

Phil's Narrow Gauge

Assembly Instructions Part 2
7/8ths Scale Caboose 556
Sandy River & Rangeley Lakes

Part # PNG-784



Tools Needed:

Sandpaper
Wood Glue
ACC Glue
#’s 66, 60, 56, 54, 53, 52, 51, 50 and 47 drill bits
Drill press and handheld “Dremel” type drill
Xacto knife
Needle nose pliers
Diagonal (wire cutting) pliers
Various plastic and metal small clamps
24”, 12” and 6” Ruler
Needle Files

556 Parts List

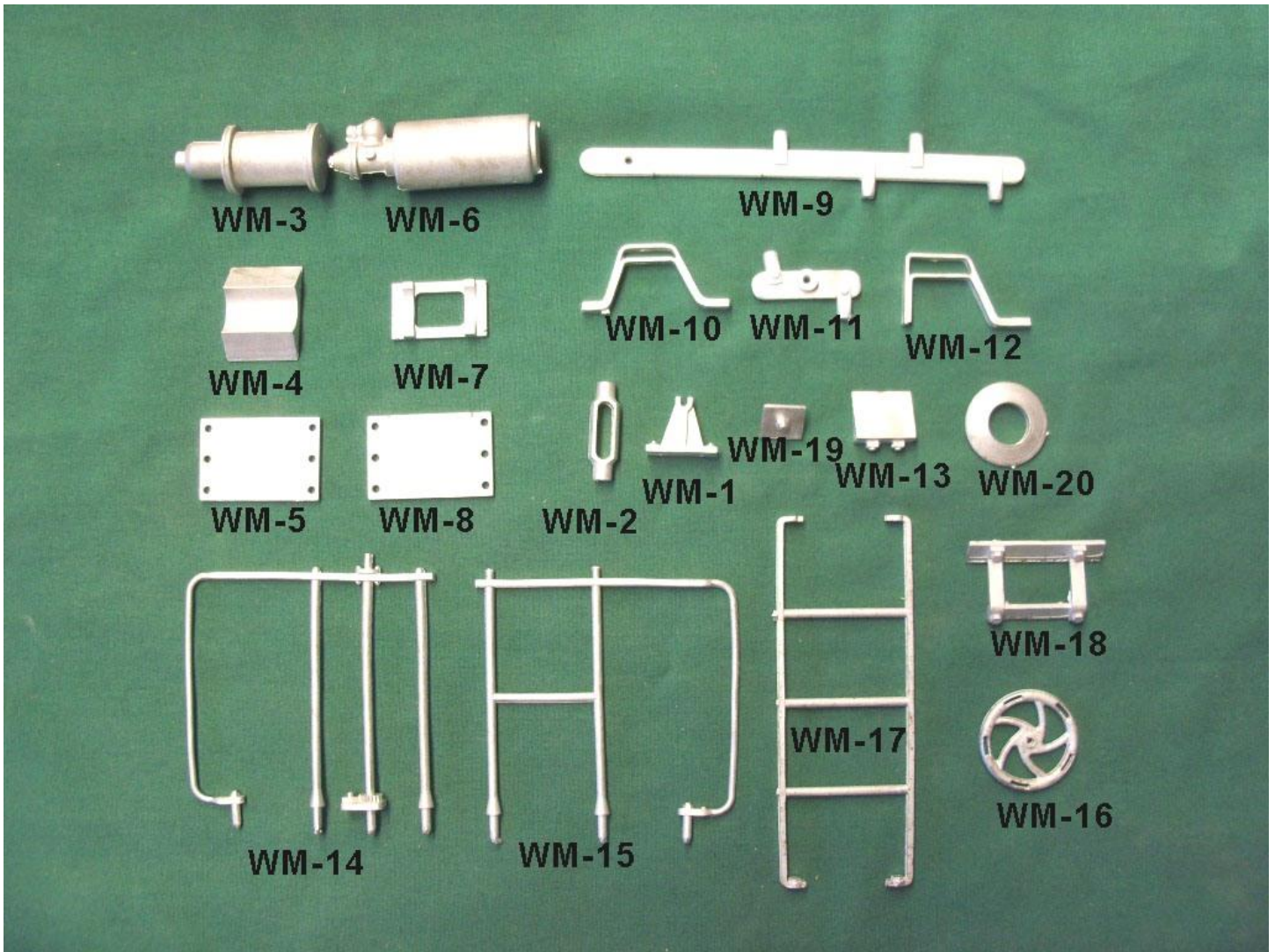
Wood & Plastic

W-1	1 ea.	Frame, Fully Assembled
W-2	1 ea.	Outer A Side, 4 Window Lasered Poplar Plywood
W-3	1 ea.	Outer B Side, 5 Window Lasered Poplar Plywood
W-4	1 ea.	Outer Long End, Door Centered Lasered Poplar Plywood
W-5	1 ea.	Outer Short End, Door Offset Lasered Poplar Plywood
W-6	4 ea.	Outer Cupola Sides/Ends, Lasered Poplar Plywood
W-7	3 ea.	Inner A Side, Short End, Long End, Center, Lasered Poplar Plywood
W-8	3 ea.	Inner B Side, Short End, Long End, Center, Lasered Poplar Plywood
W-9	1 ea.	Inner Short End, Lasered Poplar Plywood
W-9	1 ea.	Inner Long End, Lasered Poplar Plywood
W-10	3 ea.	Inner Cupola Sides/End
W-11	1 ea.	Cupola Seat & Cabinet Bag. 16 Pieces
W-12	1 ea.	Chair Bag. 6 Pieces
W-13	1 ea.	Long Bench (Chair Side) Bag. 11 Pieces
W-14	1 ea.	Short Bench (Stove Side) Bag. 11 Pieces
W-15	1 ea.	Stove Bag. 1 Stove. 3/8" Brass Tube 1-1/2". 3/8" Brass Tube 2-1/4". 3 Pieces Lasered Poplar Base 12 Bricks. 1 Stove Pipe Cap. 1 Stove Pipe Roof Base (White Metal)
W-16	1 ea.	Bag of 4 Platform Steps
W-17	7 ea.	Cupola Roof, 4 Braces, 2 Fillers (between cupola & car sides)
W-18	3 ea.	Short End Car Roof & 2 Braces
W-19	7 ea.	Long End Car Roof, 6 Braces, 2 Rafters
W-20	5 ea.	Center Car Roof, 4 Braces, 6 Rafters
W-21	4 ea.	1/4 Rounds (side door trim), 4.7" Long
W-22	12 ea.	Side Door Bag. 2 Outer, 2 Center, 2 Inner, 2 Glass, 4 Long & 4 Short Hangers
W-23	5 ea.	Long End Door Bag. 1 Door & Glass, 1 brass Hinge Rod, 1 Spring, 1 Custom Rafter, 1 Doorknob
W-24	5 ea.	Short End Door Bag. 1 Door & Glass, 1 Brass Hinge Rob, 1 Spring, 1 Wood Upper Hinge Capture, 1 Doorknob
W-25	12 ea.	Catwalk Supports
W-26	4 ea.	Catwalk Boards. 3/32 x 3/8 x 18"
W-27	9 ea.	Side Windows & Glass
W-28	2 ea.	Cupola Side Windows & Glass
W-29	2 ea.	Cupola End Windows & Glass
W-30	2 ea.	Letter Boards

White Metal

WM-1	2 ea.	Turnbuckles
WM-2	4 ea.	Queen Post
WM-3	1 ea.	Brake Cylinder
WM-4	1 ea.	Brake Cylinder Saddle
WM-5	1 ea.	Brake Cylinder Base
WM-6	1 ea.	Air Reservoir
WM-7	1 ea.	Air Reservoir Saddle
WM-8	1 ea.	Air Reservoir Base
WM-9	1 ea.	Main Brake Lever
WM-10	1 ea.	Main Brake Lever Support
WM-11	1 ea.	Secondary Brake Lever
WM-12	1 ea.	Secondary Brake Lever Support
WM-13	4 ea.	Bolster Terminating Plate
WM-14	2 ea.	Brake Wheel End Rails
WM-15	2 ea.	Ladder End Rails
WM-16	2 ea.	Brake Wheels
WM-17	2 ea.	Ladders
WM-18	2 ea.	Catwalk End Supports
WM-19	4 ea.	Truss Rod Square Nut Bolt
WM-20	1 ea.	Stove Pipe Roof Base

