

## HISTORY AND INSTRUCTION SHEET:

### NP 59000-59499 and later series 41-FT ACF GONDOLA RESIN KIT (HO scale)

#### Northern Pacific Historical Association

[C. Frissell, ver. 2.1 revised 26 March 2023]



#### HISTORY

The Northern Pacific Railway's long-lived 41-foot gondolas were delivered from American Car and Foundry in 1952-53. The 500 all-steel, solid bottom, fixed end cars were built to a modified AAR design, measuring 41ft 6 in. in length at the outer faces of the ends, 9 ft. 6 in. inside width, and stood just under 8ft 5 inches in height above the rails. Rated at a volumetric capacity of 1807 cubic feet, or 2332 cubic feet with a heaped load, they were constructed with 14 side panels and 13 riveted side posts, solid steel floors, improved dreadnaught ends with

rounded corner posts, and Miner handbrakes. The floors were composite steel and wood, and the cars sported 70-ton A-3 Ride Control solid bearing trucks on 31 ft. 11 in. centers. They received an all-black paint scheme with white gothic block lettering, standard for the era for NP open-top cars. On delivery they were numbered into NP series 59000-59499. The GN received 250 cars of nearly identical design from AC&F in early 1952, with 200 more going to the SP&S.

By the late 1950s many of the NP cars had been repainted, with repaints retaining most of the original lettering style and arrangement, but with the white bars above and below the reporting marks and the manufacturer's stencils dropped. A few cars also saw physical modifications. Car number 59023 was given a removable steel roof at Como shops in 1958 and reassigned to the GBS AAR type, followed by 11 more covered conversions at Como in 1960 to series 57501-57510. A photo of NP 57508 can be found on p. 81 of Todd Sullivan's *Northern Pacific Color Guide*. The covered cars served aluminum plants in Washington state. In 1959-60 ten cars were converted to each haul ten containers of steel foundry sand and steel castings, and renumbered in the series 57000-57009. These cars were still seen in foundry sand service in 1969. These 1959-60 conversions retained their as-built side and end configurations.

In 1967, 100 of the cars were rebuilt by the NP and renumbered into series 59500-59549 (50 cars) and 59550—59731 (50 cars). An additional but unknown number of cars was rebuilt presumably in late 1969, as evidenced by the photo of NP 59778 here, and NP 59772 on p. 82 in the *NP Color Guide*. Rebuilds were scheduled because by the middle 1960s some of the cars were showing structural wear from hard use, with sides and ends slightly bowed from impact and stress. In response NP shops replaced side posts at the middle position and the fifth post inboard from each end with more robust posts that extended below the side sills. These possibly tied in to strengthened connections to the frame crossbearers. End panels were replaced with new ends of nonterminating design fastened to new square angle corner posts. These changes apparently increased car capacity by 30 cubic feet. The cars were also fully repainted into a sort of hybrid pre-merger lettering scheme. Twelve additional cars were given rebuilt ends and side posts, plus ¼-inch steel plate floors for handling ore concentrates, renumbered to series 57900-57911, and assigned to replace aging drop bottom gons in service between the Wallace, Idaho and the East Helena smelter.

In sum, by mid-1969, 22 cars had been converted to covered or container equipped gons, 100 had been rebuilt and updated in 1967, and 358 cars remained in the original 59000-59499 series, presumably in unmodified condition other than repainting and routine repairs, including replacement of some safety appliances. Just eight of the 500 cars had been retired after accidents or severe damage. However, conductors' wheel reports suggest the 300-odd unmodified cars were primarily relegated to nonrevenue service by 1969, hauling ties and other company materials, whereas the cars rebuilt in 1967 and late 1969 were in active revenue service, with loads including lead ore, ore concentrate, iron castings, and machinery. Unlike box and flat cars, the NP did not assign new numbers to gondolas relegated to company service. Car registers show that the NP transferred ownership of many of these cars at various times both to and from to its wholly owned tax shelter subsidiary, Cuyuna Realty--possibly in part so the NP could bill the costs of the rebuilding program to its subsidiary--but that was

apparently a paper exercise, with the cars remaining in service, marked and listed as NP cars in the quarterly Official Register issues.

After the 1970 BN merger the cars mostly remained in their late NP paint. Some were sold or scrapped as early as 1970-73, but many others soldiered on in revenue service through 1982, not scrapped until they approached their 30-year service mark.

This NPRHA model is an updated unibody casting resin kit derived from a kit originally produced by Sunshine Models. The kit and instructions produce a model representing the gondolas as delivered from AC&F in 1952-53, with as-built side posts and the original dreadnaught style corrugated ends and rounded corners. Without too much difficulty the kit can be modified if desired to represent the later rebuilt version.

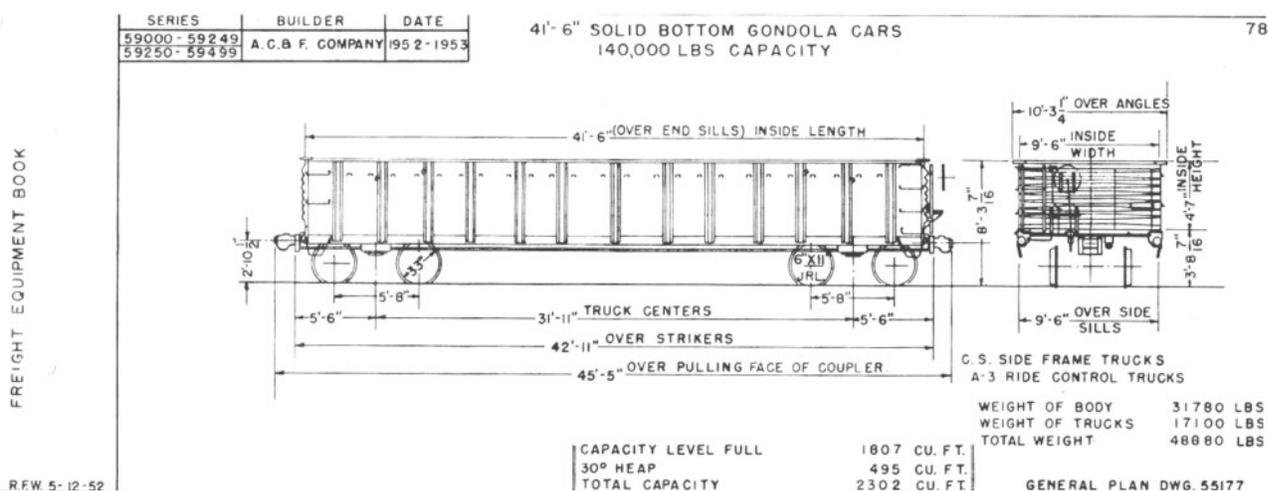


Fig. 1. Equipment diagram drawing for the NP 59000-5499 gondolas as delivered from AC&F in 1952-53.



Fig. 2a and b. A builder's photos of NP 59050 as delivered.



