. To see if it worked, I filed off the convex boss on the front cast

coupler pad so I didn't have to file the concave hollow in the styrene piece. Either way works fine. For the front coupler, I used a Kadee No. 33 with a drilled and tapped 2-56 hole in the styrene mounting pad to match the Kadee draft gear box.

B UNIT ROOF ACCESS PANEL

On the B unit shell, an access panel is missing. Make it from .010 styrene sheet measuring 11/16" long by 13/16" wide. You will need to add rivet decals all around this panel.



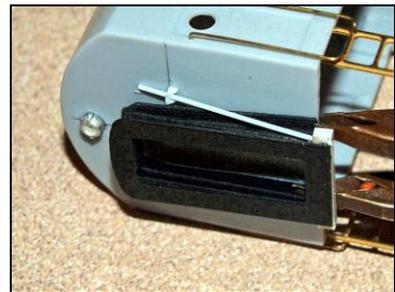
REAR WALL DETAILING

We're just about at the end of the construction phase of our project – the detailing of the rear wall of the A unit...and both ends of the B unit. The prototype Babyface ends were not quite so devoid of details as our models, but then, there's a limit to what can be cast into resin at reasonable cost. Besides, a lot of modelers are content to concentrate on the readily-seen parts of a model – front, sides, and top.



Centered above each end door and 13/64" below the edge of the roof, drill a No. 55 diameter hole for a Details West No. 162 Pyle back-up light. Before gluing the light casting in place, file off the square "plate" that it sits on so only the light housing itself is on your engine's end wall. By the way, the CNJ had lights on both ends of their Babyface B units. If you decide to use MV lenses in the back-up lights, use either a No. 25 (.078" dia.) or a No. 280 (.082" dia.).

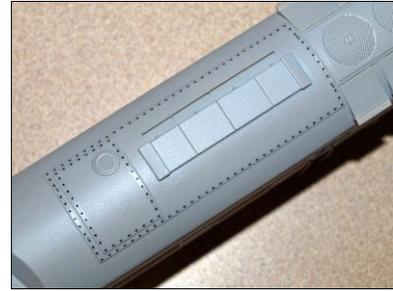
Included in the kit are cast resin diaphragms, and there is nothing wrong with them, but I had some Walthers No. 933-429 folded paper diaphragms among my stock of parts and decided to use them because they were compressible and extended beyond the end walls farther than the parts in the kit. Several other types of diaphragms are available, so the choice is yours. I would only suggest that you do not attach them until after you have painted your models.



THE HOME STRETCH

Now that you've built and detailed your models, it's time to prepare them for painting. You know the drill: Wash them in warm, soapy water, and let them dry thoroughly. If you're like me, you noticed almost as soon as you took the shells out of their boxes that there are no bolt heads along the edges of the access panels on the roofs. Since you've already gone to the trouble of adding all of those nice details, you can't just leave off the bolt heads. Now, before you think I'm one of those rivet counters who shaves rivets off old Athearn models and glues them one at a time to another model, I am and am not. Yes, I'm a rivet counter, but I haven't completely gone over the edge because I use Archer Fine Transfers rivet decals. If you've never tried them, you're going to love them. Go to their web site (<http://www.archertransfers.com/>) and peruse their offerings. The one thing you can't do with the decals is apply them to bare plastic; they

don't stick, and the fine folks from Archer tell you that right up front on their instruction sheets. So shoot a coat of primer on your models, and then add your rivet decals. (And yes, I know the prototype access panels were attached with bolts and not rivets, but in HO scale there isn't much visual difference between a round dot and a hexagonal one. On the B unit, don't forget to add rivet decals all around the access panel you added in a previous step.



PAINT

And now it's time to open the can of worms – paint colors. Back in the early 1990s when I painted my Stewart F3s in the blue and tangerine scheme and published an article in the October 1991 issue of *Railroad Model Craftsman*, I used Scalecoat II No. 20372 B&O Royal Blue and a mix of their Nos.20152 Reefer Yellow and 20162 Reefer Orange. **Today, for CNJ blue and tangerine colors, use Tru-Color No. TCP-295 Tangerine. You may want to lighten it with a bit of Tru-Color No. TCP-311 Safety Yellow. For the blue paint, you can use Tru-Color TCP-072 C&O/B&O Blue. The fuel tank should also be blue, but the trucks get painted black.**

If you're going to paint your engines in the CNJ "toothpaste" scheme of green with yellow stripes, the paint to use is Tru-Color No. TCP-233 CNJ Deep Sea Green. The paint match for the stripes is Tru-Color No. TCP-089 Lt. Imitation Gold. For the late austerity paint scheme of solid green, use Tru-Color No. TCP-232 CNJ Central New Jersey Austerity Green.

For decals, I suggest you use a set of Raritan Bay Hobbies CNJ-25 decals. You'll be able to decorate an A and a B unit with one set. If you are painting your models in the green paint scheme – with or without stripes, you'll need the CNJ-26 decal set. This set, also good for an AB set, includes straight decal stripes. With patience and decal setting solution, you can get them to bend around the nose of the A unit. Just take your time and as they soften, nudge the stripes in place with a paint brush. Of course, if you don't want to be bothered with making the straight stripes curve down the nose of your model, you can always stripe just the sides of the A unit and give it number 75. In later years, the prototype No. 75 was damaged in a wreck, and the CNJ shop forces, after making repairs, just repainted the nose green and left off the stripes. As always, use prototype photos as a guide.

And now on a prototype note, the CNJ attached painted sheet metal letters to the screens on their B units. When you add the words **JERSEY CENTRAL LINES**, letters that fall on air intake screens can be first applied to .005" styrene sheet painted the appropriate color. Then carefully cut them out and glue them to the screens. An alternative would be to cut the letters from the decal sheet, paint the edge of the decal backing sheet the appropriate color, and then glue them directly to the screens.

Once you have completed decaling your models, clean off any decal setting residue, and give them an overall spray of Testor's Dullcote®. **Add all the glazing, windshield wipers and vertical grab irons by the doors. Attach a short length of thin wire insulation to the speed recorder drive and route it up out of the way.** Weather your engines as you see fit and then sit back and enjoy them. You did it! (I knew you could.)

