Filename: Album - American Models vs. ERTL 'Farm Country' ‘S’ GP-35 Comparison-Conversion.doc

This album shows how I converted an ERTL "Farm Country" GP-35 to an 'S' hi-rail 'dummy'.

DSC01991-RE.jpg

The A.M. (top) and ERTL “Farm Country” ‘S’ (bottom) GP-35’s are quite similar. Details included on the ERTL GP-35 and dimensions are almost identical to those on the A.M. unit. To be complete and comparable, the ERTL unit would need: handrails, the correct fuel tank, an exhaust stack, dynamic brake fan & shroud, a proper horn, a correct headlight bezel, added brake cylinders and spring ‘saddles’ to the truck side frames, and step side plates on the right-rear and left front steps of the cab. Although the ERTL truck side frames are not exactly ‘scale’, the addition of the added details make them reasonable for a ‘hi-rail’ dummy locomotive. The ERTL’s short hood appears to be ‘flat’, whereas the A.M.’s has a slight slope to the front – although the difference isn’t that noticeable. The middle GP-35 is my converted ERTL ‘dummy’! What do you think?

ERTL GP-35 Shell Conversion-006.jpg

The first step was to make the left & right dynamic brake shrouds, fan, and exhaust stack to match those on the A.M. unit. This shows the silicon rubber molds made from the A.M. unit. The popcicle sticks on the bottom add rigidity to the mold, and the one on top (covered with Scotch ‘Magic Tape’ to act as a mold release) keeps the inside dimensions of the cast piece to a near net thickness, thus reducing detail sanding & finishing on the add-on parts. The ‘finished’ shrouds are shown in the middle. (Color difference apparently due to slightly different ratios of casting liquid. Later parts were all a light ivory color.)

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ERTL GP-35 Shell Conversion-008.jpg

Shows the ERTL shell with dynamic brake shroud & fan, exhaust stack, and right-side step side plate added. I used modeling body putty to fill in low areas and blend the detail parts into the ERTL body.

ERTL GP-35 Shell Conversion-012.jpg

Shows the primed ERTL shell with both dynamic brake shrouds & fan, exhaust stack, and right-side step side plate added (The middle fan that's 'missing' from this view is actually part of the ERTL chassis, and serves as the 'ON-OFF' switch.) Also note in this view that material was removed from the bottom of the chassis frame and the air tank, and that the fuel filler hole, below the frame was drilled out on the ERTL unit to make it look a little more realistic.

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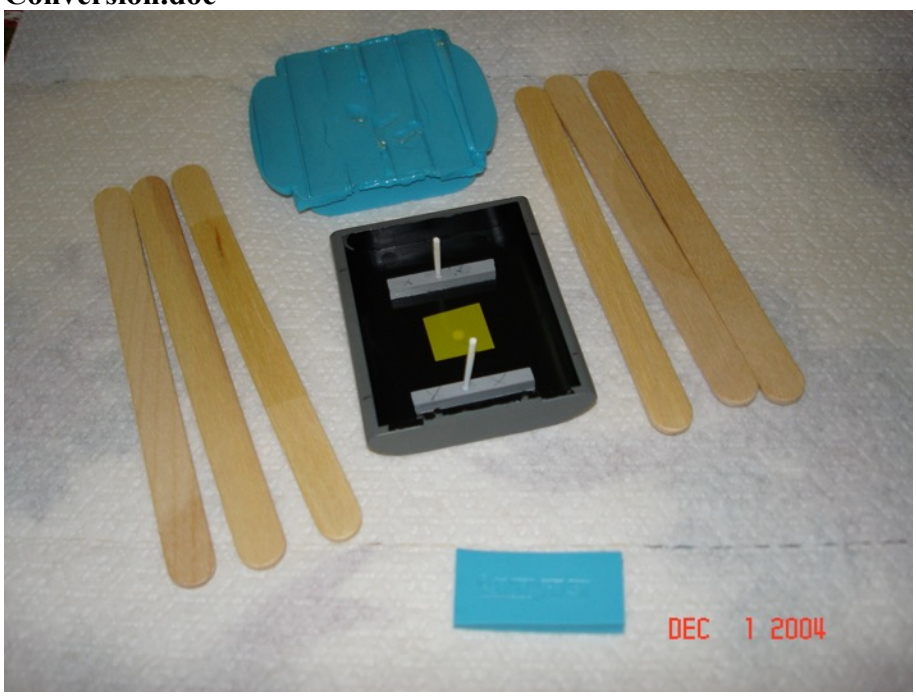

Dsc00620.jpg

Shows how the A.M. fuel tank was prepared to make the 'inside' mold of it from silicon rubber. The 2 square pieces added will become 'stand-offs' in the molded part to correctly fit on the modified ERTL fuel tank. The 2 vertical rods were placed so that any air bubbles (or excess mold resin) would exit the mold and not be trapped. This seemed to work well. The resulting 'sprues' on the molded parts can merely be broken off, then the area sanded smooth. Just for kicks, I made an 'ERTL' logo mold insert from the original ERTL fuel tank bottom, so it would also show up on the bottom of the new molded fuel tank.