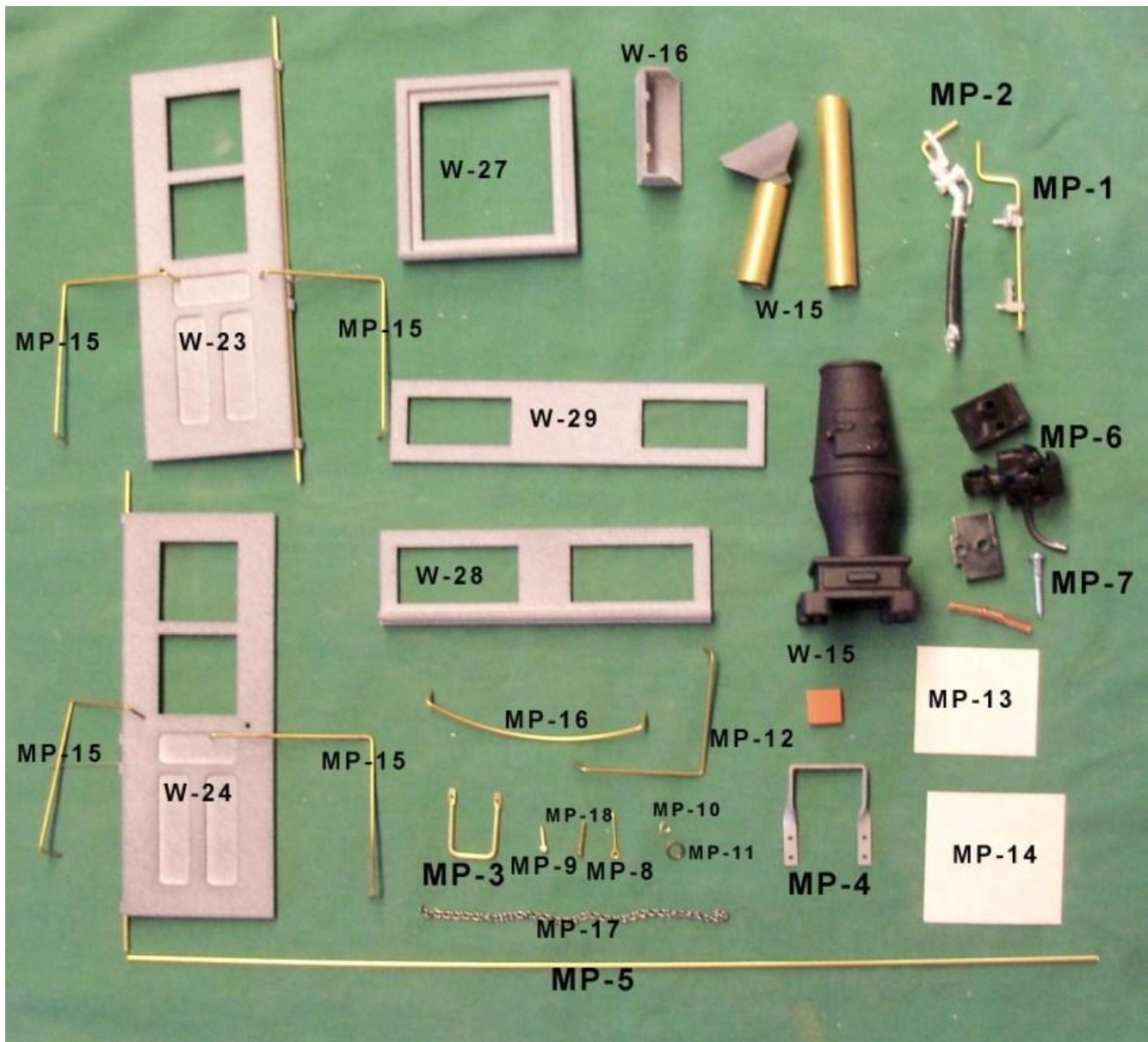
White Metal Parts



Misc. Parts

MP-1	2 ea.	Coupler Lift Bars
MP-2	2 ea.	Brake Hose Assemblies
MP-3	1 ea.	Brass Wire Main Brake Lever Limiter
MP-4	2 ea.	Stainless Steel Strap Steps
MP-5	4 ea.	Brass Rod, 1 foot long, 1/16" Diameter
MP-6	2 ea.	Kadee Couplers
MP-7	2 ea.	#4 Wood Screws for Kadee Couplers
MP-8	12 ea.	Eye Pins
MP-9	50 ea.	Brass Nut Bolts
MP-10	6 ea.	3mm Jump Rings
MP-11	2 ea.	5mm Jump Rings
MP-12	4 ea.	Cupola Grabs
MP-13	80 ea.	Roof Tiles, 1.3" X 1.5"
MP-14	20 ea.	Roof Tiles, 1.6" X 1.7"
MP-15	4 ea.	Platform Grabs
