

Boulder Valley Models KD-06 Bash for 70-ton Loco Instructions & Ideas

Note: The “Kitbasher’s Delight” kits are a bit different from our regular conversion kits. This series includes the basic parts to kick-start and simplify your kitbashing efforts plus ideas for further detailing. These ideas are intended as a starting point for customizing projects to your own tastes and your railroad’s needs. These pages include instructions for the parts included along with suggestions for using additional parts (not included) for further modification. Be creative & have fun!

Also note: We’ve provided the “Deluxe” KD-06 instructions with kits KD-07 and KD-08, which do *not* include all of the parts mentioned; refer to parts listing for details.

★ Wash the Parts!

Before you begin, soak all of the resin parts in warm water with a powdered soap such as Comet or Bon Ami. Rinse, scrub lightly with a soft toothbrush and allow them to air dry on a paper towel. Note that there are many small parts. Use a strainer and work with bowls on the kitchen counter -- **NOT** over the sink! (You’ll lose parts down the drain.)



★ **Choosing Adhesives:** If this is your first resin kit, we strongly recommend using 5-minute epoxy. Mix small batches (a few drops for each joint) following the manufacturer’s instructions. Otherwise, use a slow-setting ACC (super glue) with fine tip applicators. In all cases, familiarize your self with the parts and check their alignment before applying the adhesive! It may be necessary to trim or file parts for a proper fit.

★ **“Secret” Tip on Adhesives:** If you use 5-minute epoxy or ACC on unpainted parts, you will have a more-or-less “permanent” bond -- very difficult to un-do. On the other hand, if you use these adhesives to join pre-painted parts, you’ll usually find that the joint can be “broken” if you need to fix the alignment. It may be necessary to touch up the paint after doing this, but it can save some aggravation!

★ **Stars and Check-off Boxes:** We’ve used “stars” to bullet important pieces of information, suggestions and general notes. We’ve used “boxes” for the actual assembly steps so you can keep track of progress -- since you may be working on various components or subassemblies while others are in the paint shop!

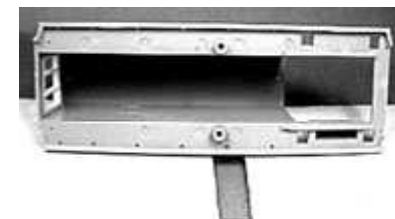
★ **Painting Tip:** Use a solvent-based primer on the resin assemblies to provide a good base for brushed, air-brushed or spray-painted finish coats. For example: Testor’s Flat Gray Primer or Flat White spray-paint or Floquil primer with an airbrush.

Plan Ahead!

- ★ The “Instructions & Ideas” are outlined to walk you through a basic kitbash, starting with disassembly of the Bachmann loco and proceeding thru assembly of the kit components and some detailing ideas. Please read thru everything and consider your own preferences. You may wish to approach some of the steps in a different order, add some ideas of your own and skip some of the ideas presented.
- ★ The cab is designed to fit the Bachmann HO scale GE 70-ton switcher and may be used for a variety of other applications.
- ★ The pilots and cab are designed to work with a deck that is widened to 7” (scale). Kit KD-06 provides the material for this adaptation.
- ★ A summary of additional/suggested materials is provided on the parts sheet. A list of detail parts used on the finished sample is provided at the end of these pages. A variety of substitutions may be made depending on your preferences.
- ★ **Note:** for brevity styrene dimensions are listed as 040x080. These refer to fractional dimensions, such as .040” x .080” etc.

Preparing the 70-ton body & widening the deck

- Test run loco prior to disassembly or modification** -- just in case you need warranty service on new locos or as a reference point on other locos.! Turn loco over & remove two screws securing body shell; remove body shell. Note plastic lugs retaining cab; pinch & remove cab.
- ★ **Suggestion:** Use the HO cab to test any paint remover that you plan to use on the body shell. Also, use this piece for practice if you wish to use a chisel blade to remove molded-on detail.
- Remove add-on details, such as grab-irons, railings, headlight lenses & couplers.
- Gently pry-off the lift bar assembly at each end of the deck; save the small metal stanchions used to support this assembly -- they can be used for handrails as shown.
- Strip paint from body shell using your favorite paint remover & follow appropriate instructions.
- ★ **Good news / advance warning:** The trickiest part of this entire project is modifying the deck. The good news is that the “hardest” part is using a bit of care and patience. You may wish to skip ahead and assemble the cab to get a feeling of progress, then come back and do this part to keep it rolling.
- Use a razor saw (such as Atlas Snap-Saw) to cut off the pilots flush with the bottom of the chassis. Cut through the steps and coupler mounting posts. Be careful to avoid injury. The cuts can be sanded afterwards, and you’ll add styrene that will even things up.
- After the pilots are removed, you’ll notice



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that the screw-mounting lugs on the bottom of the shell protrude below the deck.. Cut a slot in a scrap of cardboard and cover the cardboard with wax paper as shown. This will give you a flat work surface to make sure the styrene pieces added to deck are flush.