Dsc00623.jpg

Shows the ERTL fuel tank (also battery compartment access door) after modified to accept a new, cast resin fuel tank. (The original A.M. fuel tank is shown for comparison.)

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Dsc00624.jpg

Shows how the new, cast fuel tank will fit into the modified ERTL fuel tank/battery compartment access door.

Dsc00644.jpg

Shows the exterior of the silicon rubber mold being made. Popsicle sticks help the flexible rubber keep its shape. A single piece of flat plastic or masonite (of the proper size) would probably have been better, but hey, I had lots of Popsicle sticks.

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Dsc00647.jpg

Shows the first fuel tank casting curing. The Popsicle sticks primarily keep the bottom of the mold rigid so the exterior of the fuel tank dimensions match the original. The excess material finds its way out of the mold. The casting resin cured quite quickly. I learned to mark the approximate volume of casting material needed for a particular part (in milliliters) on the mold so I wouldn't waste a lot of extra casting resin. It sets up so quick, you are lucky to pour it into only 2, maybe 3, small-sized molds.

Dsc00653.jpg

Shows the exterior of the final casting, before final clean up. Note that concave 'bubbles/blemishes' produce protruding bumps on the final casting. These are easily sanded or filed off. Notice the'ERTL' logo that will now appear on the bottom of the new fuel tank. I ended up using 2 Pop-Rivets to secure the new fuel tank casting to the old ERTL fuel tank/battery cover. I just drilled the rivet holes near the 'stand-offs' so there wouldn't be much 'squeezing' pressure on the plastic parts. On my first unit, I used some Gorilla Glue between the 2 fuel tank parts, thinking that the Gorilla Glue would expand to fill the void and make for a very strong bond, etc. The Gorilla Glue 'leaked' out in places I didn't necessarily want it to. So, next unit, I'm simply going to use RTV silicon rubber between the parts – and just enough so it won't squeeze out!

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Dsc00660.jpg

Shows the final casting, after final clean up. Notice the 2 'stand-offs' which are now integral parts of the new, cast resin fuel tank.

Dsc00657.jpg

Shows the new cast resin fuel tank mounted on an ERTL chassis compared to the A.M. GP-35, just in front.

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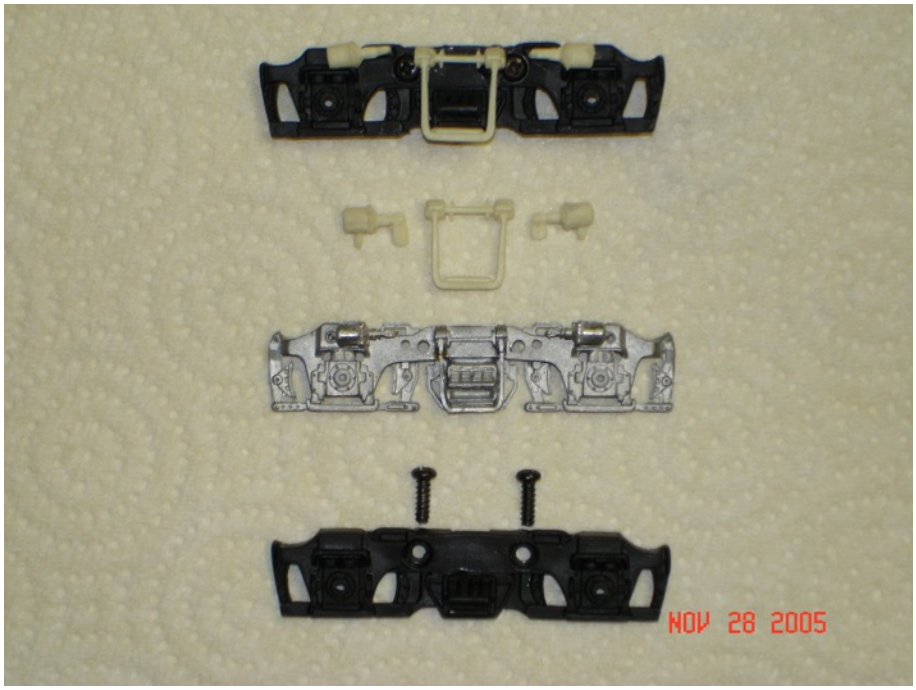

Dsc01364.jpg

Shows cast resin parts added to an ERTL truck side frame. Below that are the bare parts (after substantial flash clean-up). Below that are diecast scale Blomberg trucks – similar to the ones on the A.M. GP-35. Below that is a standard ERTL truck side frame with its 2 mounting screws. When I added the detail parts (as on the upper assembly), I found I had to install (loose) the 2 mounting screws since the 'saddle' slightly overlapped the screw holes. This turned out to NOT be a problem with the final assembly.

Dsc01370.jpg

Shows a primed, detail-added ERTL truck side frame beside an A.M. GP-35 side frame. Below that is another ERTL detail-added side frame without the primer. Since my first 'dummy' ERTL GP-35 was going to be painted in Chessie colors (which have dark blue truck side frames) I decided I could get by with the modified ERTL side frames. WHAT DO YOU THINK?

