Anthracite Railroads Historical Society, Inc.

Dynamic brake conversion kit for Lehigh Valley EMD SW8 "Pup"

Designed to be used with the Life-Like Proto 2000 SW8

This ARHS dynamic brake conversion kit contains the following components (Figures 1 & 2):

1. Replacement rear hood section with dynamic brake details
2. 36 inch fan housing
3. Crossover step box for rear platform
4. Air horn mounting bracket (very small and easy to lose if detached from resin flash)
5. Patch plate for cab front

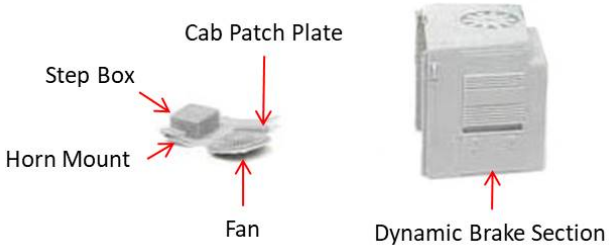

Figure 1 - ARHS parts

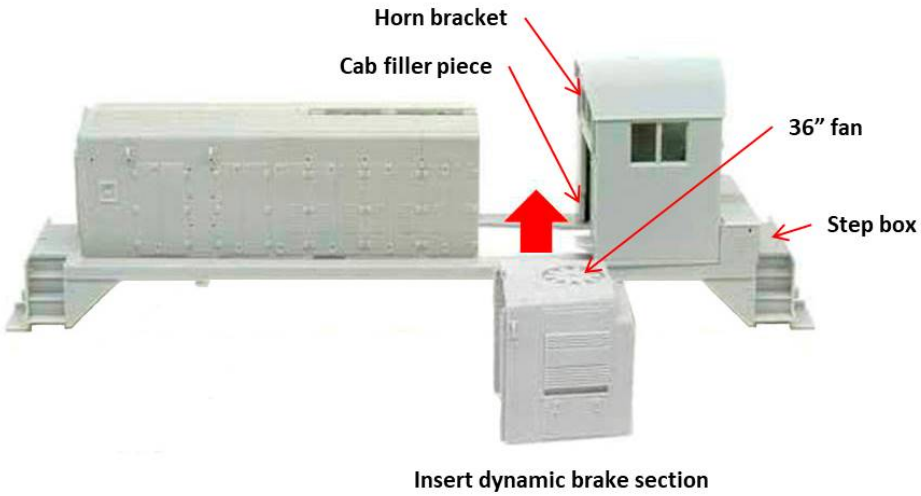

Figure 2 – Part locations

You will need the following tools and supplies to complete this conversion:

1. Proto 2000 (P2K) SW8 locomotive. Undecorated is preferred since it includes all the parts you will need. A decorated version may be used, but it will have to be stripped and cleaned and you may have to purchase some additional parts. The decorated versions for the Illinois Central or Texas & Pacific include the necessary parts. An SW9 model can be used as well after you remove and plug the rear exhaust stack.
2. Hobby knife with #11 straight blade and a #17 blade
3. CA glue & debonder
4. 400 grit sandpaper
5. Gap filler such as Gunze Sangyo “Mr Surfacer 1000” or 500
6. A flat surface for aligning the hood parts, such as a small piece of plate glass or a block of wood with a completely flat surface.
7. Suitable HO scale air horn: Nathan M3 (Detail Associates #1601) was used on most “pups”, but others were also used. Check photos for your appropriate horn.
8. Paint - The following paints are good matches for the paint schemes on these units:
    a. PollyScale Cornell Red for Steckler #3
    b. PollyScale PRR Tuscan for Steckler #5 & 6
    c. Model Masters Guards Red for Steckler $10 & 11
9. Decals – The following provide most of the decals required:
    a. Microscale 877- 961 for Steckler #3
    b. Microscale 877-995 for Steckler #5, 6, 10, & 11
10. Optional parts include:
    a. See-through 36” fan such as used on Proto 2000 SD7 (part # 584747), SD9, or E8 as well as Intermountain or Highliner F units.
    b. Drop steps (Detail Associates #1401)
    c. Mu stands
    d. Mu style end railings (Life-Like #584764)
    e. SW8 detail kit by KV Models – includes see-thru radiator grill & shutters, top see-thru radiator grill, wipers, sunshades, and windscreens
    f. SW8 hood handrail stanchions by KV Models and 0.15” wire if you choose to replace the stock handrail.
    g. Suitable decoder if converting to DCC

Preparing the resin parts

Remove the flashing from the resin kit parts. To remove the flashing from the parts that are cast with a flat back, lightly rub them over a piece of 400 grit sandpaper fastened to a flat

surface until the flashing falls off. Make sure that you rub the parts evenly so that they aren't thicker on one side than the other.