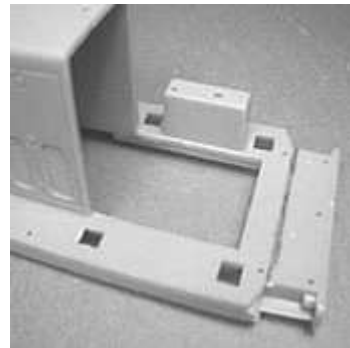
- ★ Next, the ends of the deck are cut off to make room for the styrene strip that is provided with KD-06 kits. The exact location of the cuts can be varied to taste. As shown, the loco has an overall length of 20' over the running boards on the pilots.

- ★ When making these cuts, use the cut-out cardboard described above or something similar to insure your cuts are straight.

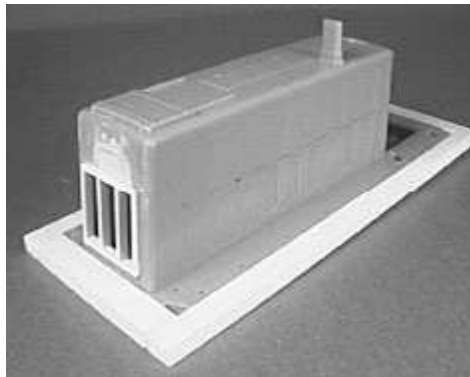
- Cut across the front of the deck just ahead of the hood as shown.

- Cut across the back of the deck as shown.

- ★ Okay -- that was the hardest part! Now we'll add some styrene pieces and finish the deck modifications. Use styrene cement to glue strip stock to body shell. The photo below shows how the styrene strip is added to extend the deck.



- Cut (2) 5'6" scale lengths from Part T 125x250 strip. Test fit against ends of shell -- the narrow side goes against the shell. The top of each piece should be flush with the top of deck. The ends should be approx. even with the sides of the deck; any gaps left can be filled with putty or covered with .005 styrene sheet. Glue end pieces in place.



- The length of the side pieces will vary slightly depending on the exact location of your cuts in the body shell. Measure over the modified length and cut two pieces of Part S 125x188 strip to match. Test fit & sand back the end pieces if needed. Glue in place. Again, any gaps can be filled with putty or covered with .005 styrene sheet.

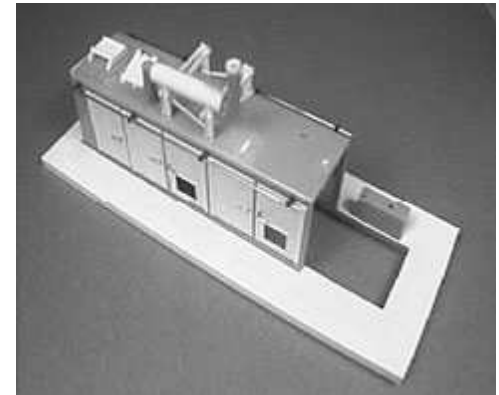


- A piece of styrene strip is added to the top of each pilot (Part I) to compensate for the extra thickness of this particular shell. Cut two pieces of Part R 040x125 strip to match the width of the pilots and glue in place as shown here -- the thicker side lays

on top of the pilot and the back of the strip should be flush with the back of the pilot. The edge of the strip will protrude slightly forward as shown.

- ★ **PLAN AHEAD!** The following steps describe completion of the deck with the addition of the decking material and pilots. However, we suggest that you review the various ideas for modifying or detailing the body shell, then return to this section *after* the modifications to the shell are done.

- ★ **Optional techniques:** material is provided for an .005" styrene overlay, which we used to produce a smooth deck surface. If desired, you can cut a single piece with an opening for the hood and the bulge in the cab area - make a paper template to check measurements. An alternative is to "keep it simple" and cut one long piece for each side and a shorter piece to fit each end. You may wish to eliminate the overlay and simply use putty to fill any gaps.