Fig. 3. Two cars from the first series in their as-delivered condition. NPRHA collection, TR Wah10898

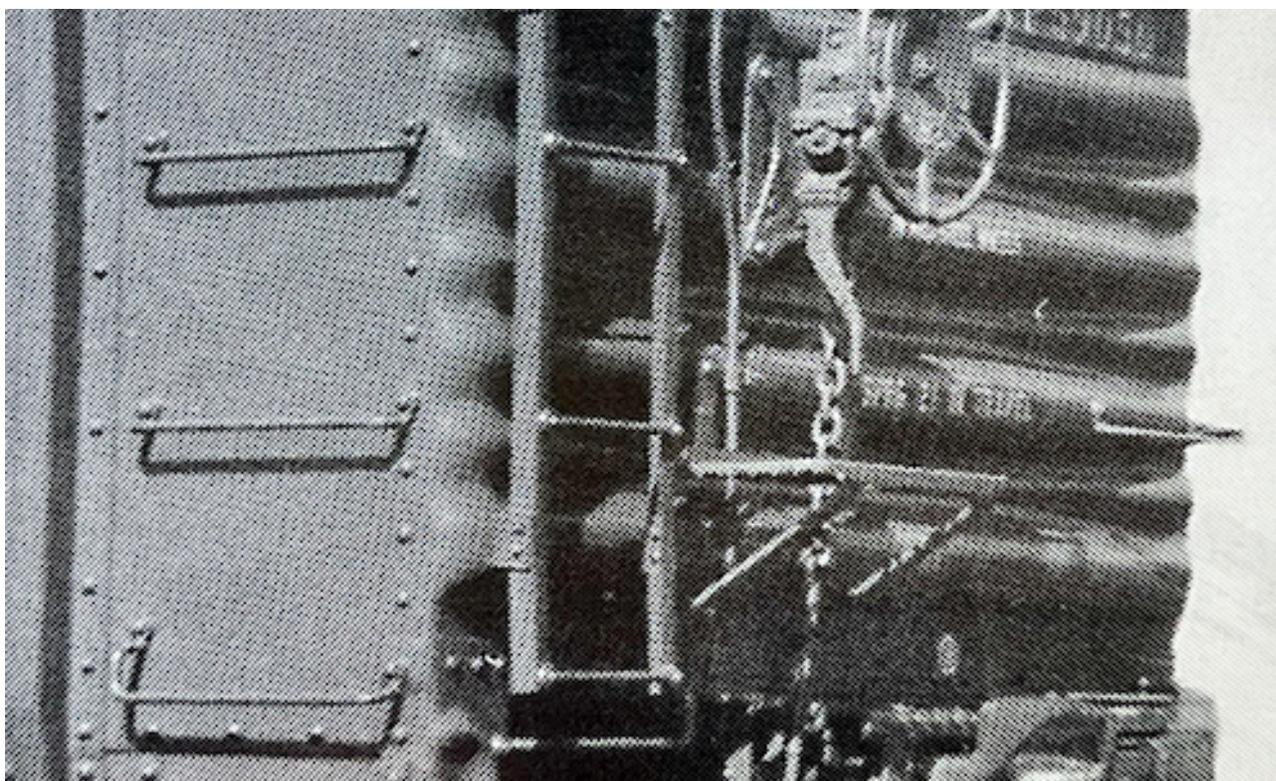


Fig. 4 B end handbrake, ladder, and grab iron detail from a builder's photo.



Fig. 5. NP 59084, as freshly repainted at Laurel shops in mid-1957. NPRHA collection WWANFC-02-052.

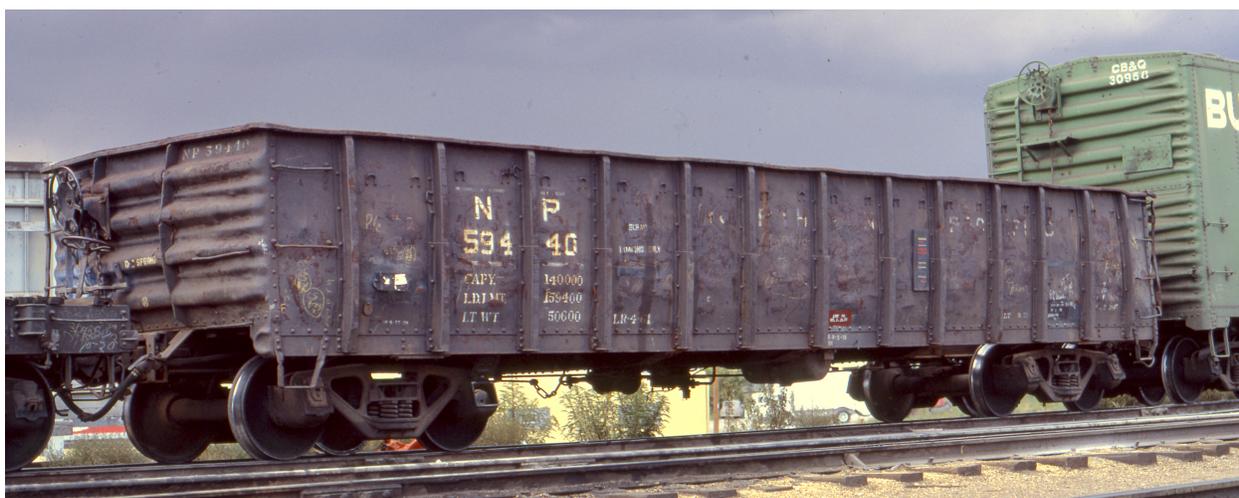


Fig. 6. NP 59440 in the immediate post-merger era. This car, assigned to scrap loading and likely not in interchange service at the time of the photo, was not rebuilt as the following renumbered cars were, but at some unknown time received vertical welded steel braces to reinforce the ends and “standard” drop grabs on the side grab ladders.



Fig. 7. NP 59602, a car rebuilt in 1967. Three elongate side posts, the square corner pieces and nonterminating ends are visible in this view.



Fig. 8. NP 59778, another rebuilt car, with a view of the replacement end. This was “sort of” the standard lettering scheme for the rebuilt cars, though variants occurred. The Wallace cars with reinforced floors for example, lacked the horizontal underline below the reporting marks.

## KIT PARTS PROVIDED

1. Resin cast one-piece body.
2. Resin cast interior floor insert
3. Cast resin parts sheet (underbody and coupler box parts).
4. Tichy AB brake parts sprue
5. 12" of .015" and 8" of .010" brass wire
6. Misc. parts bag, including:
  - a. Tahoe TMW 70-ton A-3 Ride Control Cast Delrin truck frames (2).
  - b. Truck mounting screws (2).
  - c. Tichy Cast styrene ladder (1).
  - d. A-Line #29000 Style A metal stirrups (4)
  - e. Hi-Tech Cast rubber brake hoses (sprue of 2)
  - f. Tangent Steel wire coupler lift levers (2).
  - g. Tangent Etched coupler lift lever mounting rings (2)
  - h. Steel rod for handbrake shaft (1)
  - i. Kadee Cast plastic Miner handbrake wheel (1)
  - j. Tichy Grab irons: straight 18 in. (13)
  - k. Tichy Grab irons: straight 24 in. (3)
  - l. Tichy Grab irons: drop 18 in. (7)
  - m. Tichy cast styrene L-corner gussets (4)

*NOTE: The NPRHA kindly thanks Tichy Train Group, Tangent Scale Models, Hi-Tech Details, Kadee, and Tahoe Model Works for their support in providing parts for this kit.*

## ADDITIONAL PARTS AND MATERIALS REQUIRED

1. Lead sheet or steel stock for interior weight, approximately 1/32-1/16 inch thickness.
2. Scotch or equivalent permanent thin double-sided tape.
3. Cyanoacrylate or cyanopxy cement, thick gel and thin viscosity types.
4. Wheelsets: The Tahoe Model Works A-3 Ride Control truck frames provided are designed to for InterMountain 33-inch diameter metal wheelsets, either profile or semi-scale profile.
5. Couplers: Your choice.
6. Truck spacer washers (2) 0.015" thick.
7. Paint: Your choice of primer, black, and clear flat top coat.
8. Decals: NPRHA #N3210 Gondola "From Scratch" Decals set (\$17.00, will letter 10-30 cars) <https://store.nprha.org/ho-scale-np-gondola-from-scratch-decals/>. For repaint and rebuilds, you may also need NPRHA set #N3209, "Reweigh, Lube & Other Goodies for NP Gondola Cars."