Modifying the Proto 2000 SW8

On decorated models and some undecorated kits, some parts may be pre-assembled using cyanoacrylate (CA) cement. CA Debonder will loosen these joints.

1. Look inside the shell, and see where the deck/walkway assembly and cab/hood assemblies may be glued together. Apply CA debonder on these areas. Use it sparingly, and from the inside. Set aside the deck/walkway.
2. Remove the cab from the hood. This may or may not be glued in place. If it is glued, use debonder as before to loosen the glue joins, then remove and set aside the cab.
3. Use CA debonder as necessary to remove the exhaust stack section of the hood.
4. Cut the sub-frame for the cab and battery box from the rear of the hood and set aside (see Figure 3).
5. Cut the P2K hood at the rear of the hood sides, just where the taper begins. The forward edge of the handrail mount/lift ring is a good guide, and the cut should continue down through the hinges of the hood doors that continue onto the tapered section of the hood. Be careful not to damage the rear hinges of the rearmost door on the straight section of the hood. It may be safer to cut further to the rear and sand off the remaining material to get a good fit (Figure 3).

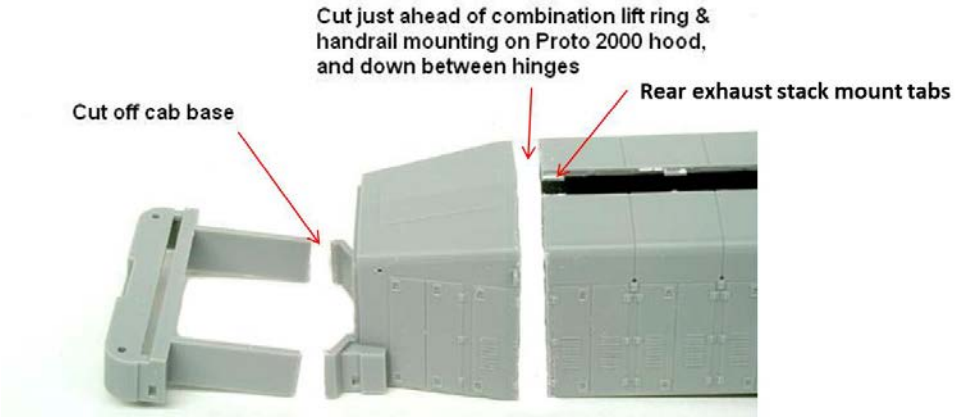

Figure 3 – Areas to cut the P2K hood section

6. Remove about 1/3 of the material from the rear of the rearmost tabs that supported the exhaust stack section, since you may need to do some filing in this area later, and it is easier to remove part of these tabs now to allow working room. (Figure 3)
7. Use a file or sandpaper to square the rear of the P2K hood section, and remove material as needed for a good fit.
8. Test fit the resin hood part to the P2K hood. Scraping the inside edges of the hood to remove any roughness and adding a slight inside bevel will help to get a perfect flush fit.

9. If you are using a see-through fan, you may want to remove the inside of the fan hole in the resin casting. Check fit your selected fan to ensure a good fit.
10. Hood handrail modifications:
    a. If re-using the P2K hood handrails, clean up the underside of the handrail mounts on the resin casting and drill out the holes for the handrail mounts on the resin casting using a #73 drill bit. The holes are located just under the handrail mount you cleaned up in the previous step and in front of the small knob molded on the resin casting just above the dynamic brake louvers.
    b. If replacing the P2K handrails with the KV Models handrail stanchions or some other stanchions, remove the molded on pieces from the resin casting and P2K hood section and fill in the existing mounting holes and drill holes for the new stanchions. A #80 drill bit works for the KV Models stanchions.
11. The existing light board or the form-fit-function decoder (NCE SW9SR) may not fit the modified hood, so remove all of the protuberances from the inside of the hood roof to maximize the room available.
12. Test fit the hood parts and battery box parts on a flat surface to ensure all parts are in straight alignment. Do not cement yet!
13. Test for length compared to the original P2K hood section by either or both of these methods:
    a. With the hood parts assembled on a flat surface (the front mounting tabs on the P2K section must overhang the flat surface), measure with calipers from the lip of the radiator on front of the hood to the mounting flange at the rear that fits into the cab front. This should be 3.76” to match the length of the original P2K hood. (Figure 4)
    b. If you don’t have calipers or another precise means of measuring, check by temporarily assembling the hood and cab assemblies on the walkway. Hold the two parts of the hood together with tape or glue that can be soaked off later. Clip the cab and battery box onto the sub-frame that was removed in a previous step, and place them on the walkway so that the mounting tab under the rear of the battery box is engaged in the notch at the rear of the walkway. Attach the hood assembly to the walkway by gently squeezing the hood sides above the two mounting tabs at the front and clipping it in place. Check the fit where the rear of the hood meets the front of the cab.