MP-16	4 ea.	Car Ends Curved Grabs
MP-17	1 ea.	5" Chain
MP-18	2 ea.	3/64 Rivet (roof hold down)
MP-19	4 ea.	Side Door Grab Irons

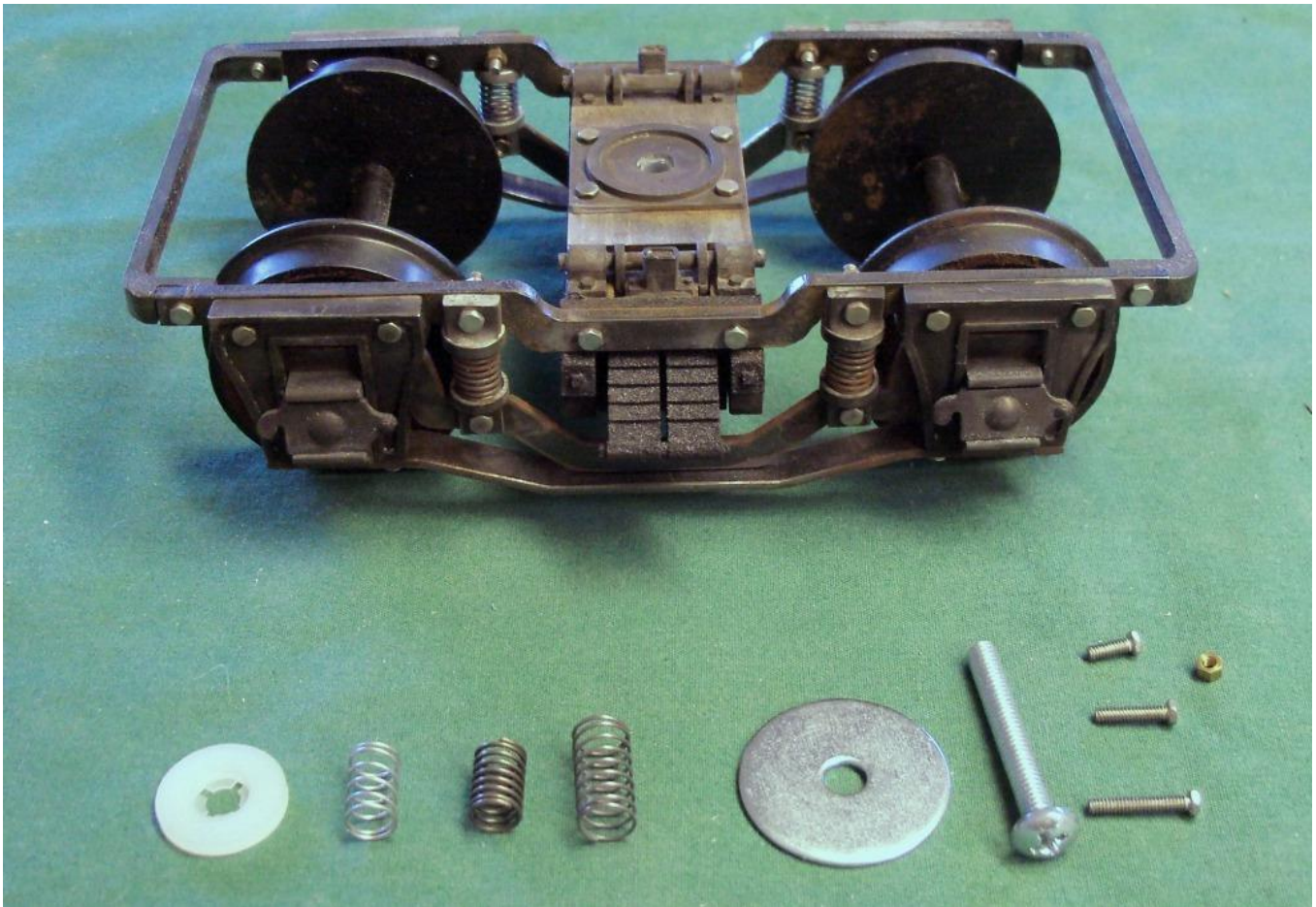
Misc. Parts



7/8ths Passenger Trucks

TR-1	2 ea.	Trucks, Assembled
TR-2	2 ea.	5/8 White Nylon Washers
TR-3	2 ea.	1-1/4" 8/32 Machine Screws
TR-4	12 ea.	Springs. 8 Installed, 4 Spare 6-8 lb Car Weight
TR-5	12 ea.	Springs. Alternate Springs for 4-6 lb Car Weight
TR-6	6 ea.	Truck Mounting Springs
TR-7	2 ea.	1" Fender Washer
TR-8	----	Misc. Spare Parts. 2/56 Thread by 1/4", 3/8", 1/2" Stainless Bolts & Brass Nuts