- Loosely fit the .005" styrene (Part U) against the top of the deck. Notice that it will slip under the door detail. Determine whether you wish to cut a single piece or multiple pieces as described above. Glued overlay piece(s) in place -- go easy on the cement, as the thin styrene "melts" easily. Photo shows deck covering added after modifications to shell were made.



- ★ **Orientation of corner steps:** the two smaller steps (Parts J & M) fit against the front pilot as shown at right. The two longer steps (Parts K & L) fit against the rear pilot as shown below -- the extended steps allow crew access to cab doors.

- ★ **REMINDER:** we suggest adding pilots and steps *after* body modifications are made.

- Test fit pilots against ends of modified body shell -- note that they'll extend past the sides slightly. The top of the pilot (with shim) should be flush with top of deck.



- Glue front pilot in place. Then add front steps (J/M) noting the orientation described above. The forward edge of each step should be flush with the deck and slightly inset from the edge of the pilot.

- Glue rear pilot in place. Then add the rear steps (K/L) as shown.

Prepare Kadee #47 Couplers

- ★ **Note:** We've suggested #47 couplers instead of the "usual" #5 couplers -- the coupler boxes sit lower due to the extra thickness of the deck on the 70-ton shell. The #47

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coupler has an underset shank that will compensate for this difference and align with the standard HO coupler height

- ★ The pilots are designed to accept Kadee coupler boxes with the ears removed from the boxes as described here. Many On30 modelers use these HO couplers. If you prefer a different style, test fit and modify parts as needed prior to assembly.



Photo -- Stock parts with “ears” are shown at left front. Modified parts with the ears removed are shown at right front. Completed couplers are shown at right rear.

- ★ **Painting suggestion:** We like to spray paint the assembled Kadee couplers prior to installation; this makes it easier to weather/chalk the couplers. The ones shown on the finished model were painted with a light mist of Krylon primer. Be sure to apply a thin, dry coat and test couplers to make sure the parts don’t become bound.
- Assemble Kadee #47 couplers, with the “ears” removed from the top and bottom of the draft gear box (**Photo**). Use a tiny dab of ACC to secure the lid to the box.
- ★ **Do not glue couplers in place** -- at this point, just use for testing. You’ll want to complete painting and other details prior to coupler installation.

Assemble the new cab, floor & roof

- ★ **Design notes:** The cab sides fit *between* the cab ends. Note that the cab sides are opposites -- the doors should be oriented toward the rear of the cab. You may wish to install grab-irons and door latches prior to assembly of cab walls. Placement of these items may be varied to taste -- review color photos for ideas.
- ★ **Design note / clearance for mechanism:** The notch in the cab front is sufficient to clear the 70-ton mechanism used on this bash. If using cab for a different loco, check and adjust opening as needed.
- ★ **Placement of grab-irons on doors:** This may be varied to suggest a sliding door (top) or a hinged door (bottom). We used the hinged door arrangement on our sample. Note that the placement of these items will be reversed on the opposite side.
- **Forming door latches:** Hold a piece of .020” wire (Part P) with needle nose pliers and make a bend approx. 4” scale from the end. Cut length approx. 6” scale from bend. Press short end into #75 hole drilled in cab door and glue in place from inside. Repeat for other side. Make sure wire doesn’t protrude into cab, as it will interfere with floor.



- **Forming grab-irons:** Start as above, then make a second bend at the desired location (we made our grab-irons 3’ scale length). Cut after wire is bent. On our model, the bottom of each grab-iron is approx. 6” from bottom of cab.
- Test fit cab sides between cab ends. “Scuff” (lightly sand) the edges of the cab sides and the back of the cab ends where they will be glued together -- this insures a good joint on small gluing surfaces.
- **Important:** double-check orientation of cab walls prior to gluing!
- Glue one side to one end, with outer edge of the cab end flush with the cab side; use a metal square to insure alignment. Add second side.
- Test fit cab on modified body assembly. The cab front butts against the back of the hood on the 70-ton shell. **Do not glue** the cab in place until you’ve completed the false floor and any other modifications to the body shell. Also, we found it easier to paint the cab assembly separate for our two-tone scheme.