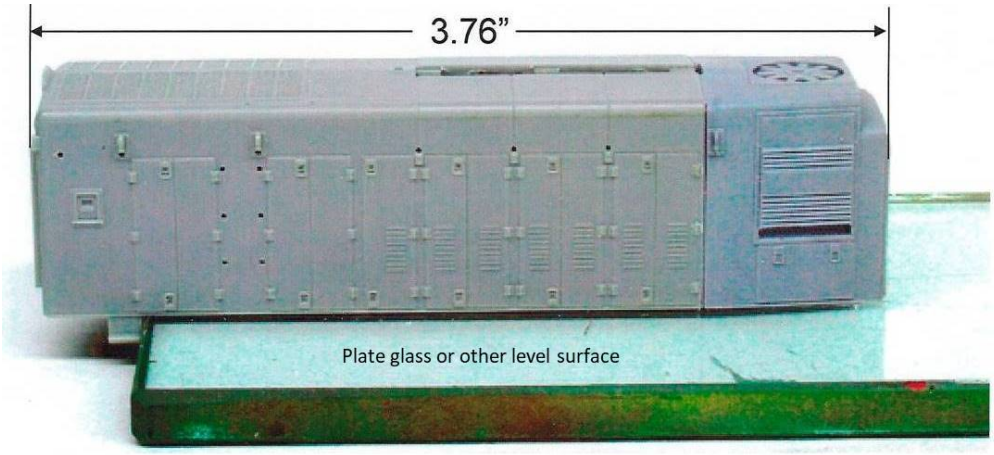

Figure 4. Alignment of hood sections

14. Remove additional material from the rear of the P2K hood section if necessary, then repeat steps 11 and 12.
15. If installing the KV Models details kit, do the radiator grills now. Note that the handrail in front of the radiator is very close to the radiator, so ensure you remove some material from the front of the radiator before installing the grill piece.
16. When you are satisfied with the fit, glue the resin hood part to the P2K hood with by filing the seam from the inside with thick CA. Epoxy can also be used.
17. Fill any gaps in the seam between the resin replacement part and the P2K hood and smooth the joint. This is perhaps the trickiest part of this project, since you are working very close to the hinge detail on the side of the hood. Here are several options:
    a. Gunze Sangyo “Mr. Surfacer” 500 or 1000, liquid putties used by aircraft and military modelers, can be painted into this joint with a fine pointed brush and smoothed with a cotton swab dipped in denatured alcohol. This avoids any damage to the nearby detail.
    b. Use Elmer’s Glue or a vinyl spackling compound to fill the joint, and smooth with a cotton swab dipped in water.
    c. Fill the joint with a fine grain putty such as Squadron white, using a small spatula or knife blade. With a narrow sanding stick or wet/dry sandpaper, smooth the puttied area being careful not to damage the hinge detail.
18. Test fit the exhaust stack section into the assembled hood. File the resin section as necessary to fit the exhaust stack section, removing just a little material at a time. Since there is rivet detail on the exhaust stack section, it is best to avoid filing and sanding in this area. If the slot in the hood is too long, use scrap styrene to fill the gaps.
19. File or cut off the small mounting tabs on the inside of the front wall of the cab. These tabs fit into the hole on the cab base that you removed in the previous step. It is no longer needed, and would interfere with the installation of the resin parts. (Figure 5)
20. Glue the small resin filler piece in the rectangular hole in the front of the cab or use a piece of 0.040” x 0.080” strip styrene to fill this gap. (Figure 5)

21. If you are going to install a Nathan M3 air horn in the most common position, use the mounting bracket provided in the conversion kit. First, drill a hole in the bracket between the four bolts printed there (Figure 5). Start with a #78 drill and slowly move to larger drills until you get to a #63 drill bit. Next, plug the horn mounting hole on the front of the P2K cab and use a #57 (0.043") drill to make a new mounting hole 6 scale inches above the top of the windows. This will locate the horns just below the cab roofline. A few "Pups" had their Nathan M3s mounted higher so that the horns were above the roofline. A few "Pups" also used single chime horns so the horn supplied with the kit would be appropriate for them. You may want to leave the actual horn installation for later, since this part is easily damaged while handling.