## OPTIONAL PARTS UPGRADES:

1. Archer HO AR88190 gondola retaining clip surface detail decals (tie downs).

2. Miner X-shaped gearbox with lever, Moloco #CA-0305.
3. ACI label decals if modeling late 1967 or later.
4. For 1967-69 rebuilds: Various styrene shapes and sheet to fabricate replacement side posts, and nonterminating ends.

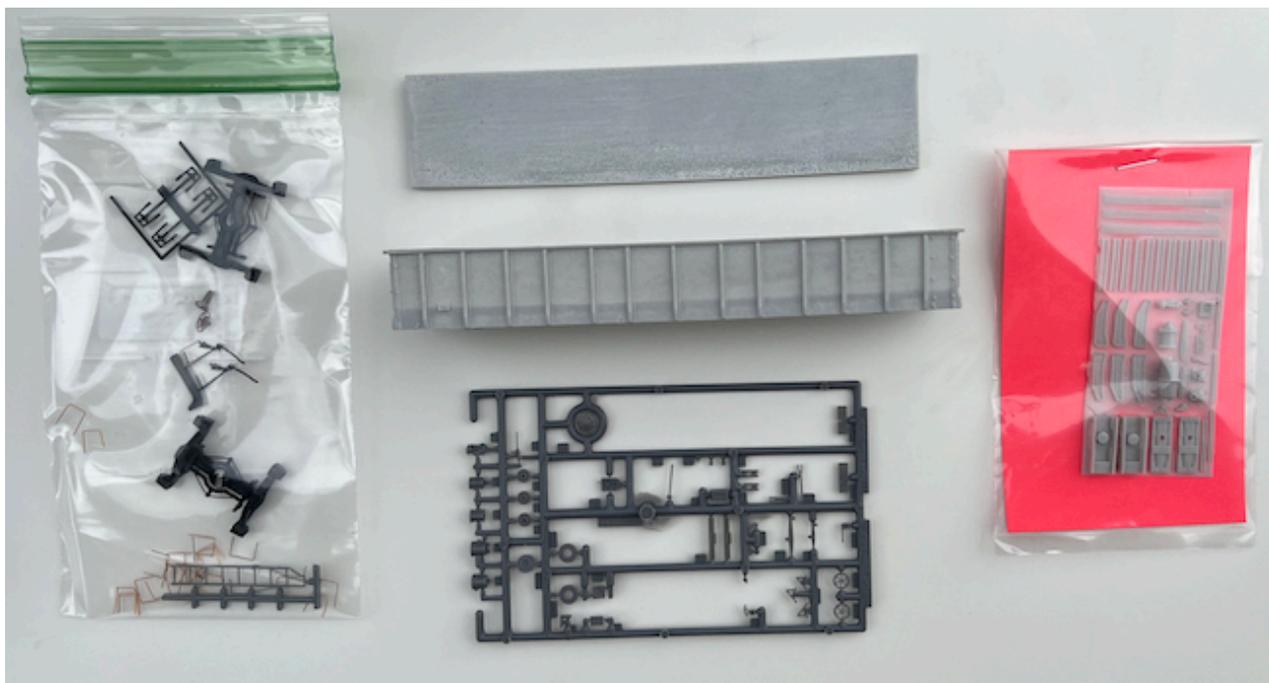


Fig. 9. Kit components, clockwise from left: Misc wire and cast parts bag, body and floor castings, rising detail parts sheet, Tichy plastic brake parts sprue.

## ASSEMBLY INSTRUCTIONS

### I. Body casting and weight

1. **Body casting inspection:** Check the body casting for straightness and any casting imperfections. Turn the casting upside down and lightly grind the casting on a flat block or sheet of extra fine sandpaper to burnish the top sills to remove imperfections. Be careful not to over sand—check frequently to ensure that the top sills remain intact and appear even in thickness (they will be thinner than when you started). One consequence of this treatment is you will lose the cast-in topside detail of the corner gussets—but that detail is not well represented on the castings anyway. If you wish to restore the corner gusset details, you can do so later by installing the Tichy gondola corner gussets listed in the optional parts list above.
  - a. If you find imperfections in the car exterior caused by casting bubbles, now is a good time to fill these with thick cyanoacrylate (ACC) gel, allow to cure, and sand smooth.

2. **Weight:** The shell is designed to carry a metal weight sandwiched between the unibody casting and the separate interior floor casting. You will need to trim lead or other sheet metal of thickness between 1/32 and 1/16 inch to dimensions of HO scale 40ft 6inches length by 6ft 6inches width. This will fit snugly into the depression in the floor of the body casting. Slightly rough up both faces of the metal weight with a mill file or coarse sandpaper, wipe them clean with isopropyl alcohol on a clean cloth, then affix the weight in place with Scotch or other brand permanent double-sided tape. Take care when applying tape and adhering the metal weight, as the casting under the weight well is very thin and easily punctured. Alternatively to affix the metal weight you can use a light application of a high quality cyanoacrylate adhesive, such as Loctite Super Gel Control, Gorilla glue gel ACC, or Cypox. In fact the entire model can be assembled with this adhesive although certain applications may benefit from thinner ACC that penetrates joins..
  - a. *\*\*Note that on occasion ACC has been reported to cause oxidation of lead that can cause weakening of the bonds over time and damage to surrounding materials. The same problem can be triggered by polyvinyl adhesives like canopy cement and possibly other white glues. Hence, if you use lead sheet, we recommend you employ double-sided tape to install the weight, with another application of tape on top of the weight to affix the floor, and a bead of high quality ACC around the edges to affix the floor to the body casting such that glue does not directly contact lead.\*\**
3. **Floor:** Whichever method you choose, be sure to adhere the floor piece not just to the metal weight but also to the carbody floor and sides around the edges of the weight. Note that one side of the floor casting will be smooth, with faint impressions of alternating wood and steel “planks.” This is the exposed topside; the bottom side is rough in texture and lacks impressions. The thin floor casting may appear somewhat warped, but this should correct itself when you insert it into the carbody and adhere it to the metal weight (this is another advantage of using double-sided tape). The floor should be a snug press fit, which helps straighten the sidewalls of the carbody in the event the cast sides displayed a slight inward warp (they often do). For this reason, we recommend you do not shrink the floor insert by sanding its edges! If the floor piece appears looks warped or uneven after press fitting, you can weight or clamp it down flat to the body interior while the glue is drying. One simple method, especially handy if you are building multiple cars, is to cut a simple rectangular wood or styrene block tool of dimensions to fit just inside the body casting, slide it into the gondola interior, then either place a weight on top of the filler block, bind it with rubber bands. or affix a clamp lodged against the center sill, until the glue is cured. However, in most cases the floor should insert and adhere flat and straight of its own accord—assuming your metal weight insert is itself flat, and especially if you use the double-sided tape method.



Fig. 10. Lead sheet weight taped into body casting, ready for floor casting to be affixed.

## II. Grab irons and ladders

1. **Order of assembly** of a kit like this is best dictated by the durability of the parts applied, working from the most robust to most delicate details. Accordingly, we recommend that the next stage of assembly cover drilling of the body casting and installation of the wire grab irons. Later steps will involve mounting of more fragile resin and plastic cast details. Note that bolt head expressions are cast in to the exterior side sides and ends to guide you in locations of holes you need to install grab irons, but in some cases these are indistinct—and if modeling a *ca.* 1950s you may need to altering mounting locations for certain grabs slightly (see below).
2. **Grab Iron Types:** Note the grab irons on the sides and ends of the model are all 18 inches in width. The kit contains several longer (*ca.* 22 inch) grabs to represent the brake lever brackets on the underside of the model. Using the prototype photos for reference you will note that grab irons are somewhat complex on these cars as delivered, in particular for the 4-grab ladders in the far right-hand end panel of each side. You will need to drill the mounting holes accordingly if modeling an as-delivered car, the top grab on this side ladders is a straight grab with mounting holes located *below* the grab attachment points. The middle two are standard straight

grabs with the attachment bolts *above* the grab attachment points. The lower grab on the ladder end is a semi-drop grab, as delivered. You will need to use needle nose pliers to straighten the right hand leg of a drop grab iron, and locate the mounting holes accordingly. Study the photos provided closely. If you are modeling a car mid-late 1960s, it appears most (but not all?) of these cars had that bottom grab changed to a standard full- drop type—so for that you can install unmodified the drop grabs provided in the kit. Note the demonstration model pictured here employs the 1960s retrofit full-drop grab iron at this location. The two grabs on each left end side panel are both 18-inch straight grabs with mounting holes above. The three grabs on each end are also straight with mounting holes above the grab attachment points.