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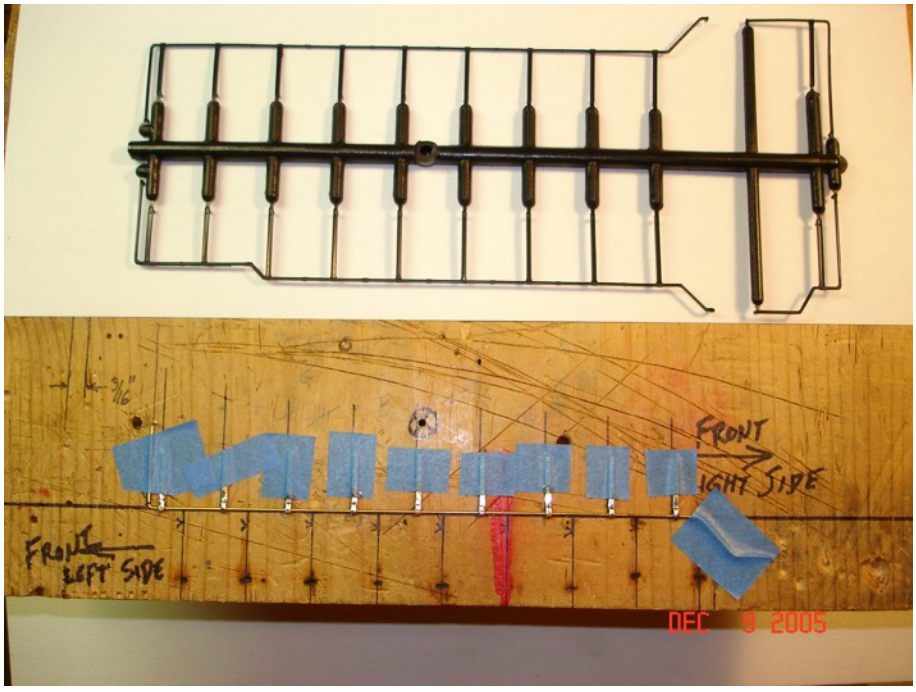

Fabricated Handrail 'jig'.jpg

Shows 'jig' used to solder brass handrail assemblies. I used (as reference) the A.M. plastic handrails – shown above. Although the ERTL unit has hole indentations in the body frame for handrails, they don't match up, exactly, with the A.M. plastic handrails. I had purchased 2 sets of plastic handrails from A.M., and will use them on 2 'dummy' U.P. GP-35's I'm planning to make. I needed 2 more sets of handrails for my planned Chessie 'dummys', so I decided to fabricate them like I did for a 'kitbashed' Durham Industries U-18, YEARS EARLIER. The hand 'rail' is 0.032" brass rod bent at the proper location and angle. The stanchions were made from brass flat bar 1/16" x 1/64" with a small 'eye' formed at the end where the round rod passed through. I found the brass rod and flat bar stock at a local hobby shop. It's from 'Special Shapes Co.'

Fabricated Handrail Stanchion closed 'hook'.jpg

Shows typical fabricated handrail stanchion. I formed the 'eye' around a piece of steel wire (also 0.032" diam.) using the 'non-knurled' part of some needle-nosed pliers. After the 'eye' was formed, I then cut the individual stanchions to length using ordinary scissors. There are a LOT of stanchions, but after you get some experience, this fabrication detail goes pretty fast. I kept the various lengths of stanchions in small pill bottles labeled with the length for later reference!