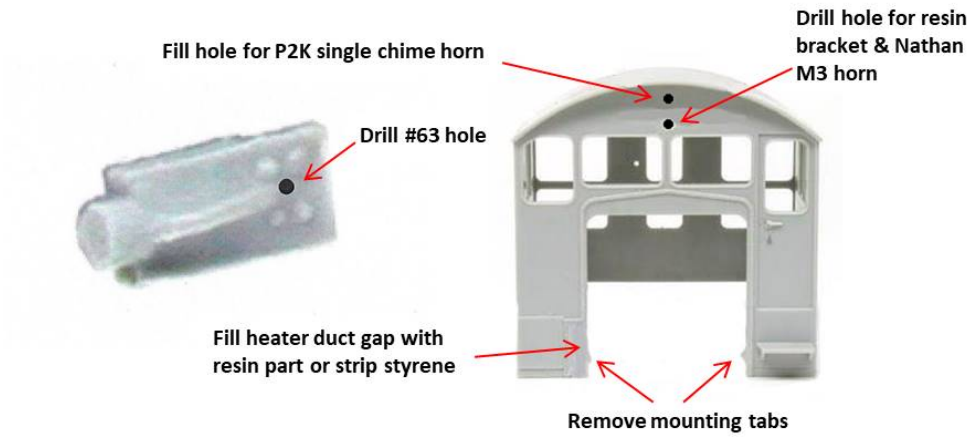

Figure 5. Modifications to Horn Bracket & Front of Cab

22. Plug the mounting holes for the step on the rear of the battery box with styrene rod or putty, and sand smooth. The step will not be used, since the "Pups" had a step box in this position with the rear drop step attached to it. (Figure 6)

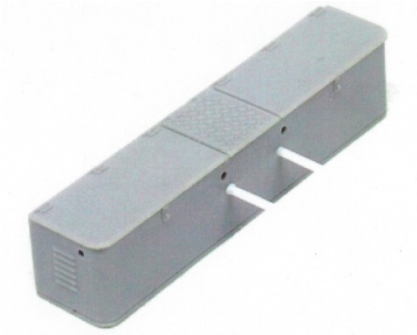

Figure 6. Plug holes in battery box

23. Carefully scrape the raised tread pattern from the rear walkway where the step box will fit. Use the drop step to determine the width of the section of tread to remove. (Figure 7)

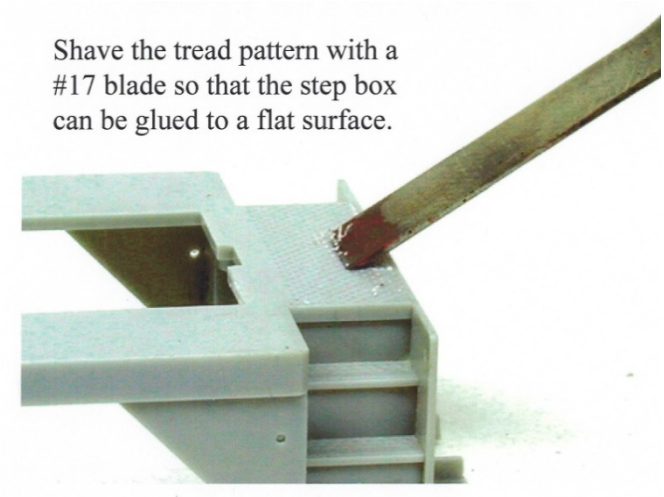

Figure 7. Shave surface for step box

24. Glue the rear drop step riser in place with styrene cement.
25. Sand the bottom of the resin step box so it is the same height as the drop step, and sand the front face so that it fits snugly between the drop step and the battery box. The step box was made slightly oversize so that it could also be used with a Detail Associates (DA) drop step, which is taller but narrower. If you are using the DA drop step, you will also have to sand the step box so it is the same width as the DA drop step riser, and flatten the face of the DA drop step to fit against the step box.
26. Glue the step box to the walkway and drop step riser with CA. (Figure 8)