3. **Drilling:** After studying the photos so locate the correct grab mounting positions, start each hole with a pilot depression made by a sharp straight pin mounted in a pin vise, then drill with a #79 drill bit in a pin vise. The sides of the body casting are so thin you will inevitably drill through them. Take care you do not damage the thin wall side castings. If you do cause inadvertent holes in the sides =, repair them now with a dab of thick gel ACC, sanded smooth after it cures and before installing wire grabs.



Fig. 11. Installing trimmed grab irons into drilled body casting.

4. **Trimming:** Before installation, you will need to trim the grab legs short so they do not protrude inside the body shell when mounted. Be sure to trim a few more grab irons than you should need, to make up for the inevitable “fliers.” You want the grabs when installed to project about 0.025 actual inches from the outside face of the side panels. if desired, use a styrene or wood spacer strip of 0.025 inches thick to slide behind the grabs to ensure even grab iron projection. Or the points of your tweezers may suffice to gauge the set off distance.
5. **Installing:** Using strong-grip tweezers or fine-tipped needle nose pliers, pick up a grab iron, dip each short-trimmed end into a small puddle of ACC, and insert into the appropriate mounting holes. TIP: The simplest way to pick up the grabs and any small wire bits is to moisten a fingertip and use that to pick up the grab, and feed it to your waiting tweezers or pliers.
6. **Straightening:** After the glue has cured and everything’s secure, use the needle nose pliers or strong tweezers to grip each mounted grab and twist and torque it very slightly until it looks nicely level and properly spaced. Use a flat needle file to carefully shorten any wire ends that protrude too far into the inside of the carbody. Slight protrusions are fine as they resemble the grab mounting bolts that were visible at these locations.

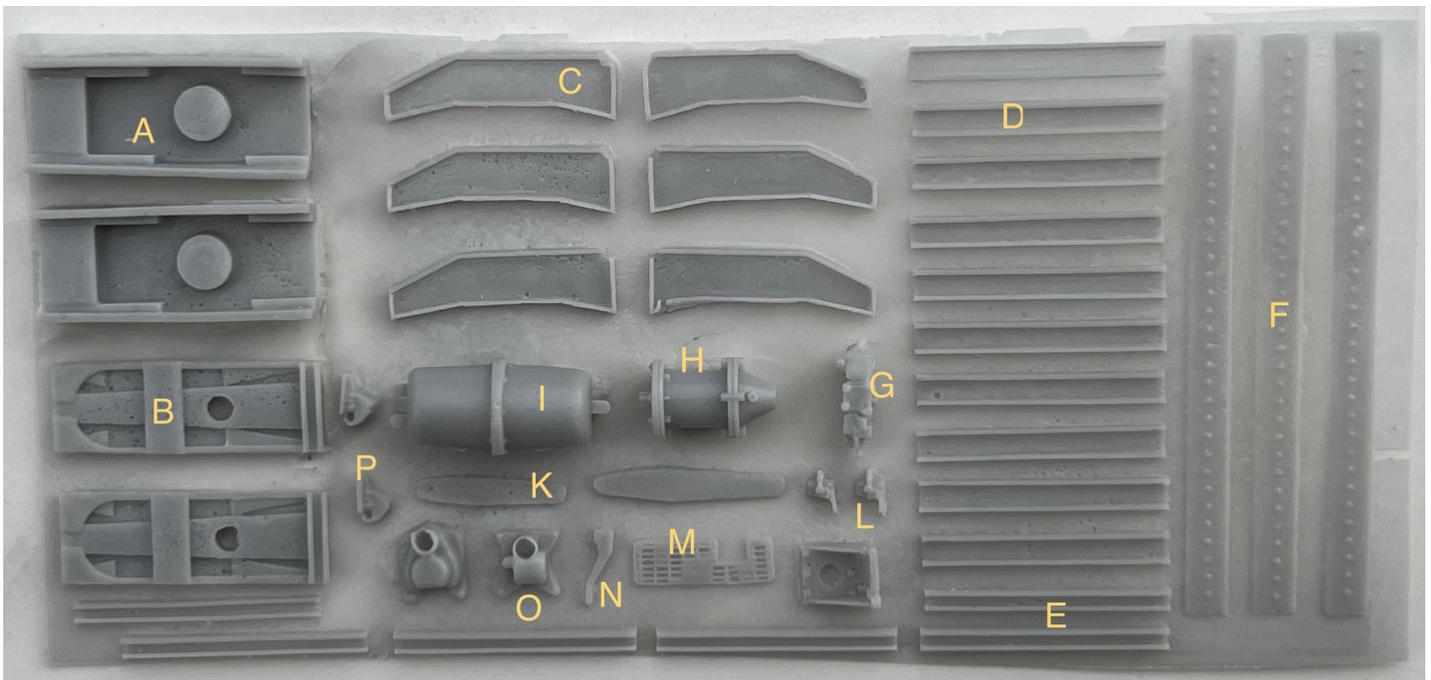


Fig. 12 Cast resin details sheet, parts identification. A = draft gear coupler boxes, B = coupler box covers, C = cross bearers, D= large crosssties. E = small crosssties. F = crossbearer rivet plates.

### III. Underframe

1. **Crossbearers:** The underbody has frame members cast in, but the modeler needs to affix crossbearers and crossties onto these frame members with ACC. Place the model upside down on a flat surface to detail the underbody. When installed the crossbars and crossties should approximately align with the side posts of the body casting, extending from the frame center sill to the side sill at the side post locations. Remove cross bearers from the resin cast parts sheet and sand and clear them of residual flashing. **Crossbearers** are located at the middle side post, and the second side post to either side of the middle post. At this time you should designate one end of the car as the A end and the opposite as the B end. Mark the A and B end designation somewhere on the under frame with a felt tip marker or soft pencil. The center crossbearer should be installed with the angle indented side facing the B end of the car. On the other two cross bearers, the angle indented side should face the nearest end of the car.
2. **Crossties** are located at the remaining side post locations. The larger and taller crossties are installed at all the crosstie locations between the trucks. The smaller, lower-height crossties go at location underneath the trucks, to avoid fouling the wheels.
3. **Rivet plates over crossbearers:** These long plates or straps with rivet detail over lay the crossbearers, and tie the crossbearers together across the center sill channel. Remove them rivet plates from the casting sheet, clear them of flash, and trim and bend angles in them to for a snug fit over the cross bearers. Proceed with caution, because the casting resin used is brittle and thin parts are not easily bent without inadvertent breaks. The rivet plates on our demonstration model broke at several locations during installation; we repaired the breaks as best we could with gap-filling ACC. A close look at the underside shows them to be very rough, but thankfully the repaired breaks are not visible at normal side-on viewing angles. It might be possible to reduce brittleness of the rivet plates by warming them in a hot water bath before bending the angles needed to snug them to the cross bearers.
4. **Draft gear** consists of two parts—an upper casting we'll refer to as the “coupler box,” and a lower casting with surface details that serves as the “draft gear lid.” Now is a good time to ACC the coupler box castings to the underbody in position snug against the body bolsters. Eyeball or measure carefully to ensure the coupler boxes align with the center sill of the car.