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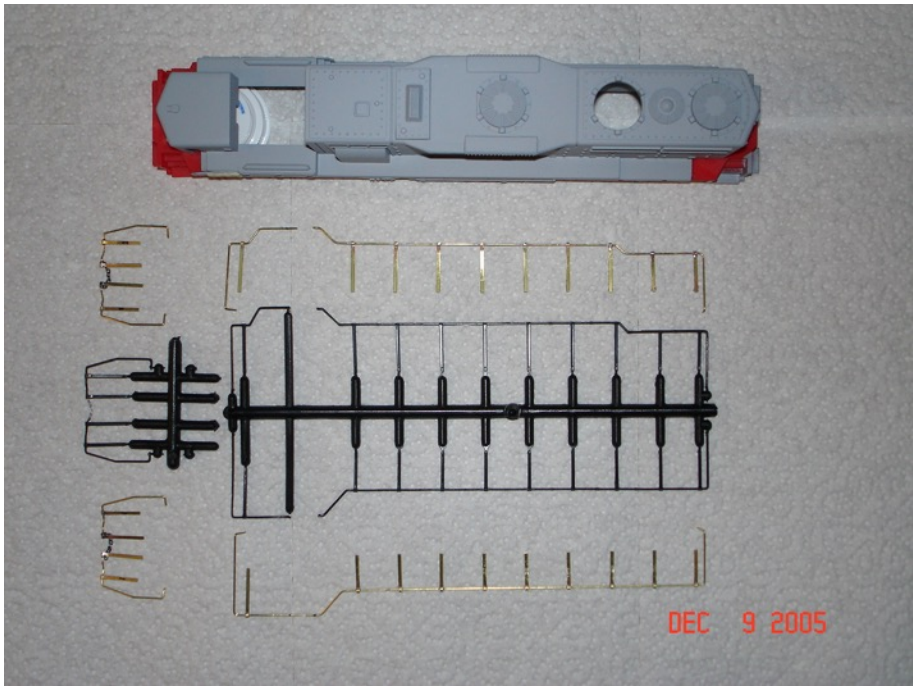
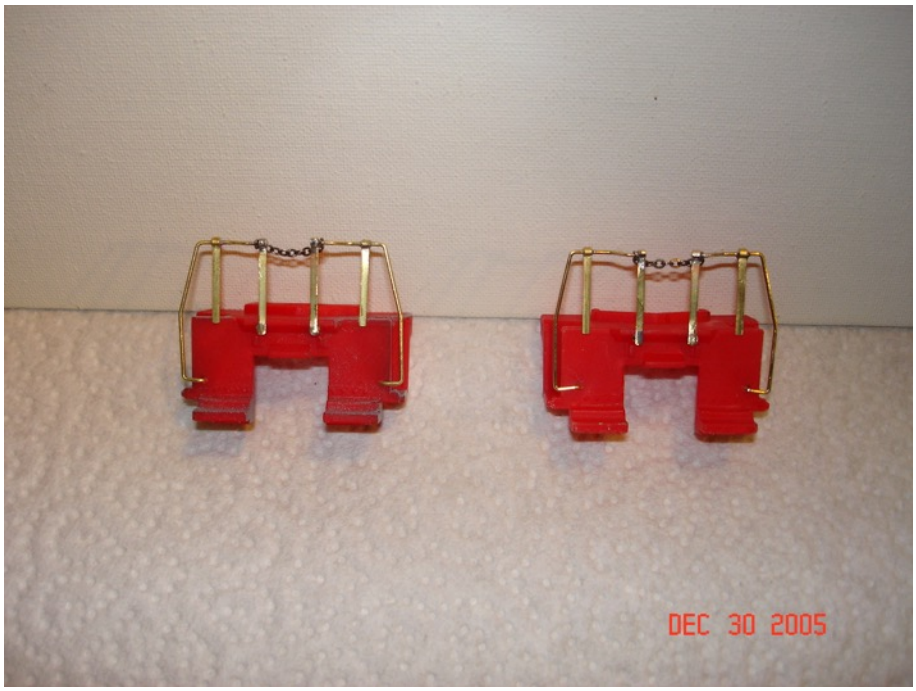


Fabricated Handrail vs AM Handrail.jpg

Shows a complete set of handrails for a GP-35. On the ends that terminated on the Cab, I did NOT form the last 90 deg. bend as I thought it would be easier to fit them up during final assembly and make the bends match the holes I drilled in the Cab. This worked out quite well, later. The end platform handrails also included a small piece of chain. I merely used some small jewelry chain (but probably a little large, scale-wise). The chain was threaded 'through' the actual handrail brass rod, and hangs down BEHIND the middle 2 stanchions. It looks fairly good on the model, and is quite a strong assembly. To mount, I merely soldered some small, cut-off wire nail heads and soldered them to selected stanchions. For the others, I merely soldered a small piece of brass bar, to hold it out slightly from the frame. Final installation looks quite good!



Fabricated Handrail fitted to frt & rear platforms.jpg

Shows handrail assemblies attached to the front & rear platforms. I only actually attached the outer rail (near the bottom step), and the middle 2 stanchions in the middle. The middle 2 stanchions had small wire nails soldered and cut to length. The result is quite sturdy. The 2 short stanchions merely sit in place.

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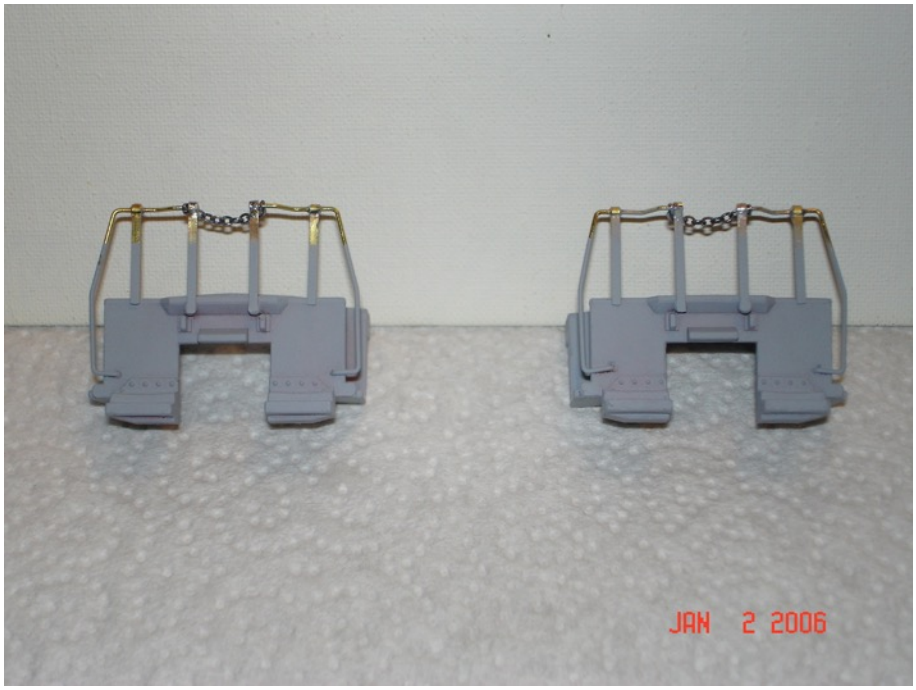