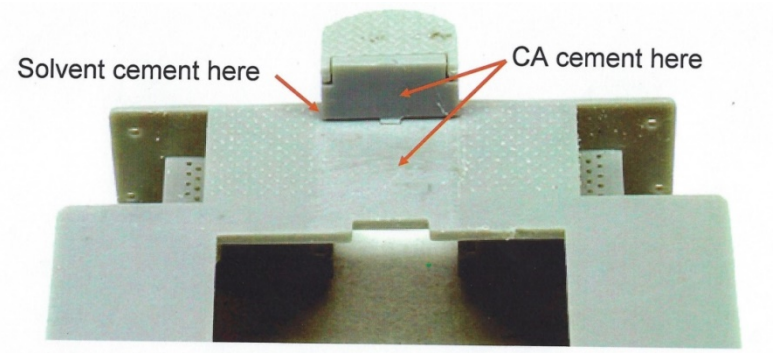

Figure 8. Glue step box in place

27. Glue the fan housing in place.
28. Test fit the modified hood to the body with your decoder or light board. You may have to remove the rear mounting tabs on the motor mount and the decoder may have to be forward on the motor to get a good fit.
29. Depending on your preferences, you may want to paint and decal the subassemblies before completing the next few steps. The notch at the rear of the dynamic brake section will be difficult to spray once assembled to the cab. See Figure 9 for details on paint/decal options.
30. Install the cab windows and interior plus lighting for the rear headlight now.
31. Place the cab/battery box sub-frame (left portion of Figure 3) onto the P2K deck. For the strongest result, apply glue to secure the sub-frame to the walkway.
32. Clip the cab to the sub-base and slide the battery box into place. Do not glue in place unless you do not expect to open the cab again.
33. Clip the hood/cab assembly to the walkway. For greater strength, you may glue this assembly to the walkway leaving an unglued area around the two front mounting clips so that they can be squeezed in to remove the body from the chassis in the future. Another option is to glue the cab to the rear of the hood assembly.
34. To install the P2K handrails on the new hood section, cut the handrail off next to the mounting bracket then trim it so that it will fit into the hole in the new hood section. Install the modified handrail pieces. A glue such as B-7000 can be used to attach pieces of this handrail together at one of the joints.

LVRR Dynamic Brake Modified SW8 Locomotives

LV #	In Service Dates	Steckler #3	Steckler #5	Steckler #6	Steckler #10	Steckler #11
256	8/51 - 8/76	1951				
257	9/51 - 8/76	1951				1973
258	9/51 - 8/76	1951				
259	9/51 - 8/76	1951				1973
260	9/51 - 8/76	1951				
261	9/51 - 8/76	1951				
262	6/51 - 8/76	1951				
263	9/51 - 8/76	1951		X	X	1972
264	9/51 - 8/76	1951				1975
265	9/51 - 8/76	1951	1971			
266	9/51 - 8/76	1951				
267	9/51 - 8/76	1951				1974
268	9/51 - 8/76	1951				1974
269	9/51 - 8/76	1951				
270	9/51 - 8/76	1951				
271	9/51 - 8/76	1951				1974
272	9/51 - 8/76	1951				
273	9/51 - 8/76	1951				1974

Notes:
Refence book is by Carl Steckler "Lehigh Valley Railroad Diesel Paint Schemes"
Steckler #3 - Cornell Red w/3 black stripes,etc.
Steckler #5 - Tuscan w/yellow stripe, flag herald, and RR Roman lettering
Steckler #6 - Tuscan w/yellow stripe, flag herald, and Gothic lettering
Steckler #10 - Late Cornell Red w/yellow stripe, flag herald, and Gothic lettering
Steckler #11 - Late Cornell Red w/yellow stripe, no herald, and Gothic lettering

Handrails: Black prior to 1958
Yellow 1958 - 1963
Orange from 1963 - 1976

All units had dual headlights, drop steps, mu fittings both ends,
& 7 versus 8 sets of vent louvers on hood. Class designation DS-4

Figure 9. Paint/decal Options

35. Assemble the rest of the kit and any other details according to the P2K parts diagram.
36. Enjoy your finished model (Figure 10).

Figure 10. LV #263 in Steckler #6 & #10 paint schemes