- ★ **Design note / false floor:** This assembly is provided to hide the mechanism, which would be visible thru the cab windows. It is designed to fit over the mechanism of the 70-ton loco. Additional interior details, such as controls, could be added -- we simply painted the interior dark gray and used exterior detail to create areas of interest.
- ★ If you’re using the cab for a different loco bash, check to see if you have room for interior cab detail and modify or omit the false floor to suit.
- Test fit cab floor (Part E) inside cab assembly; file if needed. Add risers (Part F) to cab floor as shown. Make sure they do not protrude beyond the floor sides or ends. Do not glue floor assembly in place until body modifications and cab installation are completed (in “Final Assembly” below).
- Test fit the roof insert (Part H) inside the cab; it should provide a plug fit but shouldn’t be too tight. File if needed.
- Make pencil marks on the underside of roof form (Part G) making lines 3” scale from each edge. Use these as a guide for centering roof insert; glue roof insert in place as shown.



- ★ **Painting tip:** You may wish to pre-paint the roof assembly and the roof stock separately if you’re planning a multi-color paint scheme.
- Make pencil marks on the styrene roof stock (Part N) -- draw lines 2” scale from the front and back edges; 1” scale from the outer (cab side) edges. Use your fingers to gently curl the styrene. Glue one edge as shown in photo & allow to set; then proceed to glue and wrap the roof stock.



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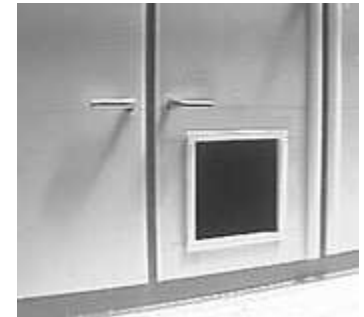
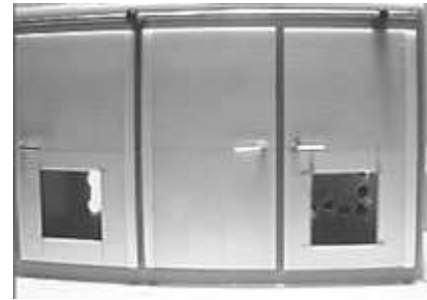
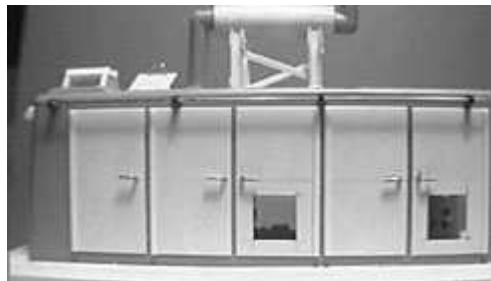
- ★ **Design note / removable roof:** The roof is a plug-fit, so that it can be removed to add interior detail & window stock, change figures, etc.
- ★ **Test fit assemblies & plan ahead:** Now's a good time to loosely place the cab, floor and roof assemblies on the modified Bachmann body shell and plan any other modifications you might like.

The "Rules" of kitbashing -- some ideas

- ★ **Kitbashing is fun:** It provides an opportunity to change & rearrange existing parts and items to produce a new item or at least a new look for your equipment.
- ★ **Use what you have or what you find:** For example, I decided that I wanted to change the headlights on an earlier, so I looked thru the castings I had on hand. Nothing seemed "right" so I decided to see if I could build some headlights and brackets with materials on hand -- this became the "house standard" described here.
- ★ **Consider using "something else":** If you can't find materials suggested, look at ways to use the items you can find ... the results will be creative & interesting!
- ★ **Make up a story:** Pretend you work on your model railroad, as an engineer or in the maintenance shop; decide what you would customize if it were really your loco!
- ★ **If you're not having fun:** You're not doing it right! Take your time, ask for ideas or help where needed, go back & see the previous "rules".
- ★ **The following "ideas" are presented to help kick-start your project.** You may wish to duplicate some, ignore others or design your own changes. You might notice as the photos are presented that I made the modifications as I went along ... not quite in the order now recommended!
- ★ One of the great things about kitbashing is that **you can change your mind and modify the design as you go along.** I've tried to present the ideas in a "recommended" order that makes things a little easier ...