Dsc01506.jpg

Shows handrail assemblies attached to the front & rear platforms after receiving a coat of primer.

Dsc01524.jpg

Shows front & rear platforms with final Chessie colors ready to mount to ERTL GP-35 chassis.

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Dsc01048.jpg

Shows typical ERTL GP-35 body removed from battery-powered chassis. As you can see, the front & rear platforms are separate pieces. The "ON-OFF" switch protrudes through the front fan assembly hole. I plan on using this switch to merely turn "ON-OFF" some battery-powered LED 'headlights'. The slide switch toward the front of the loco (which protrudes through the top of the body) is actually a 'reversing' switch that controls forward/reverse on the battery-powered loco. I lowered this switch on my 'dummy' since I won't use it. However, if you wanted to have directional-control lights on your 'dummy' you could use it for that. The only thing is, that you'd have to remove the body from the chassis to get to the switch. I just filled in the hole on my 'dummy' and sanded it smooth. I'm using the existing battery compartment and access door on my 'dummy'. The batteries will give the loco some needed weight.

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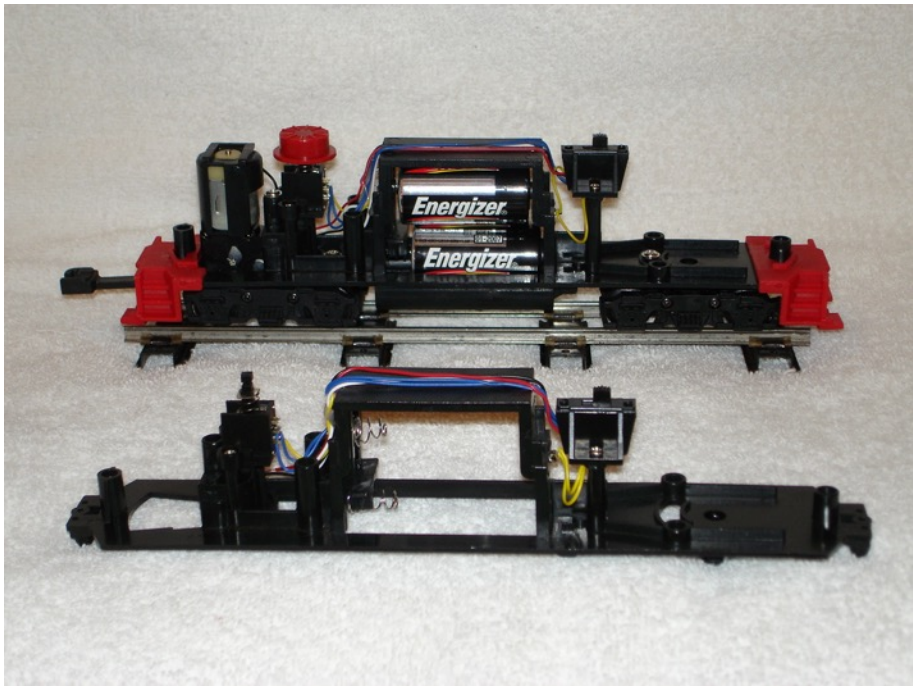
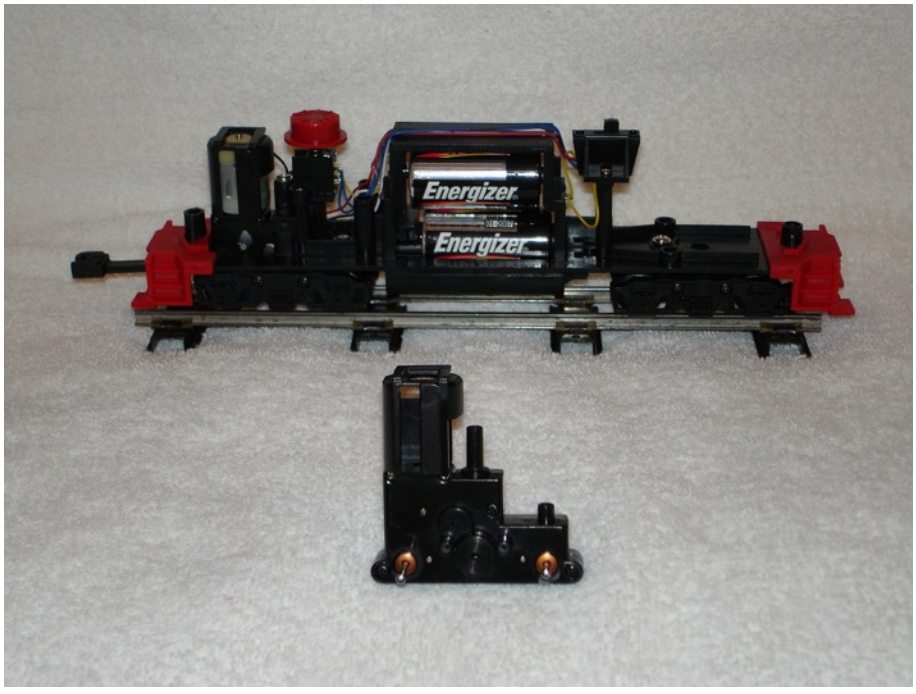