#### **IV. Underbody Brake Equipment**

1. **Brake Gear Layout:** Turn the model upside down and rest it on a flat surface. Look at the photo below, and orient your model with the designated B and A ends matching the photo for guidelines on the drilling points needed if you wish to model the full air piping. Note in the photo, the A end is to the right, and B end is to the left. Use a Sharpie or other pen to mark the locations of triple valve, air reservoir, and brake cylinder. You can also mark the locations on the center sill of the brake levers that attach to the air cylinder arm and brake rods at this time.

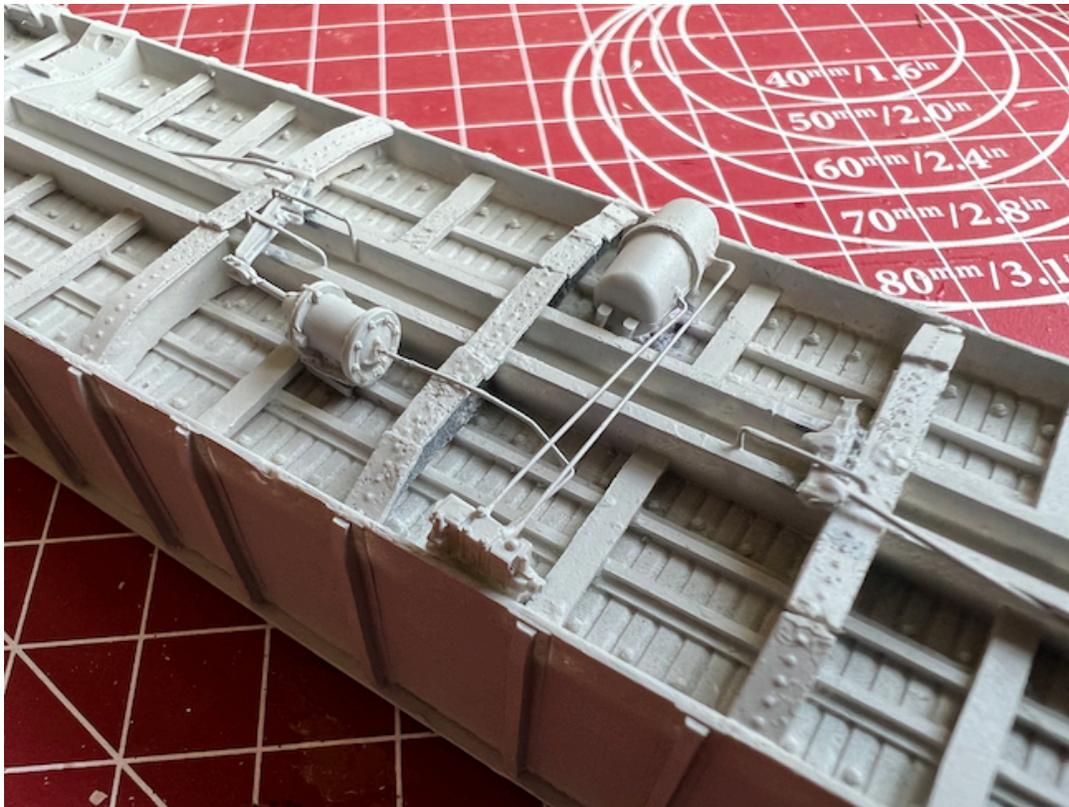


Fig. 13. Underbody brake detail arrangement. The modeling is far from perfect, but Location of main components the general arrangement of the piping is in the ballpark. Note, missing in this photo is the long rod running down the middle of the center sills to connect the two brake levers.

2. **Brake equipment components:** Cut the air reservoir, triple valve, and brake cylinder castings from the resin detail sheet. Now is the best time to drill the needed airline holes in these parts. while the parts are still attached to the immediately surrounding casting flash to help give a firm finger hold. Orient the transversely mounted air reservoir so the double mounting bracket end abuts the center sill and the single mounting bracket on its end abuts the side sill. Drill two #78 holes on the side facing the A end of the car for the air line connections, as seen in the photo. The using the same a #78 bit, drill three holes in a triangle arrangement, two above one

in the inside face of the center component of the triple valve. These are where the wire representing air lines will join the triple valve. A close look should reveal faint circles to guide the drilling. Take pains to stop before the drill penetrates the outside face of the triple valve. Next, with the #78 drill out the dimple in the center of the blunt end of the brake cylinder. This is for the airline connection between the triple valve and the brake cylinder. Finally, with a bit of about #75 size, drill out the end of the conical tip of the air cylinder. This hollow is where the actuating rod and clevis casting from the Tichy plastic sprue will connect to the air cylinder. On a sanding board or similar flat surface, sand the “topside” surfaces (the surfaces that will attach to the underside of the car) of the triple valve, air reservoir and brake cylinder until the casing flashing is easily removed.

a. **Glue the triple valve and air reservoir** in the properly marked locations on the underfloor (both should be attached in the space between the center cross bearer and the next crosstie toward the A end of the car).

b. The castings are designed to mount at the correct depth if you do not sand too much material off the cast-on mounting surfaces. Now **sand the brake cylinder** mounting base smooth and trim the edges of the base for a neat appearance.

c. To **mount the brake cylinder** at the correct depth you will need to glue a small “pad” to the inside stringer in the space between the center crossbearer and the first crosstie toward the B end of the case (see photo below). Look for a small channel-shaped rectangle on the Tichy sprue—this works perfectly if you glue the “pad” channel side straddling the stringer, then cement the brake cylinder in place on top of the pad. You can judge the correct height by eye—the airline feed to the cylinder should be at a height that allows that feed line pass just over the surface of the cross bearer. There are two actuating rod and clevis castings on the Tichy sprue—use the longer one, and glue the blind end into the hole you drilled in the brake cylinder conical end, with the clevis oriented such, and at at the correct height such, that a brake lever lying across the center sill can be inserted between the forks of the clevis and lays level on or just above the surface of the crossbearer.

**3. Air lines:** Note the train air line is left off of our demonstration model because from a side view this detail is deeply hidden from view. this kit as designed doesn’t provide clear routing for a train airline, although a motivated modeler could add one with round styrene stock cut into segments to fit between the crossbearers and crossties, snug against the underfloor. After the air brake components are cured and firmly affixed to the underside of the body, fashion the air lines from the wire provided. One L-shaped air line passes toward the B end over the center crossbearer, connecting from the triple valve into the blunt end of the brake cylinder. Two parallel elongate L-shaped air lines pass over the center sill to connect the air reservoir to the triple valve. Trial and error is the order of the day here; bend the air line angles, then set the air line in place and by eye, trim each leg of the line to just a bit longer than you think it needs to be. Test fit it, then trim again, test, and trim until the lines fit in snugly place in their receiving holes and orient properly. Build and attach the air lines in this sequence: a) triple valve to brake

cylinder, b) “inside” line connecting air reservoir to triple valve, then c) “outside” line connecting air reservoir to triple valve. Dab a bit of thick ACC on each end and insert the line into the receiving holes in the brake appliances you are connecting. Add additional tiny dabs of thin ACC to reinforce the air line at joints at the connected parts.