Trucks

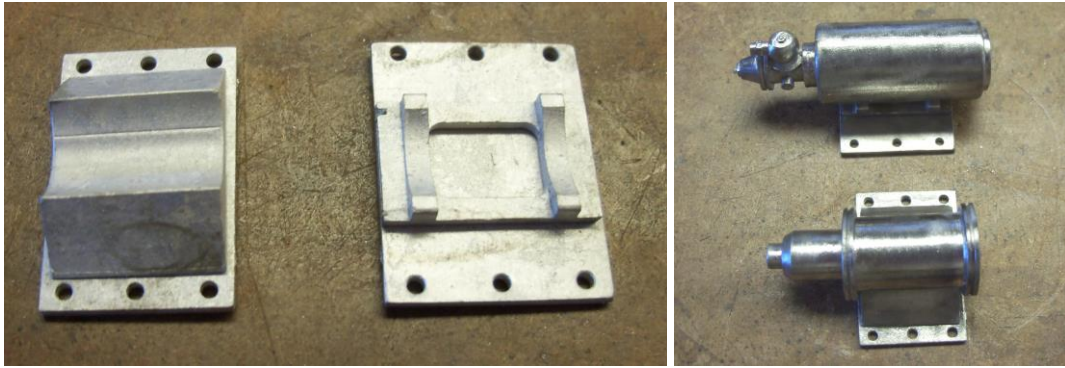


Step 21.

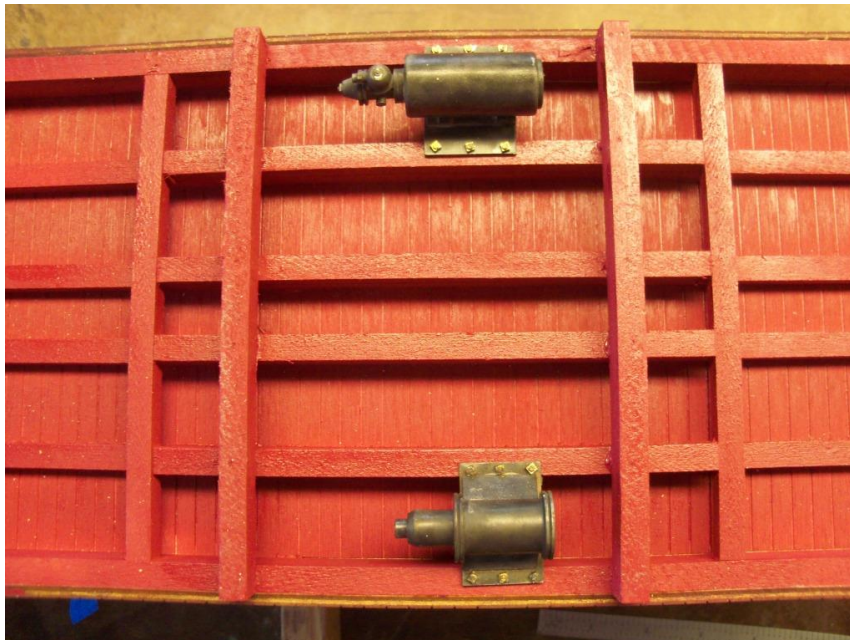
Underbody white metal. Gather up all the white metal parts for the underbody. Most all the parts have been pre-drilled to make it a tad easier for you. I use a blackening agent from the stained glass hobby. Novacan. It comes in black for solder/lead and zinc plus copper. Either the solder/lead or the zinc work great on white metal and brass. I've tested the copper and if you have some white metal parts you want an antique bronze look, give it a try.

All blackening agents work best on clean white metal. All white metal casters use a release agent in the rubber molds, so the parts comes out of the pockets easier. Many of us use talc. Between the talc and oils from handling, blackening agents don't penetrate as well. I use a wire brush in my Dremel tool to shine up all the parts. Another thing I've learned is ACC glues loose effectiveness when in contact with a blackened part. Another time when the E6000 adhesive works better. At least in my opinion.

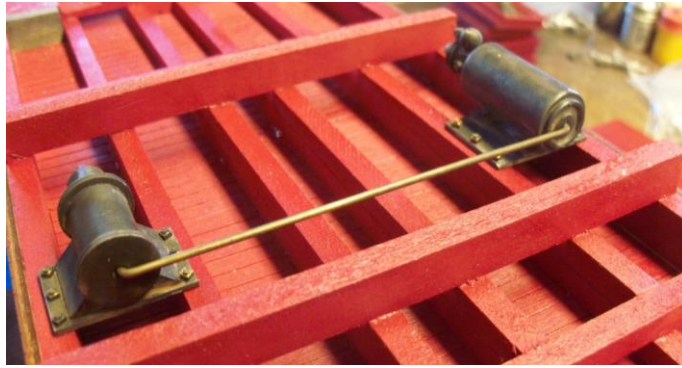
First up is to shine up the brake cylinder, saddle and base and the air reservoir, saddle and base. Then glue them together as pictures. Once dry, you can blacken them. Also blacken the brake lever limiter and 18 brass nut bolts and the lengths of 1/16" by 12" brass wire. I used sandpaper to clean the wire.