Dsc01049.jpg

Shows an unmodified ERTL chassis, above; and, a modified chassis (without trucks), below. The modified chassis has had the 'reversing switch' lowered so it WON'T protrude through the body.



Dsc01050.jpg

Shows an unmodified ERTL chassis, above; and, a modified 'motor' truck (less gears & motor), below. I am re-using the ERTL plastic trucks on my 'dummy' locos. This will make the mounting to the chassis much easier. The ERTL design (even though plastic) is quite good. I did, however, add short sections of copper 1/8" pop rivets as bearings. I had to drill out the gearbox to 1/8" to slide the copper pop rivet in. I 'set' them by using MEK to 'weld' the pop rivet bearings to the ABS plastic. (Seems to be working out okay!) I am using the center portion of 'steel' 1/8" pop rivets as the axels. I am re-using the ERTL wheels, after turning their flanges down to a thinner profile. The front, un-powered truck, is modified in the same way, using the copper pop rivet bearings, and modified ERTL plastic wheels. Although the plastic wheels were 'press-fit' onto the axles, I used a small dab of Gorilla Glue (being careful NOT to glue the axle/wheel to the bearing) to keep the plastic wheels in place on the axles. After several 'miles' of test running, they are performing very well!

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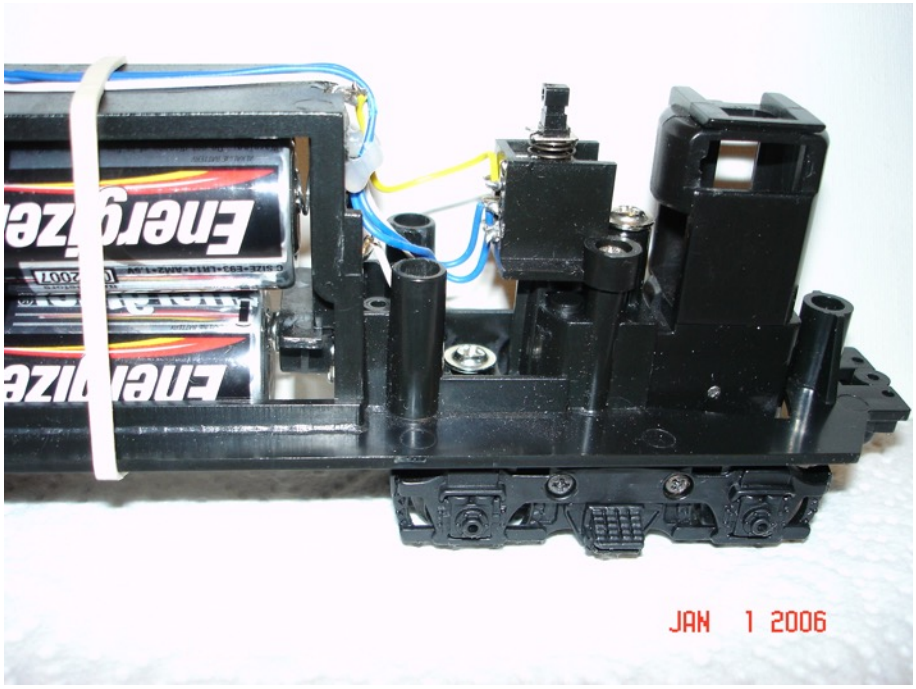
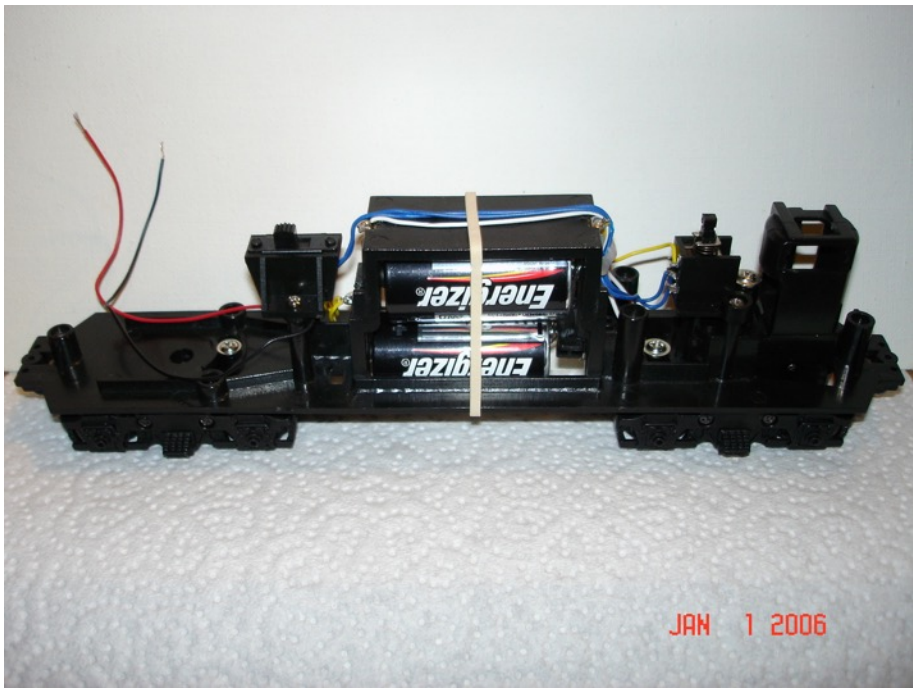