Idea #1: Add some "big" new doors

- ★ Suggested materials: 020 styrene sheet; 010x020 strip; 040 half-round strip; 020 or other fine wire for door latches; brass mesh if desired (Special Shapes #2709 shown.)
- ★ The doors on the 70-ton shell are flush with the hood, which gave me an idea ... it would be very easy to add a thin styrene overlay to enlarge the doors. Adding the basic doors as shown is very easy and highly recommended. I decided to go a step further by adding openings to a couple of the doors to allow a piece of brass mesh to fit inside.
- ★ This photo shows my "Swiss cheese method" for removing large pieces from the shell.



Outline the desired opening with a pencil, then lightly score it with a hobby knife. Use a drill bit inside the lines to make a bunch of holes. Then it's easy to slice between the holes and file out the finished opening -- and it cuts down dramatically on cutting fingers when trying to remove large pieces!

- ★ Each of the new doors covers two of the smaller doors outlined on the HO shell. Cut the door panels to 2'0" x 3'3" and add 040 half round along one edge to suggest a hinge.
- ★ The openings in the styrene doors are about 12" square -- the openings in the shell are a little bigger so the brass mesh can mount against the back of the door and still have a gluing surface. Also, the openings are offset 2" scale to compensate for the hinge stock. Since each new door overlaps two molded doors, make sure you cut the openings in the right place!
- ★ The openings were trimmed with 010x020 styrene strip as shown above. Latches were formed from 020 wire as described for the cab assembly. The brass mesh was cut, test fit & painted separately -- then installed after the loco had been painted.

Idea #2: Add grab-irons to the hood

- ★ Suggested materials: 020 wire; stanchions from shell.
- ★ The 70-ton shell includes nice little stanchions to support the coupler lift-bar assembly ... these were saved and mounted on the side of the hood to create a railing. I placed a steel ruler on edge above the doors and marked a line for the railing, then drilled holes for the stanchions. Make sure they're all facing the right way before gluing. 020 wire will fit thru the holes with some extra "play" ... this will compensate for any irregularity in placing the stanchions. Secure with droplets of ACC.



Idea #3: Change the grille

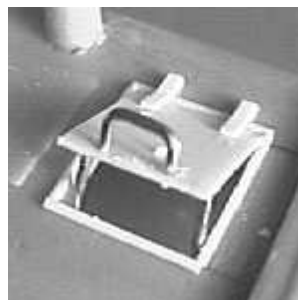
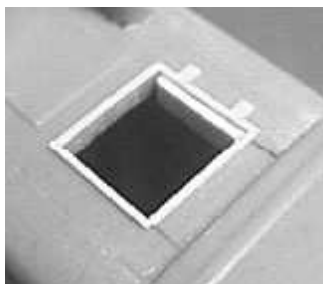
- ★ Suggested materials: 030x080 and 080x080 styrene strip; 060 half round; 080 quarter round.
- ★ The first photo on page 2 shows how I originally

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planned to have a small radiator opening with a front-mounted headlight ... then I changed my mind and enlarged the opening as shown here. The final opening is 2'6" x 3'4" and lined with a criss-cross of styrene strip -- I used 080x080 strip across the top of the opening and 030x080 for the remainder. The styrene is flush with the inside of the shell and sticks forward to form a bulky housing. A piece of brass mesh will be fit from inside. The initial opening was made using Swiss cheese method described above.



- ★ It's not particularly difficult to cut and fit the small styrene pieces. It does take a little practice and patience, but the effect is worth the effort.
- ★ I decided to add a canvas screen to allow "adjustments" to the air intake. The housing was built by gluing a piece of 080 quarter round over the 080x080 at the top of the opening. The roller beneath is a piece of 060 half round. The canvas screen was added after painting.



Idea #4: Add some "3-D" detail

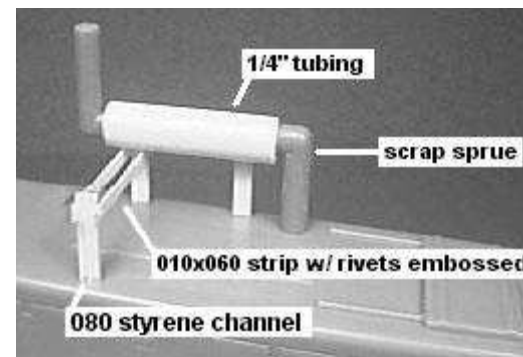
- ★ Suggested materials: 010x020, 010x030, 020x060 styrene strip; 010 sheet; 020 wire.
- ★ I wanted this loco to have lots of chunky, free-standing detail and a variety of angles ... then I spotted the "plain" area just ahead of the exhaust and decided to add a little partially-opened hatch as shown here.
- ★ I marked and cut an opening with the Swiss cheese method, then outlined it with 010x020 styrene strip. A piece of 020x060 was added inside to form a lip for the open hatch, which was cut from 010 styrene sheet. The opening and hatch are approx. 12x15" scale. I used a chisel blade to remove the runners from the large hatch molded onto the hood and left that as a mysterious engine bulge with a headlight on top. I used 010x030 strip to form the hinges and added a handle made from 020 wire.