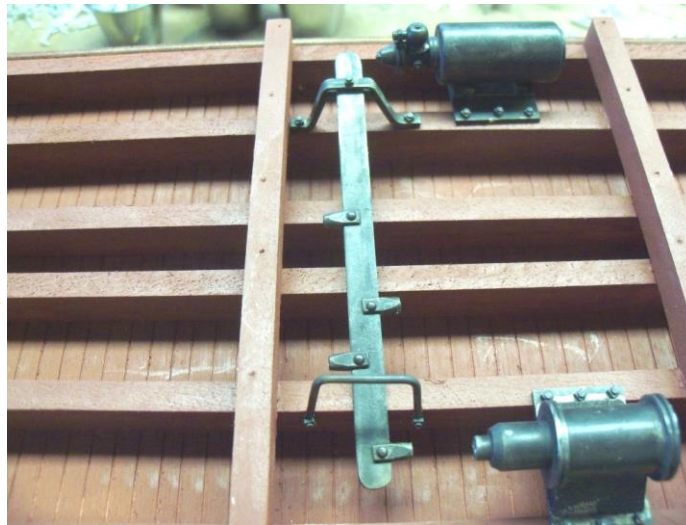
These are parts from a boxcar kit, but you get the idea of blackening the parts.



Start by positioning the brake cylinder and reservoir $\frac{1}{2}$ " from the left needle beam. Drill 6 #56 holes and press in 12 NB's to hold the parts in.



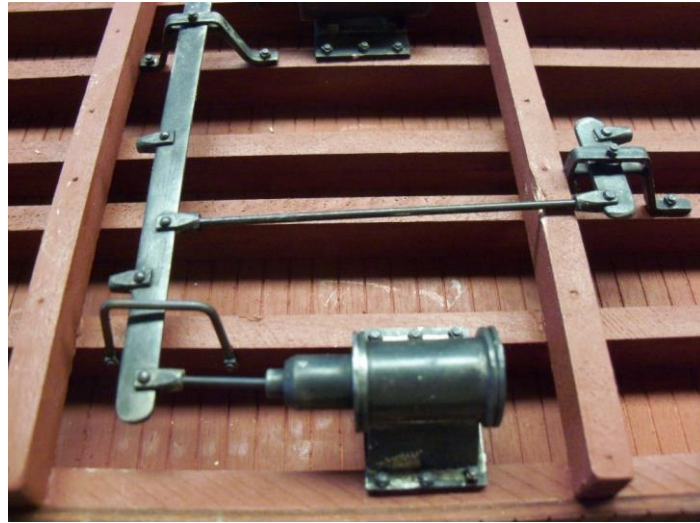
Measure the distance between the center holes in the reservoir and cylinder. Add $\frac{1}{2}$ " to that length and cut a piece of the brass wire to that length. Bend approx. $\frac{1}{4}$ " at both ends and fit into the holes but don't glue.



Drill #56 holes and mount the main brake lever support and the brake lever limiter with NB's. Mount the lever as pictured. Don't glue anything yet as the brake lever needs to move back and forth to fit other brass wires from the clevises. If your main lever lower clevis doesn't line up with the cylinder, drill another hole at mounting end and change holes for mounting. I've had to do this on a couple cars. Scroll down for that picture.



Drill #56 holes into the side of the needle beam and top of a center sill as pictured. I had to remove the brake line between the cylinder and reservoir to drill into the needle. Good thing I didn't glue it in!!



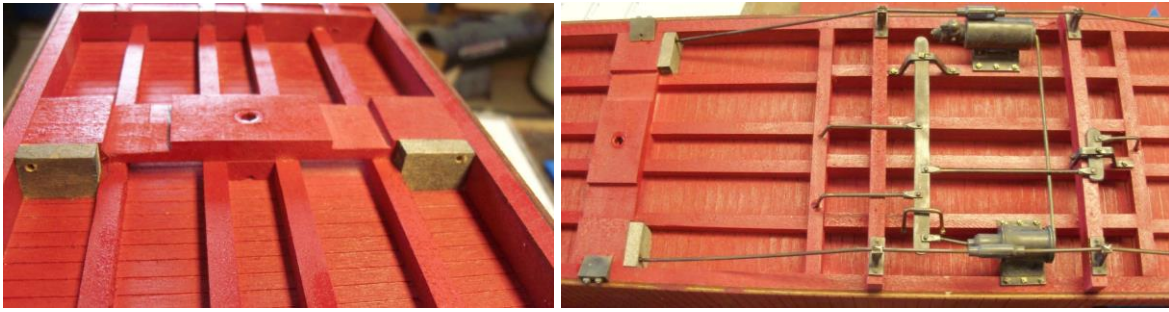
Add lengths of brass wire from the bottom clevis to the cylinder. Also add a wire between the clevises on the main lever and secondary brake lever.



Add more brass wires as pictured. These simulate rods to the trucks and air line.