Dsc01499.jpg

Shows the "ON-OFF" switch re-wired so it's "ON" in the 'UP' position, instead of the 'DOWN' position. I merely de-soldered the yellow wire from a lower connector on the switch and re-soldered it to an upper connector. Works fine, and now when the lights are "ON" the fan' switch will be fully extended in the 'UP' position.



Dsc01502.jpg

Shows lowered and modified "ON-OFF" switch and the RED & BLACK wires have been re-routed toward the front. (They WERE connected to the battery-powered motor, which is no longer needed.) I set the 'reversing switch' so that when the batteries are properly installed, the RED wire is POSITIVE, and the BLACK wire is NEGATIVE. I decided this would simplify wiring up the LEDs, which are polarity sensitive, later. This turned out to be a GOOD IDEA!

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3520cs-c&o.jpg

This is a photo of the Chessie System GP-35 that I decided to use as my first 'dummy'. This photo is courtesy of: **http://www.trainweb.org/chessiephotos/html/nojava.html** This is a fantastic reference on Chessie locomotives as well as other items of interest.

Dsc01526.jpg

Shows body with YELLOW and ORANGE paint (plus some DARK BLUE at the bottom). I used an old coat hanger formed with 2 round tabs, one at each end, that attach by merely screwing onto the body mounting bosses. You don't have to paint EVERYTHING, only that which will show up in the END. I painted the Cab separately, to reduce the amount of 'inside corners' I'd have to spray around. I used a simple, cheap little Badger airbrush to do the painting (except for the primer which was in a spray can!).

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Dsc01529-90.jpg

Now all I have to do is mount the Cab, add decals, mount to the chassis, and install the handrails. (PLUS, add the dual-LED 'Yeloglo' headlights and window glazing on the cab!)

Dsc01611.jpg

Shows the body & cab in all three Chessie colors, PLUS decals. Now all that needs to be done is mount the chassis, and install the handrails, PLUS, add the dual-LED 'Yeloglo' headlights and window glazing on the cab! I also 'installed' a seated locomotive engineer from the ERTL Farm Country set!

