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Seaboard Air Line B7 "Turtleback Roof" Boxcar (O)

NOTE

This kit was designed by Smoky Mountain Model Works, Inc. in Solidworks using 1940 Pullman-Standard drawings supplied by John Degnan from the Illinois Railroad Museum collection. Photos are from several collections and credited when known. The body and ends are printed an Elegoo Saturn Ultra printer at 50-micron (.002") layer thickness. The underframe is a urethane casting made from an SLA pattern.

Only patience and basic hobby tools are needed to produce a top-quality model. Tools you'll need include a flat working surface, hobby knife with #11 blade, assorted jeweler's files (preferably diamond coated), needle nose pliers, Zap-A-Gap® "Medium CA" glue, Zap® "Canopy 560" glue, flat and Philips head jeweler's screwdriver, artist's oils, powders, thinner, and small paint brushes. "Bondo Stage 2 Glazing & Spot Putty"® may be needed to repair any "oops" that may occur during construction.

WARRANTY: SMMW will replace any part(s) found to be defective due to manufacturing or shipping. Send the damaged part(s) to us for replacement and include $10.00 shipping to cover USPS 1st Class mail return in the Lower 48 states only.

LIABILITY: SMMW, Inc. will not be held liable for personal injury or health problems, short term or long term, resulting from the use and/or misuse of tools, adhesives, material, castings, resin-printed parts, paints, or any other product(s) used to construct this kit. This kit is recommended for builders over age 15.

WARNING: This kit contains resin-printed parts that have been washed in 99% Isopropyl Alcohol during the post-printing process and a polyurethane casting (underframe). These may contain materials that during filing and sanding may cause temporary respiratory problems if air circulation or ventilation is not provided. Be sure to work in a well-ventilated area. Wear a dust mask or respirator and safety glasses for maximum protection. Wash hands when finished, especially before eating.

COMMENTS ON THE PROTOTYPE

Pullman-Standard built 500 of the "B7" class boxcar for the Seaboard Air Line Railway in 1941, numbered 19000-19499. Its characteristic feature is the "turtleback" roof", sometimes compared to the B&O M53 and PRR X32 "round roof" boxcars. P-S built a double-door version of the B7 using the same roof pattern.

In 1946, the SAL Railway was reorganized and renamed SAL Railroad. New, larger, "Heart of Dixie" herald appeared during that period to reflect the name change but between 1947 and 1948. "Railway" and "Railroad" decals are included.

PS' boxcar design improved dramatically by the early 1950s when the PS-1 40- and 50-footers were being built en masse. The "turtleback" roof design was very short lived but a large percentage of the 500 cars remained in revenue service well into late-60s. Cars listed in "revenue service" from 1970 to 1977 were likely bad-ordered and stored for repair or disposition and not removed from the ORER. By 1970, the cars had "seen their day" and most were relegated to MOW service where they lasted into the early 1980s. Unlike many PRR and N&W "round roof" cars that were sold off to other lines (NP, DT&I, TAG, OP&E and Texas-Mexican) to run out their "second lives", the SAL cars were outdated and scrapped.

Larry Goolsby provided the following roster info from his collection of Official Railway Equipment Registers. The first number is the year; the second number is the in-service quantity.

1942 – 499 1948 – 492 1950 – 488 1953 – 485 1955 – 483 1956 – 479 1958 – 479 1960 – 476 1962 – 474
1963 – 474 1964 - 474 1965 – 472 1966 – 458 1967 – 339 1968 – 228 1969 – 157 1970 – 40 1971 – 28
1973 – 18 1975 – 10 1977 - 5