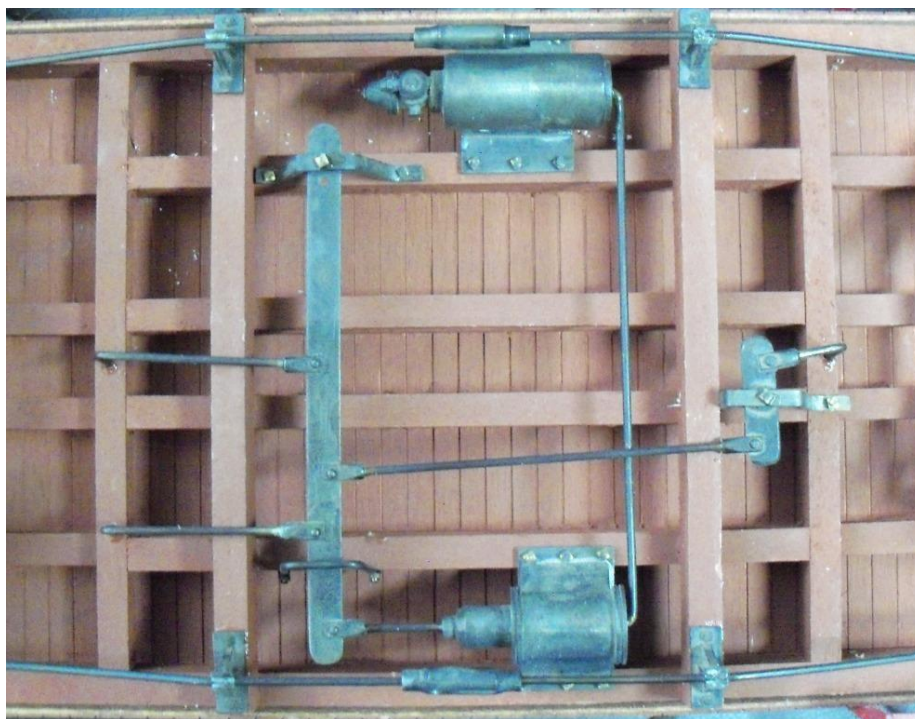
Glue the 4 queen post as pictured.



Drill #50 holes at a slight downward angle in each of the 4 truss rod terminating wood blocks in the frame in alignment with the queen post. Then slide a turnbuckle onto a 12" wire, slide into one of the terminating blocks, over both queen post and to the opposite terminating block. Measure and cut the wire to fit. Repeat for the other side. Also drill #56 holes through the bolster terminating plates and glue and pin with NB's as pictured.



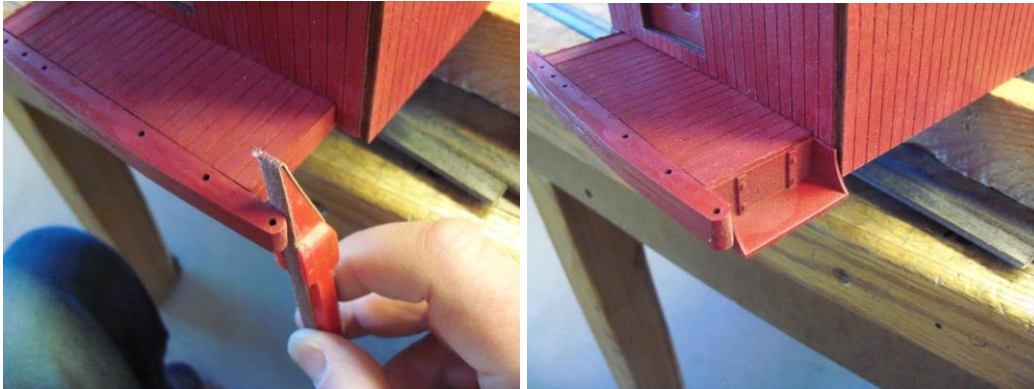
Full underbody



Look closely at the connecting point of the main brake lever. Just under the NB is the original cast hole. I drilled a new hole approx. 1/8" or more towards the upper end and used it for mounting. It corrected the angle of the connecting rod to the brake cylinder. When happy with all wire connections, glue with a drop of ACC.

Step 22.

3D printed platform steps. Paint the 4 steps red and let dry. You may need to sand the inside of the end beams for the steps the fit between the car body ends and the buffers. I had to sand a little off at one end only.



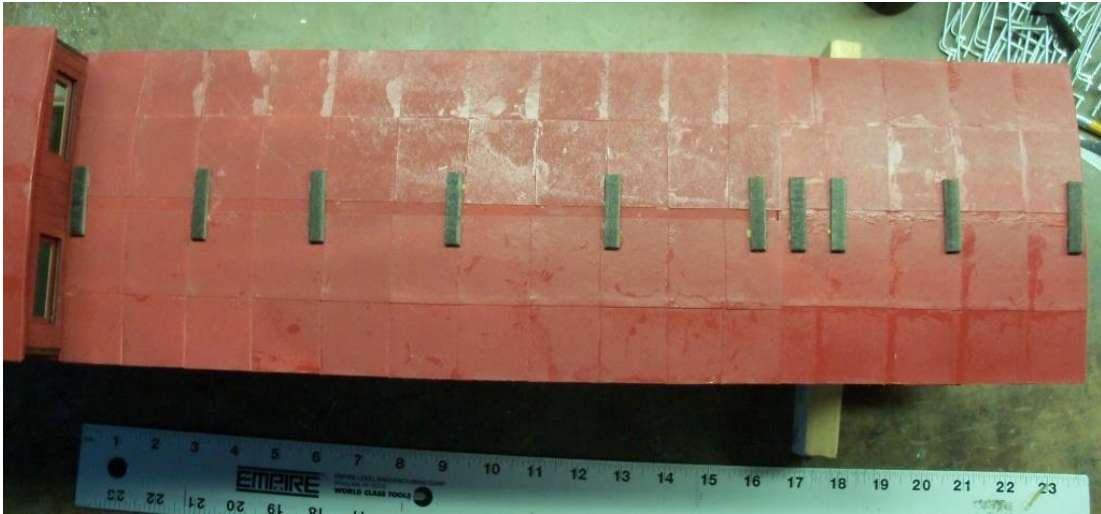
When you have a good fit, glue in. I sound like a broken record but the E6000 works best for this.

Step 23.