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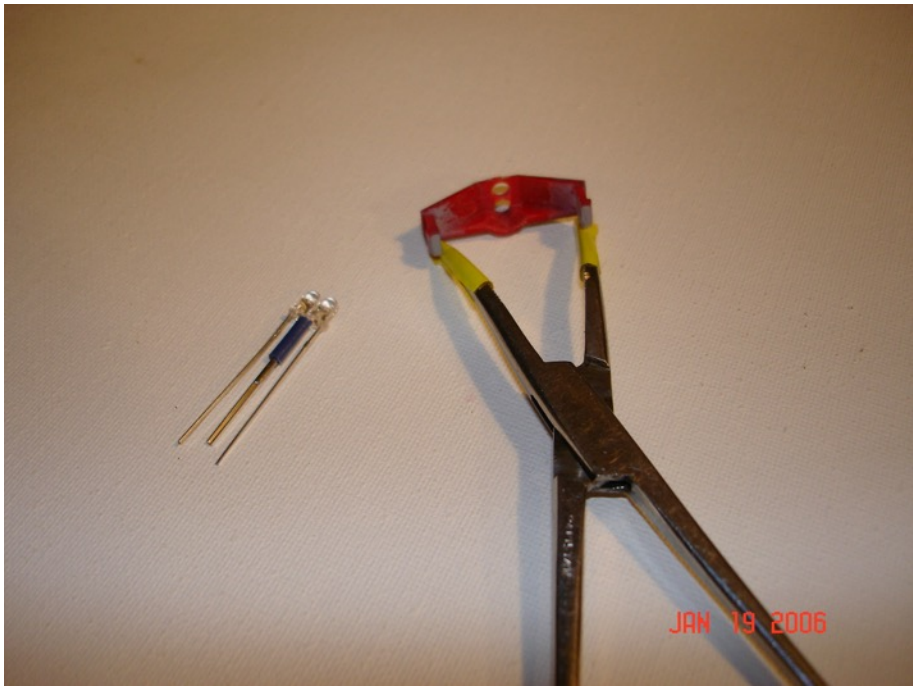
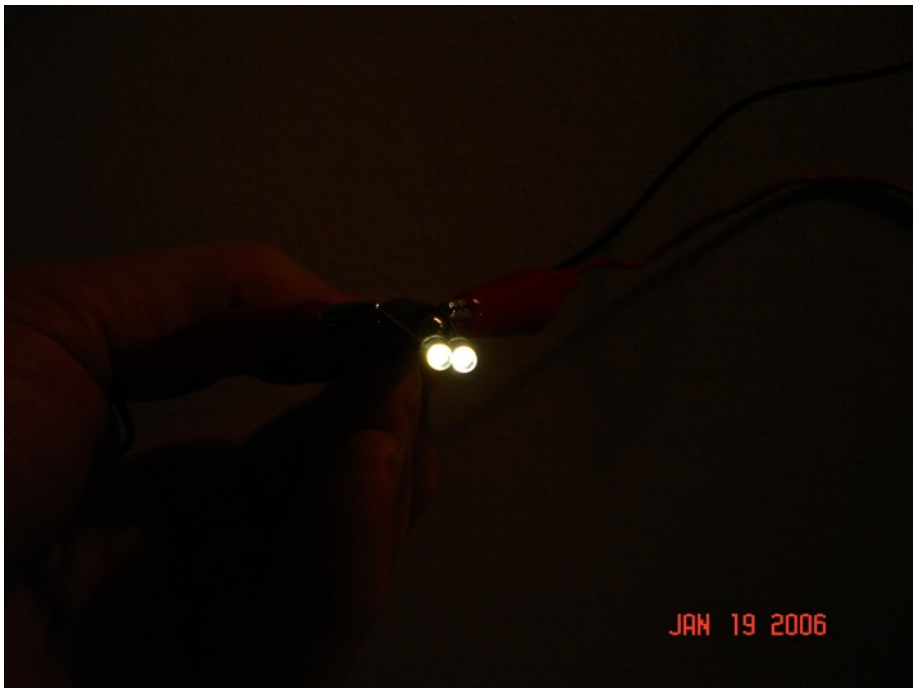


Dsc01538.jpg

Shows the dual 3mm "Yeloglo" LEDs soldered together at their cathodes. The dual LEDs fit perfectly behind the plastic headlight housing that is a separate piece on the ERTL GP-35. I drilled 2 holes, side by side, to fit the dual LEDs. (The forceps shown in the photo were merely to help support the headlight housing for photographing.) I had to drill the front of the cab (behind the headlight housing, shown) and remove a stiffening tab so the LEDs electrical leads could extend through. In the final dual LED assembly, I bent the 2 anodes around the cathodes and joined them together, then soldered them. This gave just 2 connections for the dual LED assembly – 1 positive (anode) and 1 negative (cathode).



Dsc01541.jpg

Shows the dual LED 'headlights' lite up to test them out. I purchased a (5 pcs) package of "Yeloglo" White LEDs (Miniatronics Corp. 3mm dia. 3-4 VDC, Model #12-310-05) from a local hobby shop to make these dual headlights. The Miniatronics LED package comes with 270 & 470 Ohm resistors - one/each for each of the five white LEDs in their package. The package does not give any information other than you are to use the 270 Ohm resistors from 4-9 volts, and the 470 Ohm resistors from 10-16 volts (as I recall). I used Bill Porter's suggestion, and used two 270 Ohm resistors in parallel. I successfully connected two "Yeloglo" White LEDs (in parallel) to two 'C' batteries in series, through the same two 270 Ohm resistors (in parallel)! They look GREAT!

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Dsc02013-2R

Shows the full effect of the dual headlights. Pretty impressive on a 'night-time' layout! It's powered by the 2 'C' batteries in the 'stock' ERTL battery holder. Absolutely no 'flicker' going down the track. I haven't tested to see how long the batteries will last. This photo shows off the brass BTS S Scale Triple Chime Air Horn (BTS part #02002). The next two photos show the brass BTS S Scale Twin Sealed Headlight bezel (BTS part #02036)

Dsc02005-2R

Shows another view (more to the side) with the headlight "on"! I have a small 'light leak' at the top of the headlight mounting plate (that was part of the original ERTL locomotive that I drilled out for the LEDs to shine through), but I doubt I'll worry about fixing it.

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Dsc02021-2R

Another shot of the front with the headlight 'on'. Also, note the standard ERTL 'engineer' seated inside the cab on the interior cab seats. [I don't know where the fireman / brakeman went! ;-)]

Dsc01615.jpg

Completed ERTL 'dummy' GP-35 as compared to the A.M. & original ERTL Farm Country GP-35, and the kit bashed Durham Industries Chessie U-18.

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Dsc01617.jpg

Another comparison view of the completed 'dummy' Chessie GP-35 – with a 6' tall 'scale' ERTL conductor from the Farm Country Train Set standing beside the new 'dummy Chessie GP-35'.