Idea #5: Build a funky exhaust

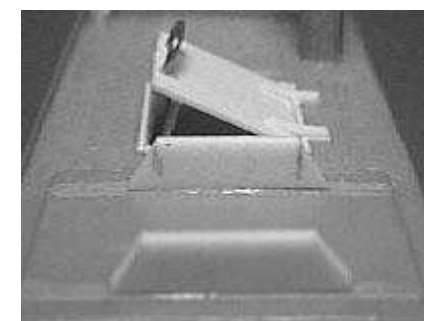
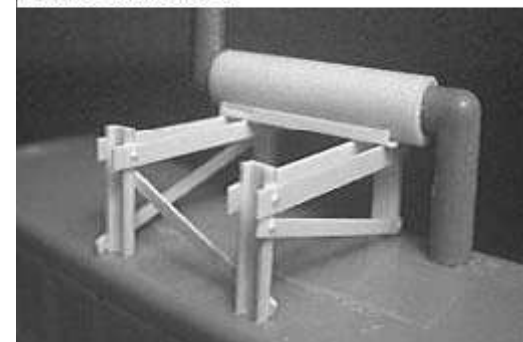
- ★ Suggested materials: 010x040 and 010x060 styrene strip; 080 channel; 1/4" tubing; scrap sprue for elbow.
- ★ Of course, it doesn't have to be this funky, but this one was inspired by a prototype

criter on the North East Rail's Plymouth pages (see our web site for link). There's nothing especially difficult about the construction. It just takes a little practice to cut and fit the styrene pieces (easily glued to shell with styrene cement).

- ★ To emboss the rivets, I sanded down the tip of a bulletin board tack and pressed it firmly into the back of the styrene (placed on a rubber matt or paper pad). Takes a little practice, but works nicely.
- ★ The exhaust elbows were snipped from a piece of scrap sprue -- those runners included in plastic model building kits. A piece of styrene tube was slide over the end and the seams were sealed with gap-filling ACC. (If you don't have any suitable sprue pieces, use a piece of styrene rod. Hold it near -- not in -- a candle flame for a moment, then bend to form an elbow. It may take a couple of attempts to get a good piece, but this technique works well.)
- ★ After these photos were shot, I added a short length of styrene tube to the top of the exhaust pipe to form a collar.



010x040 strip w/ rivets embossed added to make diagonal braces; plain 010x040 to make L-brace for muffler



030x080 trapezoids for headlight platform -- 12" top; 18" bottom

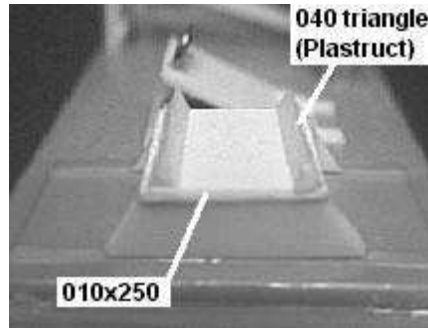
Idea #6: Add a bulky headlight

- ★ First choice: find an O or S scale headlight casting that suits you. In my case, I wanted to simply match the style used on my KD-01 and KD-05 locos, so I built up the platform as shown. (This duplicated the efforts of an earlier kitbash, when I didn't have a casting on hand -- use whatever you have or can easily find to make your own style!) The raised headlight

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platform adds to the overall look of “chunky” detail on this loco.

- ★ Suggested materials: 010x250 and 030x080 strip; 040 triangle; 1/4” tubing; 010 styrene scrap; MV L-199 lens.
- ★ The headlight canister (shown on finished loco) is a piece of 1/4” styrene tube cut to 18” length. A piece of 010 styrene scrap was glued to the back and the joints were sanded to round off the back. An MV Lenses L-199 lens completes the light.