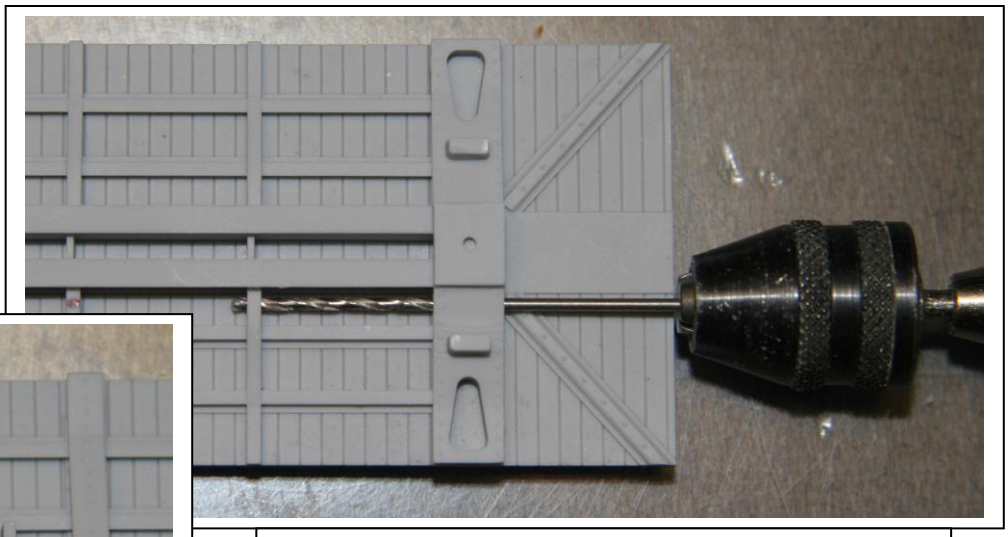
UNDERFRAME CONSTRUCTION

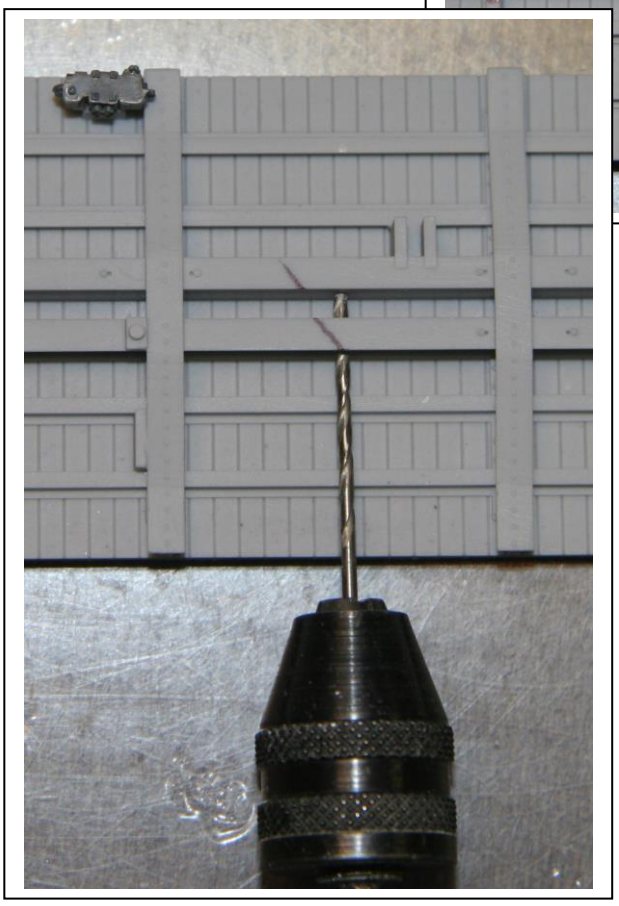
- **Cleaning:** Scrub the urethane underframe casting with "Dawn Ultra" and toothbrush, then wash thoroughly and let dry. Deflash along the edges by scraping an X-Acto #11 blade along the edges. Sand the underframe's flat side with 220-grit paper and wipe clean with isopropyl alcohol (hex nuts or other weights to your liking will be glued on these spots).

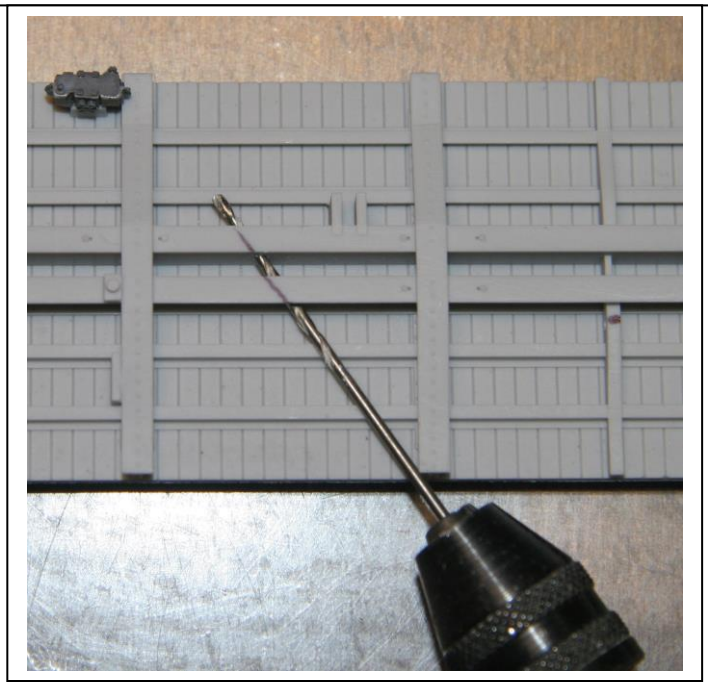
- **CA application tool:** My fancy application tools are short lengths of Tichy's .010" and .020" phosphor bronze wire and a scrap of styrene used to hold a puddle of CA. Simply dip the wire into the puddle and transfer to where you're working. As the wire is used, a "blob" of cured CA forms on the end. Clip off the wire with Zuron® flush cutting pliers and keep going. The wire "tool" lets you put the glue where it needs to be; capillary action does the rest. For larger gluing areas, use a larger wire of .025" or 1/32" diameter.

- **Underframe:** Test fit the underframe inside the body and file if necessary to fit inside the body. DO NOT attach to the body. It's recommended (but not necessary) to complete the underframe and its various parts prior to working on the body. If you prefer to build the body first, skip to that section.

- **Main air line:** Drill several 1/16" diameter holes thru the bolsters, crossbearers, and centersill for the main air line (follow photos in order, noting the diagonal black marks on the centersill that locate the angled holes). Form and insert the air line in (2) sections from 1/32" diameter "florist" wire provided.







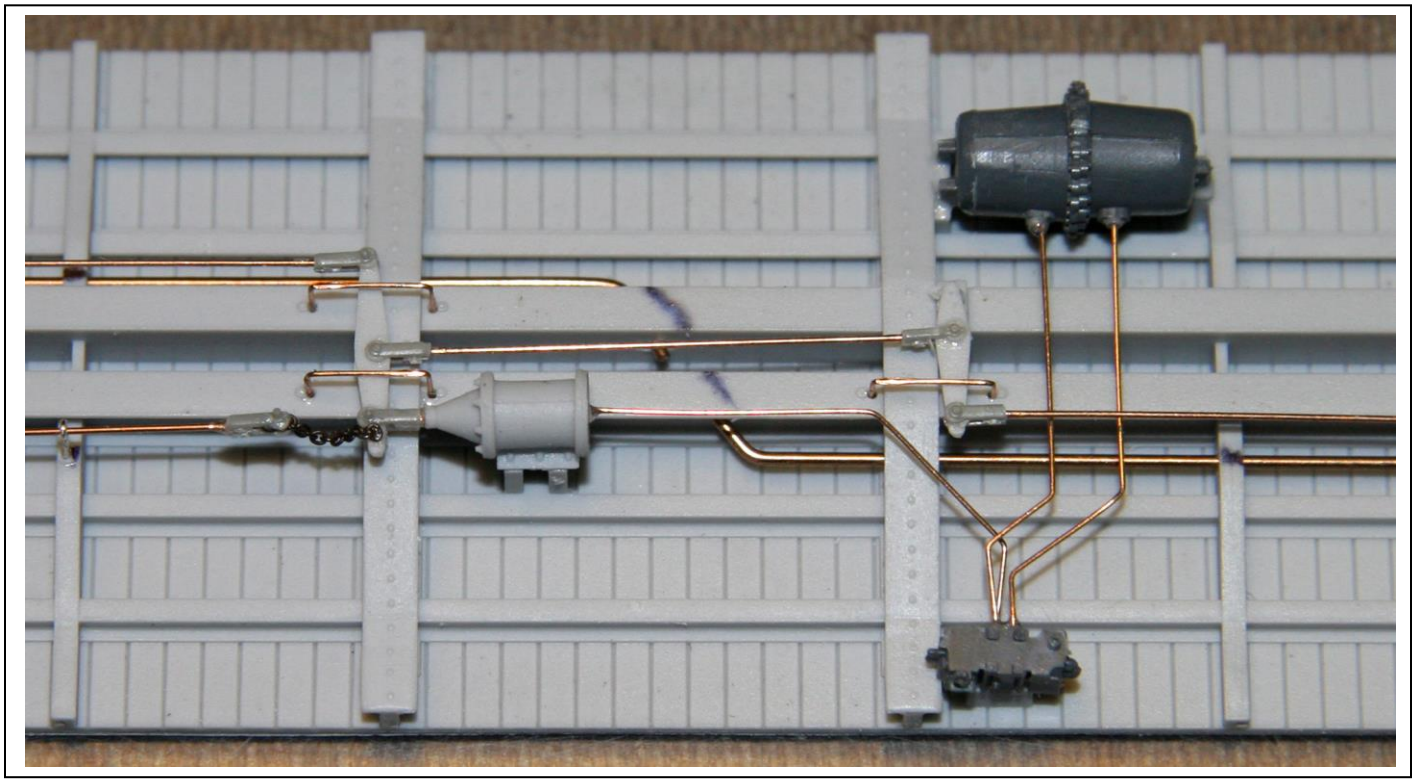
- **"Basic 3" brake parts:** A sprue of San Juan's (former Grandt Line) AB brake parts and clevises comprise the majority of the brake system. Install the AB valve first. Drill #73 holes in the reservoir and CA to the mounting tabs. The brake cylinder represents a car with brakes applied; if you want to model "released", cut off the piston rod from cylinder and clevis from rod, then reattach the clevis against the cylinder.