Catwalks and catwalk supports. Gather up all the wood catwalk supports and both white metal catwalk end supports. I stained the wood supports with a mixture of alcohol and India ink. For those not familiar with mixing the two, keep in mind, there is a waterproof ink and non-waterproof ink. The non-waterproof ink will mix with 70% Isopropyl alcohol. The waterproof will only mix with 99% alcohol. The ink is the same price, but the 70% alcohol is a little cheaper. Where I buy the ink, waterproof is more available than non-waterproof. Read the labels!!



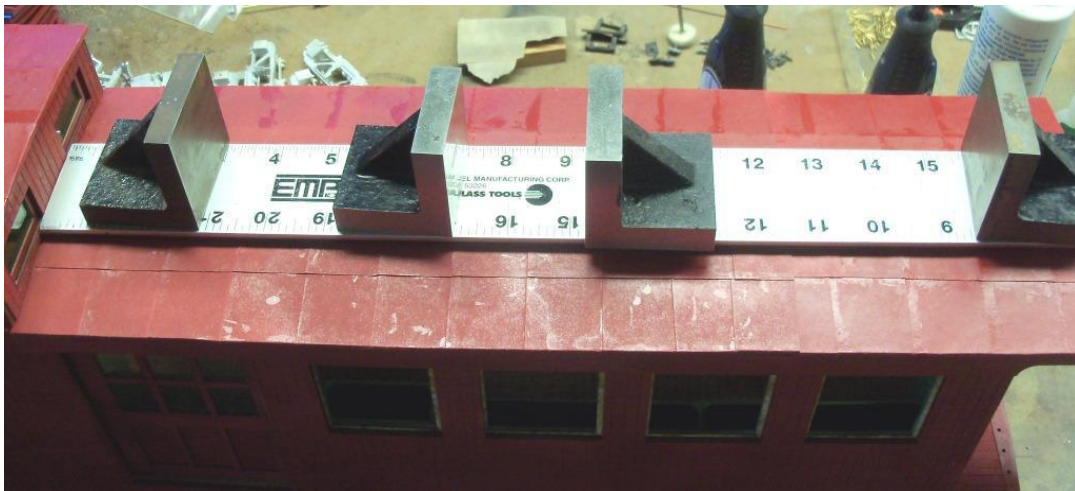
Glue 2 of the supports as pictured. Center them between the roof edges.



Layout the remaining 10 supports for placement. The 3 supports close together are around the roof break. 1 on the cupola side and 2 on the end roof side.



I use a 2' rule for two reasons. One for the spacing which other than either side of the roof break, is not critical, and two, so all the supports are held flush with each other. The support next to the cupola should be glued $1/8''$ to $3/16''$ away from the cupola. At the roof edge end, $1/8''$ from the edge.



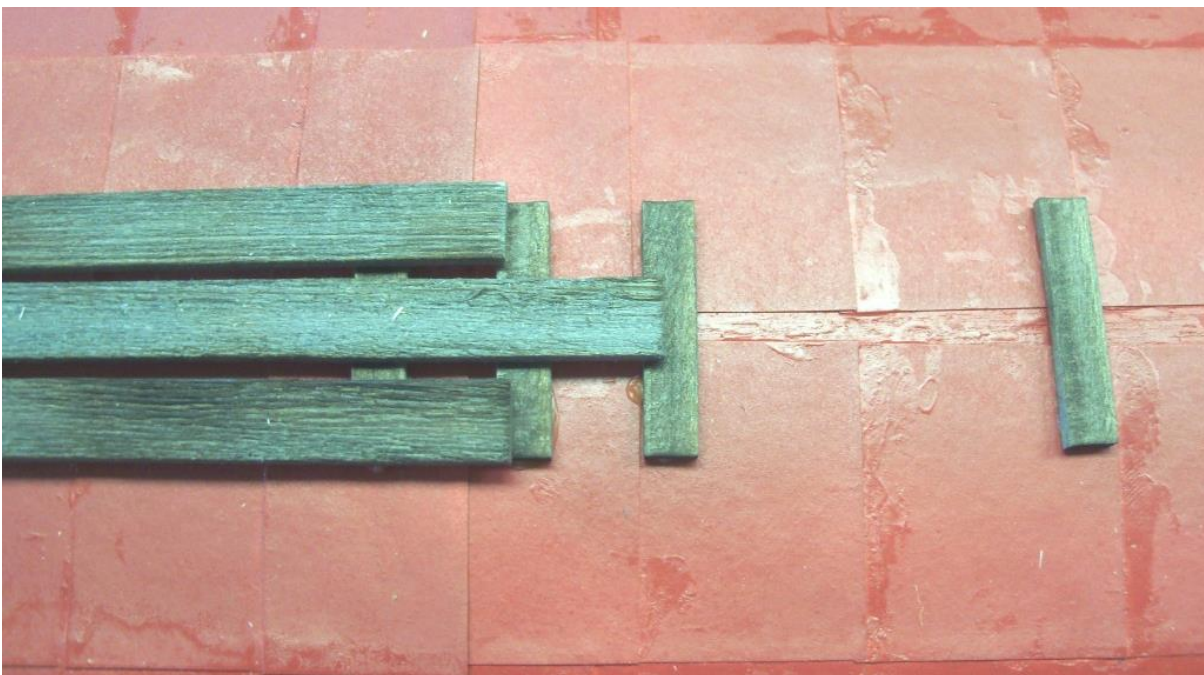
Once glued, I put the rule on top of the supports with weights until dry. Keep them flat and level.



To distress and weather the catwalks, I loaded a cheap wire brush into my drill press, clamp a piece of scrap wood to the platen touching the brush and ran the pieces of basswood through this. I used a little butane torch to burn off the “fuzz”. Then, lightly sanded and stained with the India ink and alcohol mix. I use this wire brush method for tree trunks, wood used in retaining walls or any structure to get rid of the brand new lumber look.