5. **Brake levers and rods:** Next, choose either the levers provided on the case resin detail sheet, or use the parts # 26 and #28 on the Tichy plastic sprue. The longer of the two levers attaches to the clevis of the brake cylinder actuator, that near the crossbearer toward the B end of the car. The smaller level mounts to the center sill to the center sill nearer the A end. You will need to fashion a small rectangular pad of styrene sheet and glue it to the center sill at the lever mounting positions to elevate the levers sufficiently that brake rods connected to them can clear the cross bearers. Install the four long grab irons supplied to represent brackets straddling the the brakes levers and holding them in place. You can either drill #79 holes in the center sills to accept the bracket saddles, or you can simply secure the wire saddles to the inside faces of the center sills with thick gel ACC. Now fashion three wire rods, one to connect the two brake levers down the middle of the center sill, and one each to extend from the lever end to the body bolster area. Thick ACC secures the rods to the brake levers. Affix the far ends of the truck connecting rods to the underfloor of the car near the center sill (unlike the prototype where they connect to the brakes on the trucks themselves) to ensure the rods do not interfere with truck swing. Note, you might need to put slight bends into these truck connecting rods to give them sufficient angle to allow truck clearance.

## V. End Details

1. **End ladders:** Clip off the mounting pegs on the rear of the ladder casting in the parts bag , then trim the rails to make two 4-rung ladders. Affix the shortened ladder section to each end of the gondola just inboard of the left edge of the corner section, by applying small dabs of ACC where the ladder contacts the end corrugations. The locations of brake equipment on the B end will be determined by the space left between right rail of the ladder and the car centerline. See photos for location accuracy.
2. **Retainer valve and air line:** There are a couple of castings of the small retainer valve part on the resin detail sheet, so if you lose or damage one, you have a backup. Alternately, you can use the retainer part #6 from the Tichy plastic sprue. If you are adept at drilling tiny parts, you can drill the retainer with a #79 bit to accept the wire provided. Alternately, you can first affix the retainer valve in correct position on the uppermost end corrugation next to the B end ladder with ACC, then bend and trim the wire air line to correct length and simply glue in place with the top end abutting the retainer casting. On the prototype cars the retainer line turns at a 90 degree angle beneath the B end to run beneath the car.
3. **Handbrake mechanism:** If you spaced the ladder and retainer apparatus correctly on the end, you should have space between the coupler box of the car and the retainer line to install the handbrake gear. The first step is to locate the Miner handbrake gearbox on the resin detail sheet and sand off the flashing. You’re looking for two parts: the handbrake

gearbox with an X-shaped base, and a tiny lever that attaches to the left side of the gearbox. (This type of Miner handbrake was operated by both a standard wheel and a vertical hand lever).

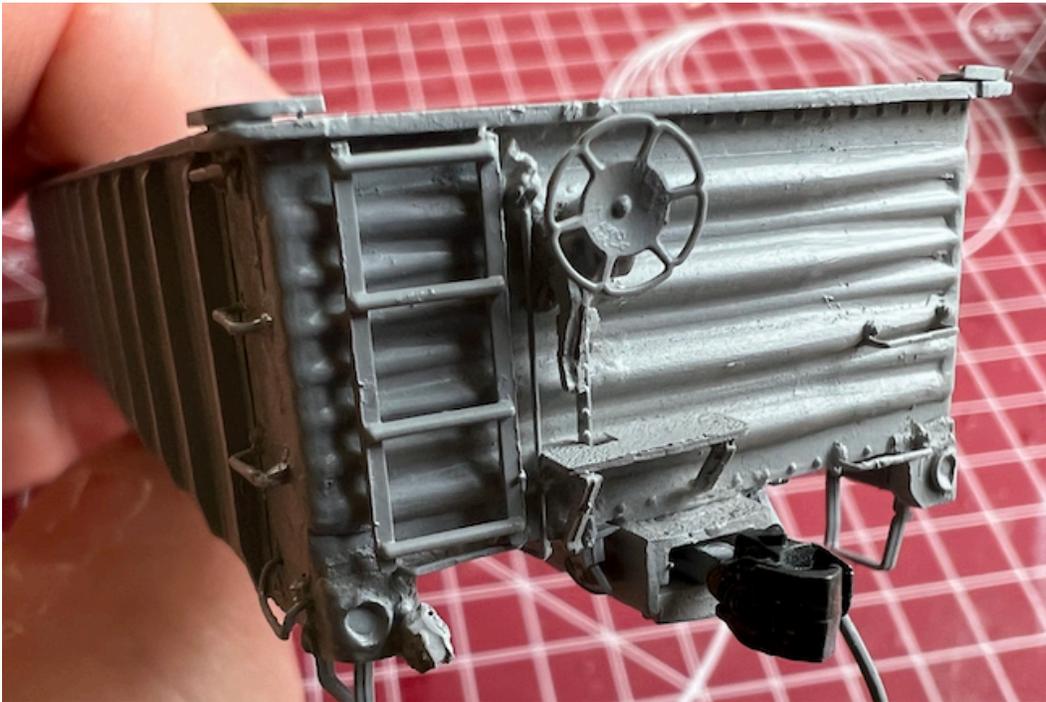


Fig. 14. Completed B end details after a primer coat. Note that a coupler lift lever back has been affixed to the side sill just to the right of the pooling pocket, but lift levers are not installed until all other detail work is completed.

4. **Next drill out the gearbox** where the brake wheel attaches to accept the relatively large diameter axis of the Kadee brake wheel. A #76 bit is about right to start. Drill carefully, test fit the brake wheel, and if the hole needs to be enlarged, we recommend using sharp #11 hobby knife blade or surgical scalpel blade to gently ream the hole to larger size. (Forcing a larger drill bit into the hole can easily cause the casting to crumble. If you do damage the parts while trying to assemble them, consult the parts list for an excellent upgrade for this part from Moloco.)
5. **ACC the brake gear box** in position, spanning the upper two end corrugations. Next ACC the handbrake lever to the flat notch on the side of the gearbox to your left as you look at the B end. Third, locate the longer chain casting on the Tichy plastic parts sprue, and glue the upper end beneath the lower edge of the centerline of the gearbox so that the bottom of the

chain projects just barely below the end sill. Make sure the chain is vertical, and if you located the gearbox correctly, the bottom of the chain should fall just to the left of the draft gear. Glue the chain in place with ACC. Next locate part #22 on the Tichy plastic sprue. This is a bell crank that can be ACC'd to the end sill at the base of the handbrake chain, simulating

6. The 90 degree connection between the vertical handbrake chain and the horizontal brake rod on the underside of the car. (we didn't model the connecting brake rod, however, as it risks interfering with the wheels and truck swing). Lastly, affix the handbrake wheel to the gearbox. ACC adheres poorly to the slippery plastic of the brake wheel. Canopy cement or cyanopoxy is needed for a good hold.
7. **Brake step:** Trim the brake step from the cast resin detail sheet and sand to remove flash and thin the step slightly. Trim the two brake step brackets from the Tichy sprue, and ACC them into place on the B end with their lower legs attached to the end sill and the upper leg attached to the middle of the lowermost end corrugation. ACC brake step to the brackets with the handbrake chain passing through the gap in the brake step.
8. **Coupler lift lever bracket castings** are found on the resin detail sheet. They are a pair of small, vaguely triangular-shaped castings with an angled notch where they are intended to affix to the end sill. Before removing them from the sheet, drill #79 holes clear through where the depressions are visible indicating where wire lift lever will pass through the bracket. Next, sand the back of the brackets and remove the flashing. ACC one bracket to each end sill. Looking at the car end straight on, the lift lever back should be affixed on the far left edge of the end sill, where it abuts the car side. Alternatively, for a sleeker appearance you can use the etched metal lift lever brackets from Tangent included in the parts bag.