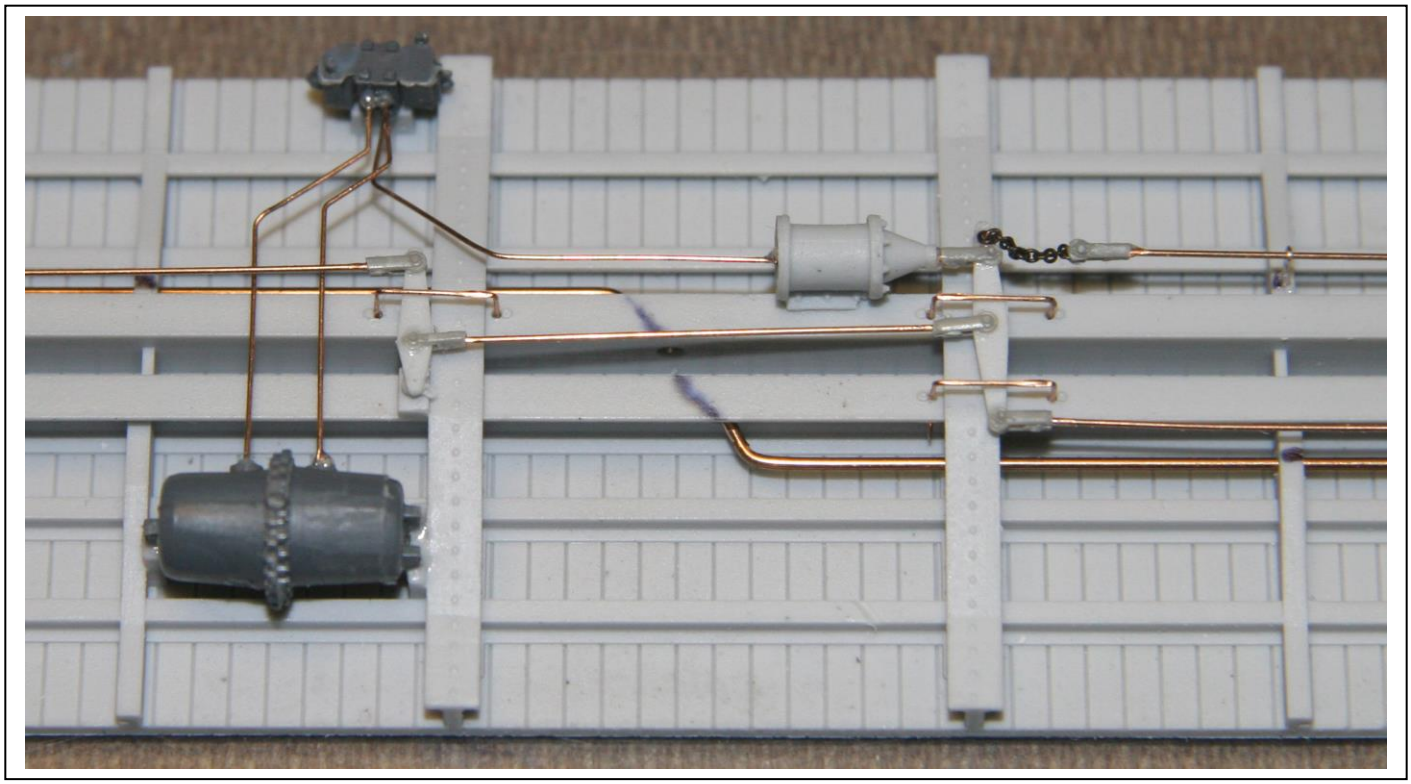
- **Levers and hangers:** Add a long "centered" lever (there is also a "staggered" lever denoted by the widest part being off-center) to the brake cylinder clevis leaving a little extension for the brake rod chain (see photo). CA the small lever to the raised round pad between the AB valve and reservoir.

  Drill #76 holes between the lever rivets on the centersill. Use .015" wire for the brackets.

- **Brake rods:** Construct (4) brake rods from .015" wire and clevises. Each clevis requires minor length-trimming from the Grandt sprue and drilling through the cored hole with a #76 bit before inserting a wire. The brake cylinder rod is made from a 3/8" length of Tichy chain, a clevis, and .015" piece of wire.

Use .015” diameter wire between the reservoir and AB valve and between brake cylinder and AB valve.





- **Couplers:** DO NOT attach coupler boxes/lids until the car ends are attached.

  Drill 1/16” diameter holes thru the box’s screw posts to clear the 0-48 x 3/8” screws provided.

