Cab-Unit LED Conversion Kit Assembly & Installation

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This guide covers the assembly and installation of the Scale Sound Systems Cab-Unit LED Conversion Kits. A Southern Pacific Athearn Genesis F3 was used for this guide. The same assembly principles will apply to using all of the Cab-Unit LED Conversion Kits.

Shown here is a lower, door-mount twin-beam headlight kit (left) with an upper, nose-mount twobulb UDE+action light kit. I want to replicate the headlight configuration shown on prototype unit #6303, photographed by Drew Jacksich, shown here at lower-right.

If your prototype differs from this arrangement, the upper, nose-mount twin-beam headlight kit assembles exactly the same as as the lower, door-mount kit used in this guide. Likewise, the three-bulb UDE+action kit assembles the exact same way as the 2-bulb UDE+action kit used here.



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Begin by placing the housing back-side down, with the front facing up, on some fine-grit sand paper. Press your finger onto the housing and gently swipe it back and forth a couple of times. Only a couple gentle swipes is all it takes to smooth the back side.

Use a toothpick to clear out any fuzz or debris from the holes.

Grab a black Sharpie® marker.





Use the marker to thoroughly blacken the *backside* of the housings. Gently poke the marker's tip into the lens holes. This ensures there will be no glowing of the part when the lights are lit.

You can color the front of the housings whatever color you'd like. A silver Sharpie® marker works well and is fast.





Using the silver Sharpie®, I dabbed it all around the face and into the lens holes of the housings. These can be further weathered with a black wash, powders or however you wish.

For the twin-beam headlight, press the lens into the back of the housing. Use a tiny touch of medium or thick CA to secure the two together.

Do not use thin CA! The glue will wick into the parts and run-out onto the front.





The assembled twinbeam headlight looks great!

Notice the two lenses for the upper UDE+action kits; the lenses are slightly offset from their bases. The lenses will fit into the housing with the base off-sets toward each other.

If there is any "flash" on the bases, carefully trim it off with a knife.





With the lenses inserted, slide the black styrene divider between the UDE and action lenses. Happy that everything is nicely aligned and within the circumference of the housing, carefully apply small amounts of medium CA to the lenses, divider and housing.

Another view of the glue drying on the assembly.





The finished assembly looking good!

Place a small drop of CA on the headlight's 1206 LED.



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Position the lens assembly on the LED, aligning it squarely. The length of the LED should follow the length of the lens's base.

Place a small drop of CA on the back of the UDE and action lenses. Attach the 0805 LED to the rear of the clear action lens and the 0402 LED to the rear of the UDE lens. Align the LEDs and snug them to the divider.





Once the glue has dried on the LEDs, carefully straiten their wires back off the assemblies. Apply more CA around the LED/lens joint and all over the back of the LED onto the wires. This strengthens the whole assembly and the fragile wire-joints on the LEDs.

Once the glue has dried, slip the heatshrink pieces down the wires and *up to* the housing. The heat-shrink should *not* wrap *around* the housing.

The twin-beam headlights use 3mm tubing while the UDE+Action kits use 4mm tubing.





Using a clean soldering iron tip, shrink the tubing down around the LEDs and try to form a tight seal against the back of the housing.

Do not use a heat gun! You'll likely melt the parts!

The stock Genesis locomotive has bulbs held in plastic reflectors.





A gentle rockingtwisting-pulling motion with some needle-nose pliers will pop them right out.

Insert the upper assembly into the nose. This is likely a snug fit, but with a little wiggling, it should go in. If it proves too difficult, pop the front lens cover off the shell, f e e d th e wires through and install from the front. This is sometimes necessary due to the curvature of the shell here.





The lower-mount will fit more easily. Apply some Kristal Kleer, or your adhesive of choice, around the heat-shrink of the assembly.

Slide the assembly into the lower-hole. Looking at the front of the loco, use tweezers from behind to align the lights. They can be mounted horizontally or vertically per your application. Take your time here and be sure they are positioned square in the holes and strait. It sometimes helps to let the adhesive setup a little and make your final adjustment.





Once I'm happy with the fit and the initial application of Kristal Kleer is pretty well set, I sometimes apply a little more Kristal Kleer to ensure they are secure for the long-term.

I use small slices of heat-shrink to bundle the wires together before re-installing the shell onto the chassis.



The entire process took less than 30 minutes. The finished installation looks great, has LED-reliability and is an easy conversion to model the various prototype configurations.