## **VI. Trucks and Couplers**

1. **Couplers:** The kit is designed to accept standard HO knuckle couplers. Kadee whisker couplers fit the coupler boxes well. With the model still resting upside down, insert the coupler, pinching the whiskers with tweezers to ensure they are seated inside the box. Properly seated the whisker springs will help hold the couplers in place while you apply a very slender thread of thick viscosity ACC to the upper edges of the coupler box and affix the draft gear covers in place. Alternately, you could drill each draft gear lid and the center of coupler box pivot nub to accept a small screw (that you'll need to provide) to secure the covers in place. Finally, check to ensure the couplers swing freely within the draft gear and return to center. If they don't, pry things apart and try again. As a final step, we recommend applying a very sparse dab of thin ACC to flow into and help secure the joints between the draft gear lids and the coupler boxes, because when the car is in service there can be substantial pressure on the couplers leveraging force against coupler box components. Once this is dry, check the couplers again for free swing and centering.

2. **Trucks** provided in the kit are Tahoe Model Works 70-ton solid bearing A-3 Ride Control type, correct for all of the NP cars. These trucks are designed for optimum performance with InterMountain Railway 33-inch diameter metal wheelsets, either standard tread width or semi-scale narrower-tread. If you substitute other wheelsets, make sure they have the equivalent axle length of 1.006 inches (1.002 to 1.008-inch tolerance).

3. **Truck mounting:** Measure to determine the exact center of the center pedestal of each body bolster, start a pilot hole at this point, and enlarge the hole with a ca #65 drill. Test fit one of the truck screws and if necessary, enlarge the hole with a larger bit or ream it with the point of a sharp pointed hobby blade. The self-threading truck screw should fit snugly in the entrance of hole. with no play and light resistance to the screw. This creates the ideal conditions for the self-threading screws to cut clean and lasting threads. You will need to add spacer washers 0.015 inch thick between the body bolsters and the truck bolsters to elevate the body just enough that the wheel flanges aren't rubbing against the underbody.

## **VII. Final details.**

1. **Brake hoses:** The molded rubber brake hoses and plastic cast stirrups and provided in this kit are the most exposed and easily damaged components of the model, so we recommend adding these as the last assembly step before painting. The brake hoses install to the side of the coupler boxes. (see photo for location) Test fit the molded air brake hose and drill one #75 hole in the floor near the end sill, and a second hole spaced to fit the rear leg of the bracket mount of the molding. Glue the rubber legs into these holes using thick ACC and let cure.

2. **Stirrups:** In the second run of kits, the stirrups have been upgraded to A-line Style A preformed wire parts. With needle nose pliers, re-bend the stirrup legs to form the correct trapezoidal shape (see photos). The side sills are thickened at the stirrup locations to support the drilling of #76 holes into the side sills for insertion of metal stirrups. For the wire stirrups you will want to retain the cast-on stirrup mount detail on the car sides, aligning the stirrup attachment holes with them. Affix with gel ACC.

3. **Coupler lift levers:** Coupler lift levers are the second most fragile parts after the stirrups. You can install them prior to painting, or you can minimize risk of damage to them by proceeding to the painting and lettering step, then applying the coupler lift levers after all decals have been applied and well-sealed with a flat top coat. In that case you'll need to paint the lift levers flat black by hand as the last step in the project. To mount the pre-bent lift levers supplied in the kit, you first need to clip off the short leg bent into the coupler end of the lever. Then thread the trimmed end through the lift lever mounts. Apply ca tiny dab of canopy glue to the center underside of the couple box cover, in the slot molded at the outer rim of the coupler cover. Affix the trimmed straight end of the lift lever to this location. Add a second dab of canopy cement to the inside of the coupler lift lever bracket where the lift lever joins, to secure the lift lever in place. Make sure the lift lever is oriented so the C-shaped hand hold end protruding from the bracket at the side of the car lies vertical. We recommend canopy cement for securing the lift lever because in the future you may need to remove the coupler box covers

to service the couplers themselves, and in so doing you want to detach the lift lever from the coupler box lid. It's easier to slice through and break a canopy cement bond than an ACC bond to access the draft gear. After the cement cures, touch up the bracket and lift lever with flat black paint to match the carbody.

**4. Top sill corner gussets:** Remove the L-shaped cast styrene corner gussets from their sprue, and thin them by rubbing the backside on fine sandpaper. Affix to the corners of the top sills with ACC or canopy glue.

**5. Optional details:** This model casting lacks the small retaining clips or tie-downs evident along the upper portion of each side panel in the prototype photos. These are small details that aren't visible on the model from very far away, but quite evident in photos of the real cars. If you wish to add them, Archer produced a Surface Details decal sheet #AR88190 that includes these tie-downs. Apply them in pairs to the upper portions of the side panels, as seen in the photos, **AFTER completing the surface prep step in VII.1**. Touch them with MicroSol to help dissolve the carrier film, and prime and paint to fix them into place.

## **VII. Painting and Lettering**

**1. Surface Preparation:** Wash the model under lukewarm running water and scrub very lightly with a soft toothbrush and mild dish detergent to remove random bits of waste material and any casting residues and body oils that can impair paint adhesion. Rinse thoroughly and allow the model to air dry completely. Check to ensure you haven't lost any details during this step.

**2. Priming:** Remove the trucks and set aside. Shield the couplers with bits of masking tape folded over them. Spray the model with an even coat of your favorite all-purpose primer. You want a primer proven to adhere well to metal, resin, and slippery plastic parts, but won't obscure details, and that is compatible with the paint you will be applying over it. We recommend Tamiya Fine Surface Detail Primer, which applies a beautifully thin, even, and durable coat from a spray can (especially if both the spray can and the model are at a warm room temperature of 68-75 degrees F). The Tamiya primer can also be airbrushed on if you desire, and makes an excellent base for either lacquer-based or acrylic paints. Allow primer to fully to cure before the next painting step. For the Tamiya primer, 12-24 hours is sufficient

**3. Body painting:** Paint it black. All black. Paint in several thin, even coats until coverage is complete. Either use a semigloss or gloss paint to provide a smooth surface for decal application, or apply a clear gloss medium like Pledge Floor Finish (formerly sold as Future) to the side panels and ends where lettering will be applied. The NP's gondolas had a glossy appearance when freshly painted or repainted, but of course this faded and flatten quickly with grime and surface wear.



Figs. 15 a & b. Completed model, lettered to represent a car *ca.* 1969 as repainted in the early 1960s. Upgrades on the pictured model include A-Line metal stirrups and Archer Surface Details retainer clips applied to the upper side panels. This model was painted with Tamiya Fine Detail Surfacer primer, under an airbrushed coat of Tamiya acrylic blend of Nato black and flat black. The model was lettered with some decals from each of the two NPRHA sets for gondolas.

**4. Decal application:** The NPRHA decal set N3210 “Complete Decals for NP Gondolas” gives you options for lettering these cars as delivered. If you wish to letter a car as they appeared after repainting in the late 1950s or 1960s, or after rebuilding and repainting in 1967 and later, you’ll likely also want to use NPRHA decal set N3209, “Reweigh, Lube & Other Goodies for NP Gondola Cars.” Consult the photos of these cars from the era you wish to model to decide on the appropriate lettering scheme. Detailed guidance for the identifying the decals needed is provided at this web link: <http://research.nprha.org/Modeling/Instructions%20-%20NPRHA%20Gondola%20Decals%20-%202017.pdf> Follow decal application instructions carefully to minimize visible decal film, which can be especially conspicuous over a black finish. If necessary, you can carefully touch up any annoying decal film spots with a fine brush and the same black you applied earlier.

**5. Detail painting:** Paint the inside and outside faces of the wheelsets, and their axles, grimy black, leaving the treads free of paint. Drybrush the couplers with a very light application of a rust oxide color. With a very fine brush and silver, gray, or or rusty brown paint, touch up the hardware components of air hoses. That’s about it for color!

**6. Top coat:** Spray on the flat clear top coat of your choice. A semigloss finish coat might be appropriate only if modeling a car fresh from the shops.