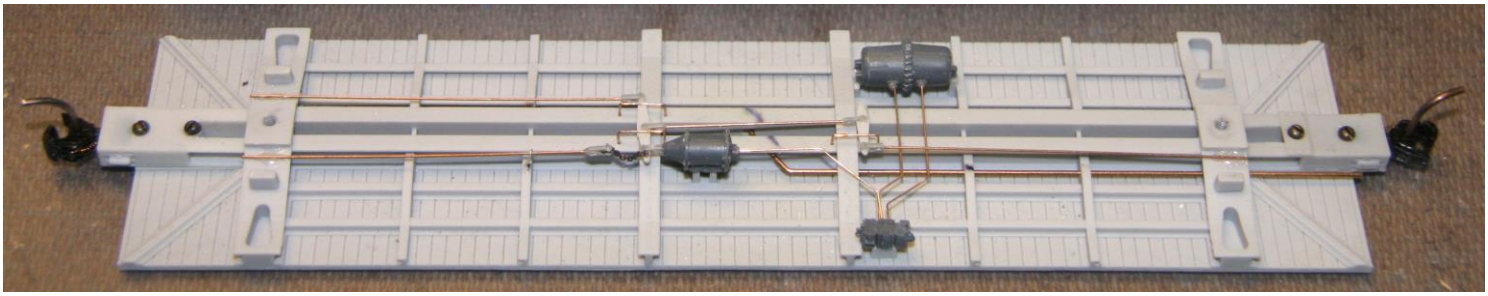
  The C-channels representing the car’s centersill are intentionally “long” to accommodate retrofitting to other manufacturer’s cars. The distance between bolster pin (screw) and the front face (“buffer”) of the coupler box is a scale 66”. Remove sufficient material from the casting and test-fit.

With the coupler box in position, spot-drill the (2) screw locations on the underframe using the same 1/16" bit as above. Remove the box and drill thru the underframe at these dimples with a #61 bit.

Assemble the box, desired spring(s) and coupler, place on the underframe and attach with #0-48 x ¼" screws. NOTE: use 2 intertwined Kadee coil springs to take up some of the room within the shank. More springs will reduce the slack but too many will bind the coupler. Do not overtighten; check coupler centering to test screw tightness. CA the riveted plate over the rear screw.

- **Truck mounting:** Kadee® offers the correct AAR truck in Proto48 and OW5. Follow their instructions to drill bolster holes for screws. No tapping is necessary.

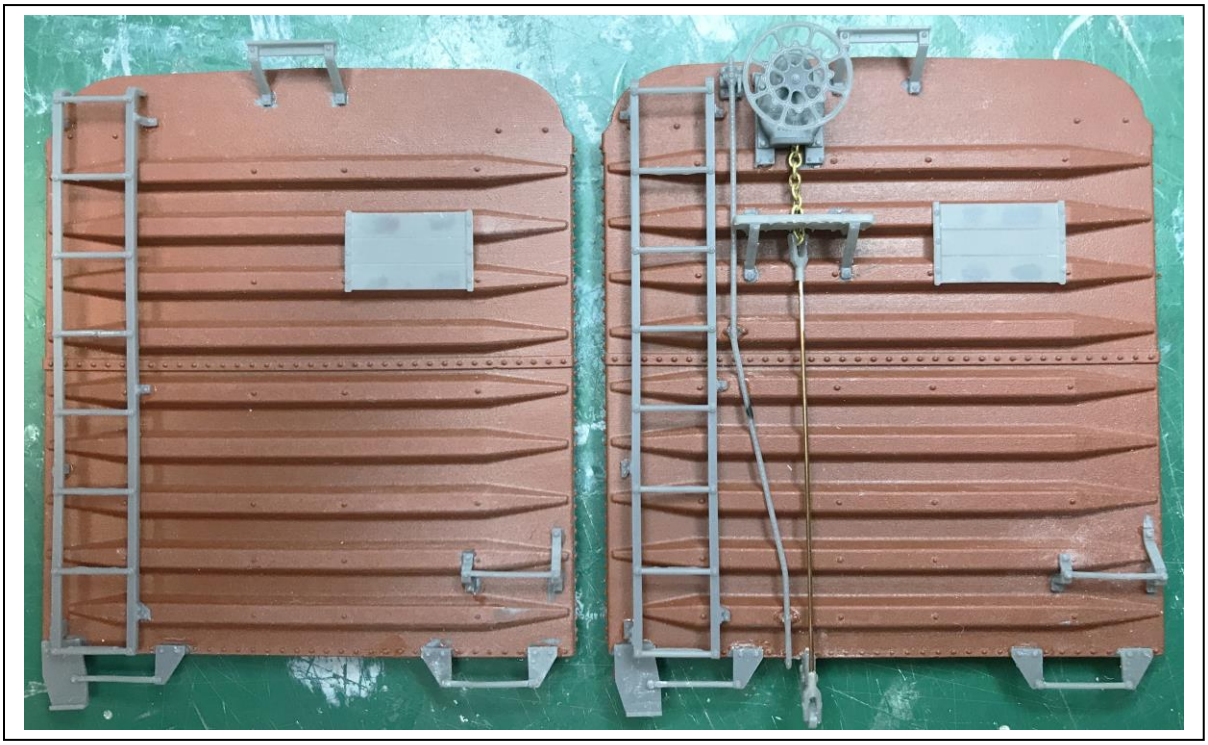
- **Air hoses** are former Keil Line® #48-607 (not included) and should not be added until the entire car is completed and underframe attached to body but prior to painting. The angle cock mounting bracket is attached during construction of ends.



CONSTRUCTION OF ENDS

- **"A" and "B" ends:** The body is printed on-end to eliminate "stairstepping" inherent to all resin-printed parts with curved/angled surfaces. The ends are printed upright. There may be some remnants of printing supports along the bottom surface of the ends that should be removed with light passes of a flat, diamond-coated jeweler's file.

Dimples mark each end for locating detail parts. Printed parts will have a single pin on the backside that are slightly smaller diameter than the dimples. On occasion, use a #63 drill to enlarge the locator dimples. There are as few of these as possible, primarily used to guide you in X/Y part placement. It's up to you to visually align these parts, like ladders and grabs, with parallel surfaces. Examples are the "A" bracket grab iron on far-right corner of each end and the ladders that have (1) pin at bottom-left.



All printed parts have been washed in 99% Isopropyl Alcohol; additional cleaning isn't necessary. However, if you handle these parts "a lot" during assembly, finger oil can transfer to parts that will inhibit paint adhesion. If you feel additional cleaning is warranted, use "Dawn Ultra" detergent, lightly scrub surfaces with a toothbrush, then rinse thoroughly. NOTE: these parts are fragile and some WILL BREAK during washing.