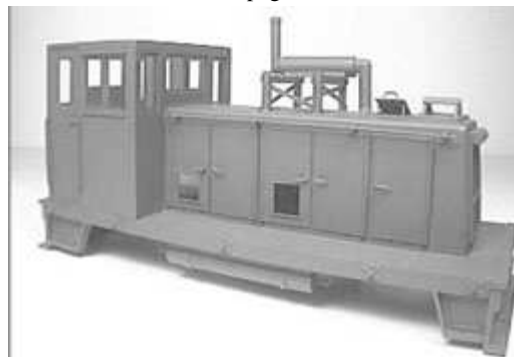
Idea #7: Detail side sills



- ★ Looking thru the detail parts on hand, I found a set of Grandt Line #18 2-1/2” nut on square washer castings. I placed one near each end, one over each bolster and one in between.
- ★ A variety of other NBW or rivet castings can be used ... or you could add some poling rods as shown on our KD-01 bash (see web page).

Final Assembly

- ★ Before you go on to final assembly, consider how to tackle your paint job and any components that you may wish to paint separately
- Test fit assembled cab against back of locomotive hood. Use a toothpick to apply a thin film of slow-setting ACC or 5-minute epoxy to the bottom of the cab walls and the back edge of hood. Set cab in place and double check placement before glue sets.
- Drop false floor assembly in place and run a thin bead of gap-filling ACC between the floor and cab walls to secure.
- 020x125 styrene strip (Part Q) is provided to fill the small gap between the hood and false floor; cut a piece to length and glue in place.
- Install pilots and corner steps as described near the bottom of page 2.
- Consider adding any additional detail items (such as the BVM #405 air tanks shown) prior to painting. On this sample, some items were added prior to painting and some after.
- We suggest using a coat of solvent-based primer, such as Floquil (airbrush), Krylon (spray can) or Testor’s (spray can) to insure a good bond to resin parts. (We’ve also used Testor’s flat



white as a primer coat.)

- Paint loco as desired. Also, you may wish to remove and spray the truck side frames flat black to make it easier to add chalks to these ... or leave in place and brush paint with Polly S. (The chalks will adhere better to paint than bare plastic.)
- Cut pieces of window stock (Part O) and fit these to the cab windows from inside. Use Micro-Scale Kristal Kleer or other clear-drying adhesive to glue in place. Make sure the top of the pieces are low enough to clear the roof insert.
- ★ The yellow used on our sample is a mixture of Polly S BAR Yellow and Earth -- blended to warm up (redden) and slightly dull the yellow.

Detailing

- ★ The air tanks (BVM #407, sold separately) were added to the underside prior to painting. Small pieces of 020 wire were added for piping.
- ★ After the basic paint job was completed, I added a “canvas” radiator screen. It’s actually just a scrap of ordinary paper with a piece of 010x020 styrene glued across the bottom. With a little bit of thinned paint, the paper curled just enough to suggest canvas. I also added a piece of thread and a Grandt Line #108 Eyebolt to create a tie-down. The thread was painted with diluted earth-color paint. (See color photos.)
- ★ The brass mesh for the doors and radiators (Special Shapes #2709 shown) were painted separately and installed after painting the loco.
- ★ The front grab-irons were formed by curling 020 wire around the shaft of a small screwdriver. They stand about 2’6” tall over the deck. These were added after the loco had been painted and the initial drybrushing (heavy weathering) had been done.
- ★ **Additional details:** The small metal toolboxes are included in the BVM #407 air tank / toolbox combo. The shovels are Berkshire Valley castings. The bell is a Grandt Line #105 with a piece of curled 012 brass wire added to form the cord. The chain is from Builders-in-Scale.
- ★ The heavy weathering was achieved thru a combination of techniques. The body was drybrushed with a variety of earth and gray tones ... some of these were blended back by drybrushing the body yellow over the weathering. Lots of chalks were applied, mostly black and browns, but also some yellows (to “fade” the paint in places) and dark orange to simulate rust. After the dark orange was applied, it was muted with light and dark browns.
- ★ Most of the detail parts were set in place with small dabs of Micro-Scale Kristal Kleer, since it dries clear.
- ★ Boulder Valley Models is owned & operated by Dallas Mallerich -- an On30 modeler who shares your interests and enthusiasm. Please feel free to write or email with any questions or ideas that you may have!
- ★ **Thank you for your continued support, interest, ideas and encouragement!**

-- Dallas

Boulder Valley Models

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