## **IX. Notes for Modeling 1967 Rebuilds**

**Kitbashing:** This kit can serve as the best available basis for modeling the rebuilt 1967+ gondolas, by replacing the ends and the 5th, 7th and 9th side posts. We modeled such a car by using a hobby knife and saw to cut the kit ends away from the body casting. They were replaced with ends scratch built of sheet styrene, with half round styrene stock applied to the outside and inside to simulate the corrugations. The ends were given new top sills of styrene strip to match those of the cast resin sides. Corner detail was shaved off the ends of the sides, and styrene strip applied to simulate the replacement square corners. New grab iron locations were drilled into the corner stock. On each side, the three posts at the crossbearer locations were planed off the casting and replaced with new, longer posts made of styrene stock joined to form a hat section, then lightly sanded to the correct semi-rounded cross section. If modeling the Wallace ore cars, the floor could be modified or replaced with a styrene sheet detailed to resemble steel plate sheathing rather than the alternating wood and steel floor plank sheathing of the unmodified cars.

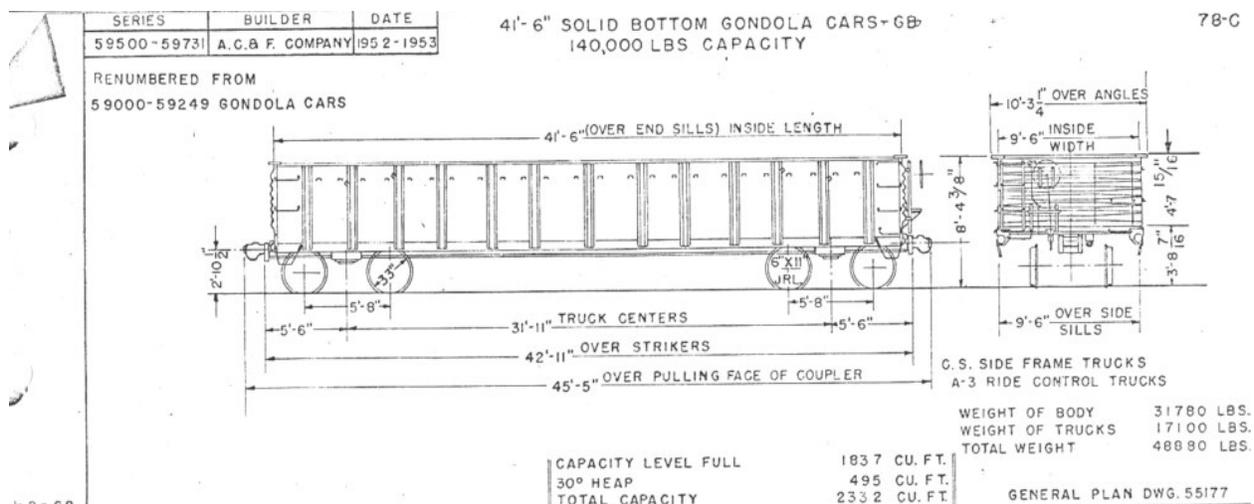
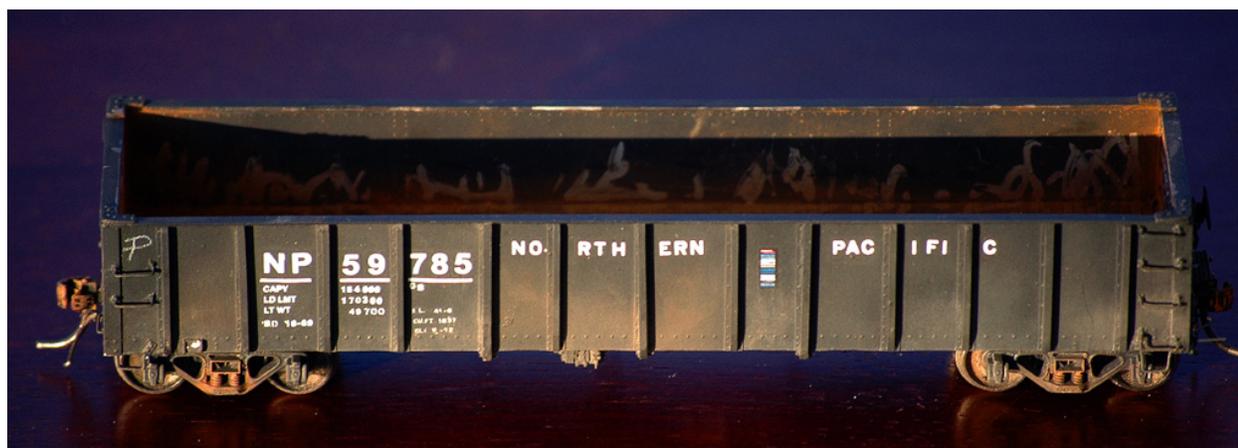
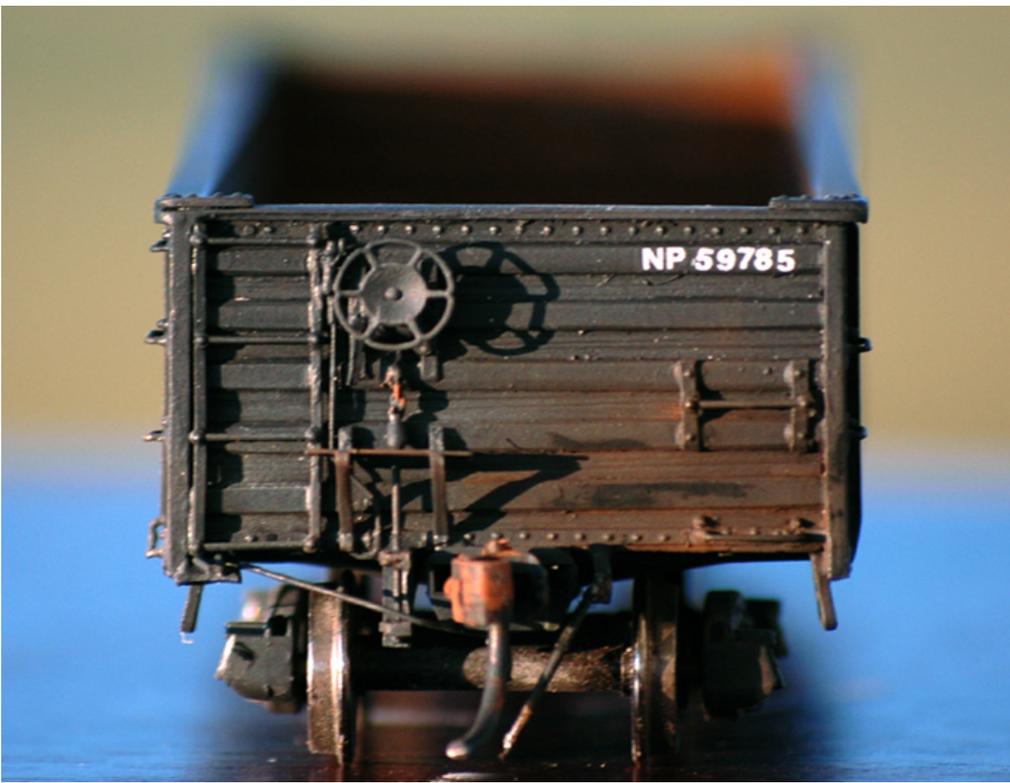


Figure 16. Equipment diagram folio for cars with rebuilt ends and side stakes. Note that although dimensions are revised, the drawing was not re drafted to represent the replacement ends and side stakes.





Figs. 17 a, b and c. Example of resin kit modified to represent a car rebuilt in 1967 or later, with ends replaced with scratch built nonterminating ends, and the 5th, 7th and 9th side posts replaced with longer, slightly fatter posts.

## STOP##