To familiarize yourself with resin-printed parts (shown in grey above), I suggest starting with the "A" end (shown at left) because there are fewer parts. Test-fit each end in the body (the body's roof panels are symmetrical so there is no end orientation). The end should slide easily under the roof leaving a sliver of clearance along each side. If no tweaking is required, start adding parts.

Resin-printed details are supplied on their rafts to maintain protection during packaging. The next (4) paragraphs must be followed. DO NOT "cut corners" trying to save time … your only result will be damaged parts and frustration.

DO NOT cut parts off the supports with clippers or try to pop off with a #11 blade. Doing so **WILL** cause breakage in undesirable areas.

Use a razor saw to cut each support close to the base (called a "raft" in printing jargon) until the part is removed, then gently twist off the remnant between your thumb and forefinger.

The remaining, tiny "nub" doesn't, generally, require additional clean up, such as on the ladders, but you can opt to CAREFULLY remove most of a nub with the diamond-coated, flat jeweler's file. Be sure to support the area between your fingers on one hand while you're filing with the other hand. DO NOT attempt to apply filing pressure on unsupported areas or you GREATLY increase the chance for breakage. (If parts break, you can repair the joint by placing a tiny CA drop with a .010" wire on the broken joint then spraying with "kicker" (Acetone) to accelerate curing.)

Each printed part is printed "flat" (parallel to the printer's platform). This orientation creates the least number of layers but also leaves "droopy" areas on the bottom between supports. Be sure to file this surface on each part to provide a solid gluing surface. Hold a part between your fingers and file the surface with your other hand to avoid breakage. Only a few light passes are needed but this step is critical to getting parts to adhere properly … FLAT … to the base. Example: brake housing.

- **"A" end construction:** Parts were added in this order: tackboard, roofwalk end support, end sill grabs, right-side "A" grab, and ladder.

- **"B" end construction:** Add the ladder first, then the air brake retainer valve & line. Notice there are (2) small mounting pads where the line passes over. You can opt to drill #80 holes on the (2) dimples on each pad, add the line, then form and attach .010" wire "U" brackets or just CA the line to the pads as was done in the photo to speed assembly for these instructions.

  1. Build a subassembly of the brake housing, chain, and upper clevis. Cut an 11-link length of chain, CA an end into the pocket on the bottom of the brake housing and a clevis (printed part … larger than brake system clevises) to the other end. Attach the brake housing brackets to the top rib and flat surface (there are (2) pins/dimples to help you).
  2. Add the grated brake platform.
  3. CA a 2" length of .020" Phosphor Bronze wire into the clevis. Align it parallel to the ladder or retainer air line and place a pencil mark where it passes over the bottom rib.
  4. CA the bell crank to the bottom of the end under the pencil mark.
  5. Place another clevis on the bell crank and angle it toward the brake platform.
  6. Cut the brake rod to fit inside the bell crank. CA the wire to the clevis then the clevis to the bell crank.
  7. Other than the Ajax brake wheel, add the rest of the parts as you did on the "A" end (the brake wheel is susceptible to damage from subsequent steps and should be added last, just before painting.

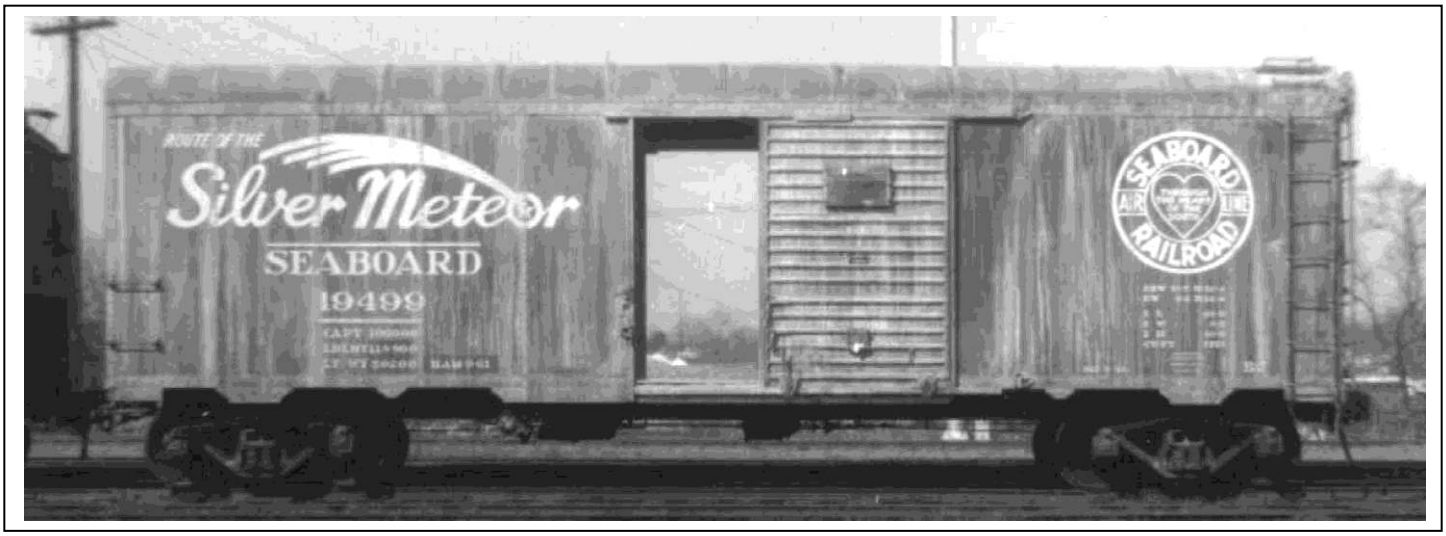
BODY CONSTRUCTION

- **Attach the ends** to the body by sliding under the roof lip as you did when test-fitting the plain ends. Use a tiny CA drop on the INSIDE joint between end and roof to secure in place. Press the sides against the end and apply a tiny CA drop around the middle of the end/body side joint. Hold until it cures (which should be a few seconds). Repeat for the other side. If satisfied with the end's position, add a small bead of CA to the inside joints where you tacked the end by placing a CA drop on a joint and spreading with a wire along the joint using capillary action. Repeat for the other end. You now have a solid body on which to add the rest of the details.

- **Door:** Each door opening is plugged with a removable array of connecting tabs and a central door mounting pad. If you intend to model a partially or completely opened door, remove part or all of this plug, then contact me at jimking3@charter.net to purchase printed doors in the "open" position (these are not supplied in the details part line). DO NOT try to clip or knife-cut the connecting tabs or you can break off a chunk of the body. Instead, carefully cut through each tab with a razor saw, then file the remnants of each tab flush with the body. Removing the rectangular, raised mounting pad which properly positions the door relative to its offset from the body, will require a different mounting technique that's left up to the modeler.

  If you're modeling a car in service many years after the 1941 built date, you'll need to attach styrene door guides on the top track (shown below). Some cars used (2) small tabs welded to the door; some cars used a single long strip welded to the door track. As cars aged, the tracks were damaged and rusted so these tabs were added to keep doors from falling off. Refer to model and prototype photos.

  Add the tackboards and handles in their respective holes.



- **Add remaining body parts:** Ladders, grab irons, roofwalk, and roof corner grab iron (above ladder) can be added now. Use Zap's "Canopy Glue 560" to attach roofwalk to each roof tab, centered in both directions. It's recommended that the stirrups be added after decaling is done as the frequent handling during painting, decaling, and clear coating increases changes of damaging these parts.

- **Painting:** Colors varied depending on era and weathering. The "early years" (1941 to 1947) paint scheme was reportedly very similar to PRR Freight Car Red (or brown, depending on the terminology). Around 1947, the herald size was increased to 56" but it is not known if the color changed. Color photos of cars from the 1960s show a shade of "Red Oxide" and "Freight Car Brown". Both are available as primers in the Krylon line. The latter is called "Ruddy Brown".

  "Ruddy Brown" was used on a previous car. This O scale pilot model used "Red Oxide". The Dupli-Color grey primer is optional; you can spray either the red or brown directly on the car as both are "primers". The Red Oxide was sprayed from the can into a Paasche "H" jar then airbrushed on the parts at 18-20 psi in several light coats. Spraying the model from a can doesn't allow coverage in hard-to-reach areas, especially on the underframe. Krylon dries to the touch in about 30 minutes. The Dupli-Color "Acrylic Glass" was sprayed from the can over the entire car, including underframe, followed by decal application, another gloss coat, and, while still tacky, a few light coats of Rust-Oleum's "Frosted Glass" which provides a matte surface for weathering powders.

  Underframe color was same as the body. Trucks were black. Between end of WWII and 1950, rooftops were sprayed with black car cement.

- **BE SURE** to compare the various prototype pix to the decal layout shown on a black-line sheet with the decals. The B7 had a LOT of paint scheme variations; the decals provide data for (3). For example, the letter width in "SILVER METEOR" varied over the years. The wider letters (included in the decal set) are applicable to as-built into the 1950s with the "RAILWAY" logo, small "RAILROAD" logo (not provided) and large "RAILROAD" logo (provided). "SEABOARD" was moved to the right side of the car under the smaller "RAILROAD" logo and replaced with "S.A.L" above the road number. As the scheme modernized, "SEABOARD" gothic lettering replaced "Route of the SILVER METEOR".

- **Decaling:** Refer to application instructions below. Be sure the Gloss Coat has dried overnight before starting. The black strips (described below) represent painted out areas where new stenciling was applied. Some shops also used a color closer to the body "brown" but are harder to see in photos.

Suggestions for Applying Thin-Film Decals. Avoid sliding metal objects across the characters and excessive flexing of the sheet. DO NOT use scissors to cut out decals.

Use a gloss overcoat on your model and allow to dry completely before applying decals. Use a clear ruler and fresh X-Acto® #11 blade to cut decals, angling the blade toward the center of the decal while cutting. This will taper the decal's edge and make it less visible. It is reported that the decal lettering can be smudged by resting the hand on the sheet while cutting. Use a sheet of waxed paper between your hand and the sheet if handling is necessary.

Small decal text is hard to read due to the thin application of white film on a light background. Fold a paper towel four times to form a thick pad and dampen with tap water. Find the area of the decal sheet you want to cut (refer to the layout included with the decal sheet), place that section on the dampened pad and press down until some of the moisture transfers thru the blue backing paper. As the paper absorbs water, it darkens, creating more contrast with the white text without soaking the film off the paper. Cut out the desired area and follow typical decal processing, outlined below.

Fill a shallow dish with water. Float the decal face down on the water's surface and place on a dry paper towel to absorb excess water. I use a trick from the late Bob Harpe for decal setting solution. Fill a small bottle with 40% Walther's Solvaset®, 40% distilled water, and 20% isopropyl alcohol (used to break the surface tension). While the decal is floating in a shallow dish of water, brush this mixture in the area to be decaled. Slide the decal off the paper backing into the puddle of setting solution, slowly letting the decal push the excess solution ahead as it is positioned.

Move the decal into the final position using a toothpick or equally dull tool to avoid tearing. When mostly dry, poke any air bubbles with a pin or tip of a sharp blade and re-apply the 40/40/20 solution. Repeat this until all bubbles are removed. Lastly, brush on *full-strength* Solvaset® across the surface of the decal, then let dry thoroughly. Use water and a Q-tip to remove excess decal glue.

- Once decals are applied, bubbles have been popped and sealed with "Frosted Glass", weather to your taste. I chose to model a car that was repacked in 1957 and reweighed at Hamlet 1-58 (by FRA law, a boxcar can run up to (4) years with an old repack/reweigh date) and displays some "patch paint" areas where car data has changed.

NOTE: Weathering was applied after pilot model photos were taken.

Artist's oils are very popular, especially when modeling rust streaks. PanPastel powders are the go-to for many modelers when various, "dusty" colors are needed. They don't require drying time as is required with oils. I weathered the car with artist's oils (tubes shown at right). "Paynes Gray" was applied to the roof straight from the tube around and under the roofwalk then outlined the profile with white. When partially dry, "Turpenoid" (a turpentine substitute) was brushed from the white into the black to represent soot and carbody cement leakage over the years.

The roofwalk and corner platforms were galvanized and painted when produced by P-S. It's common railroad practice to leave galvanized surfaces unpainted during subsequent shoppings but this practice depended on the shop and era. Paint does not stick well to galvanized surfaces so peeling patches and edges were common as cars aged. A 70/30 mix of Floquil "Old Silver" and Grey Primer lightly brushed along the top and sides of these parts does well to represent aged, galvanized surfaces but does require a few days to dry.

Burnt Sienna and Raw Umber were dabbed along the rivet lines on the roof (across and along), then streaked downward with a ½" wide brush with Turpenoid. Raw Sienna was used sparingly in areas that may be recently damaged and rusting.

PanPastel browns and greys were brushed around the door locking parts and both rollers to represent oil and grime that migrates along surfaces during many years of service. The "earth colored" brown was used on tackboards.

Lastly, paint was scraped off the tack boards to simulate aged, grey wood (natural color of the printed parts).

When the Turpenoid and oils evaporated in a couple days, black decal strips (Microscale colored sheets) were cut from a sheet and applied to the car, set with diluted Solvaset and allowed to dry. Reweigh and repack decals were applied on top of these strips and sealed with full strength Solvaset. The entire car was then "dull coated" with "Rustoleum Frosted Glass" and let dry.

Air hoses (not provided) are Keil Line #48-607, now offered by Scale City Designs. The mounting bracket is provided.

Kadee "Rice Control" trucks are shown.

- **Car weights:** Attach 3/4" hex nuts (not provided) to the sanded underframe spots using Zap's "Canopy Glue 560". The completed car, including Kadee's "Ride Control" trucks, weighs 16 ounces (1 oz more than NMRA recommendation).

19143: no location or date; reweigh info shows "PTS 12-65" (Portsmouth VA). This is the second paint scheme (smaller logo), superseded by large billboard "SEABOARD" that replaced the Silver Meteor banner.

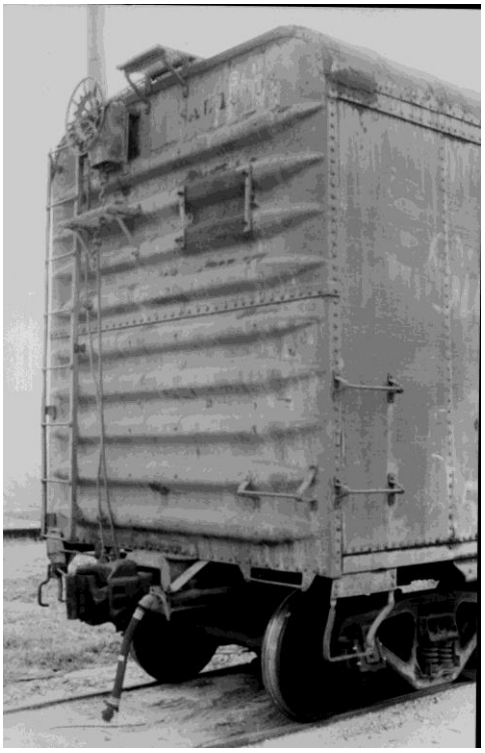
19193: no location or date (as-built paint scheme with "RAILWAY" logo so date could be mid-1940s to early-1950s).

SAL 19208 rolls thru Lawrence, Kansas in July 1955. This was a "half-frame" Kodachrome slide, a technique used by photographers in the 1950s to conserve film (a 36-exposure roll yielded 70+ images but at the expense of quality).

Slide taken by Don Ball; Jim King collection.

Reweigh info appears to read "Jax ?-53" which indicates this car's paint is about two years old.

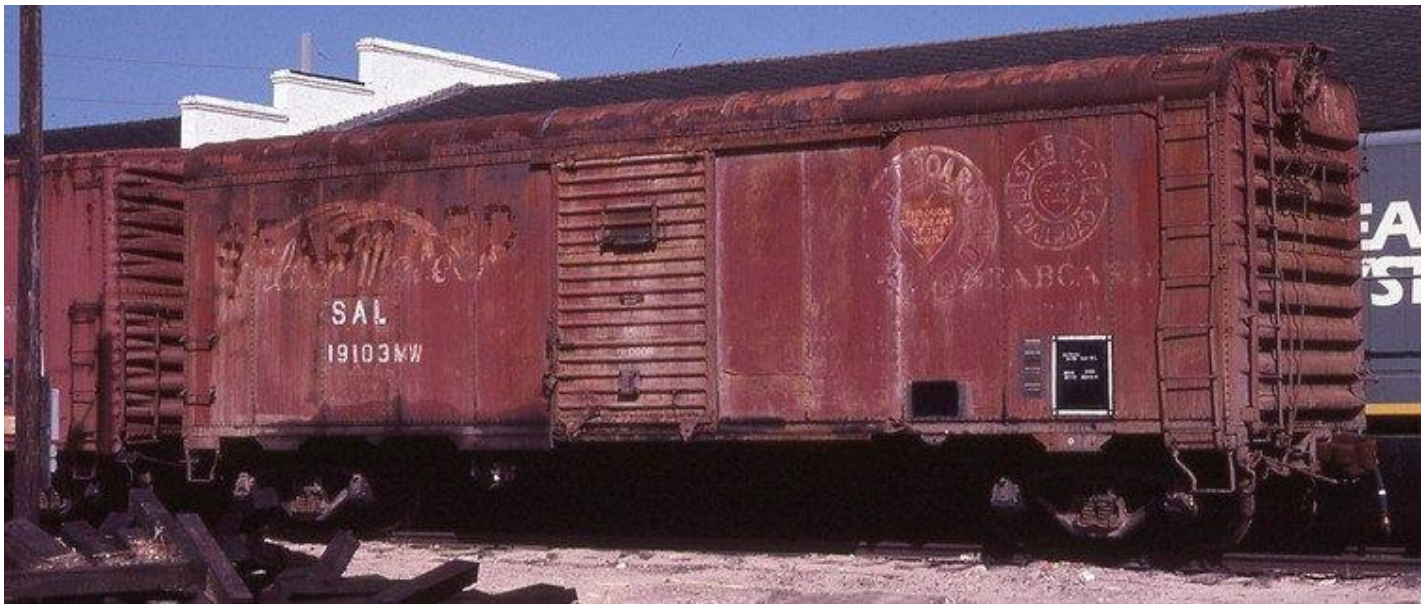
SAL 19208 rolls thru Lawrence, Kansas in July 1955. Reweigh line appears to read "Jax ?-53" which seems appropriate given the overspray above meteor "shower", slide date and clean condition.
Don Ball slide. Jim King collection.



Top (2) & middle: 19103 in MofW service; Sanford FL 1987

Pieter Roos photos (3)

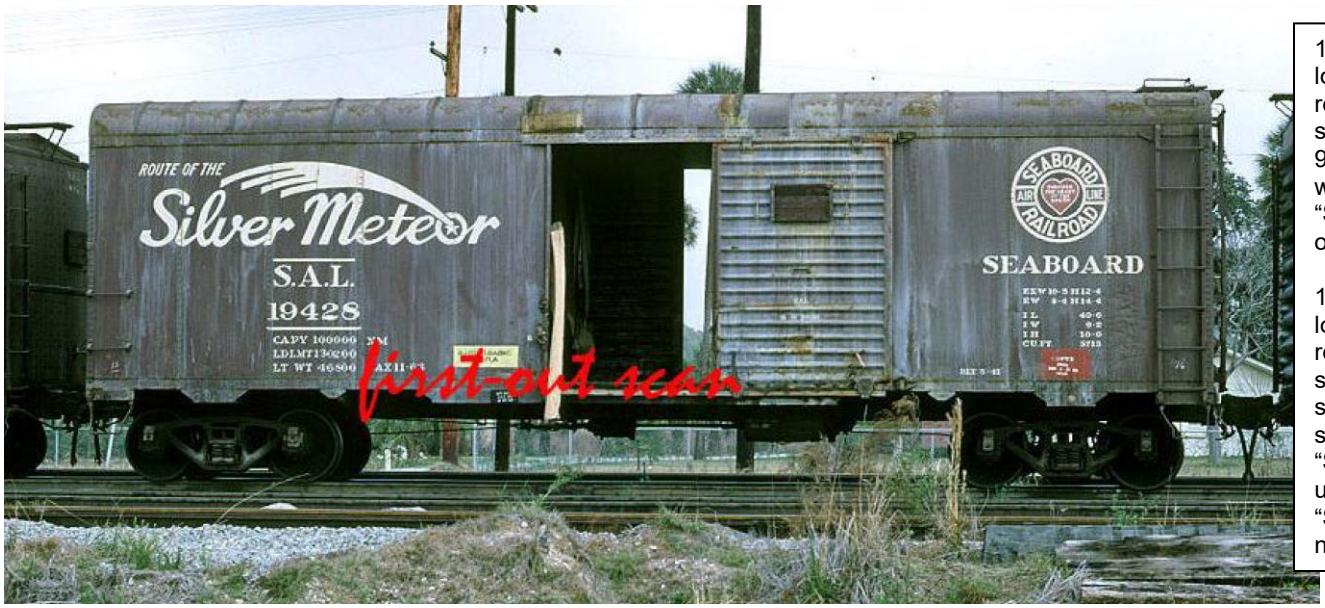
Bottom: 19135 no date or location but reweigh/repacking dates and clean condition indicate this is close to the 1964 dates. Note faint shadow of logo to right of painted logo. Warren Calloway collection.



Top: no location, 1985, wearing (2) paint schemes (same car as in Sanford, FL photos on previous page)

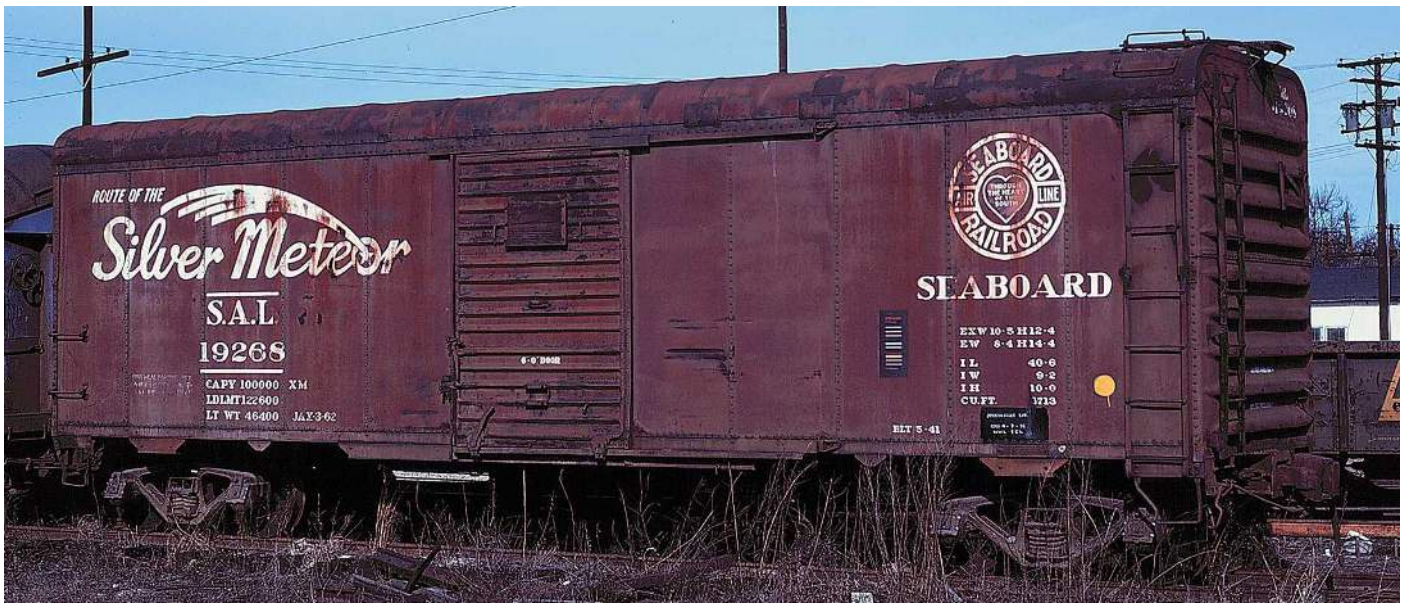
Middle: Bradenton FL 9/59. Note wide "Silver Meteor" letters and longer name compared to 19405 below. Howard Ameling coll.

Bottom: no location, 1968. Note shorter and thinner "Silver Meteor" name. 19264 to the left displays "billboard" name common in the 60s. Jim King collection.



19499: no location or date; reweigh info says HAM(let) 9-61; large logo with "SEABOARD" on left side.

19428: no location, 1969; reweigh info says JAX 11-64; small logo with smaller "SEABOARD" under it and "S.A.L." under name.



This Bill Folsom image shows SAL 19268 in Atlanta, GA at an unknown date, likely assigned to MofW service (note baggage car at left). The Automatic Car Identification (ACI) decal first appeared in 1968. The "yellow dot" wheel inspection at far right appeared in the late 70s. Noteworthy features: numerous roof patches (leakage was a major design flaw), single upper door track "keeper plate", repaired side ladder with new (narrower) top-half section.