I cut the short cupola ends pieces approx. 2-1/4” long with approx. a 5/8” overhang. The long roof end are cut to fit around the supports.



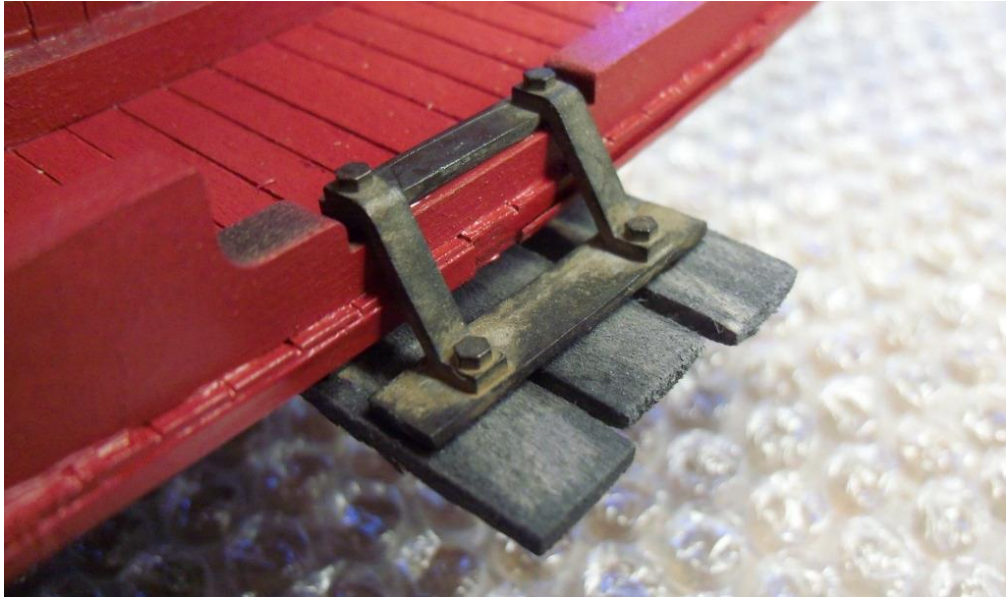
All three catwalk boards glue fully to the left (of the three) supports. NONE glue to the center or right support.



Now cut and glue the remaining three boards as pictured. They will glue to the right edges of the center and right (three together) supports. Don't let any glue get onto the removable roof catwalk boards. Overhang is approx. 5/8".



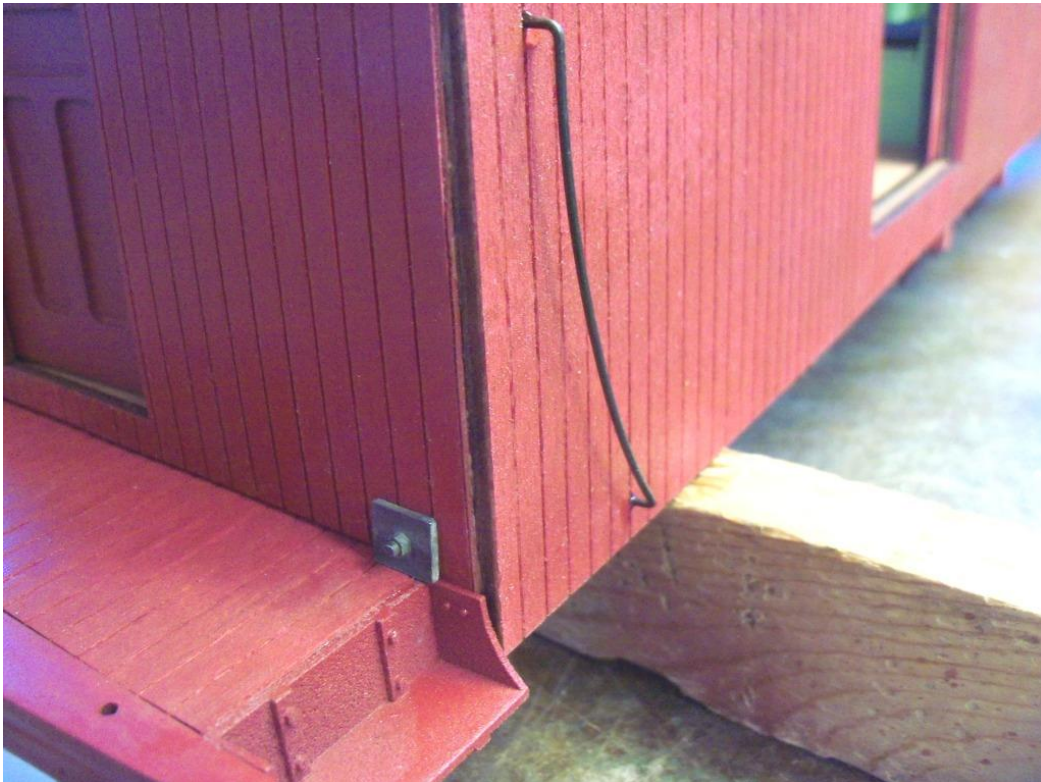
With the car upside-down, press a catwalk end support into the car end rafter to make a couple dimples as pictured. Drill these out with a #52 bit, 1/8" deep less. Enough for the white metal tabs to penetrate.



Glue and clamp the catwalk end support until dry.

Step 24.

Wire details.



Glue the 4 blackened curved handles to the sides of the car in the pre-lasered holes. You may have to add a little bend or release some of the bend to fit into the holes. If the hole are clogged with glue or paint, open them with a #56 bit. Drill 4 #53 holes, one in each platform corner and glue in the 4 square truss rod terminating bolts.



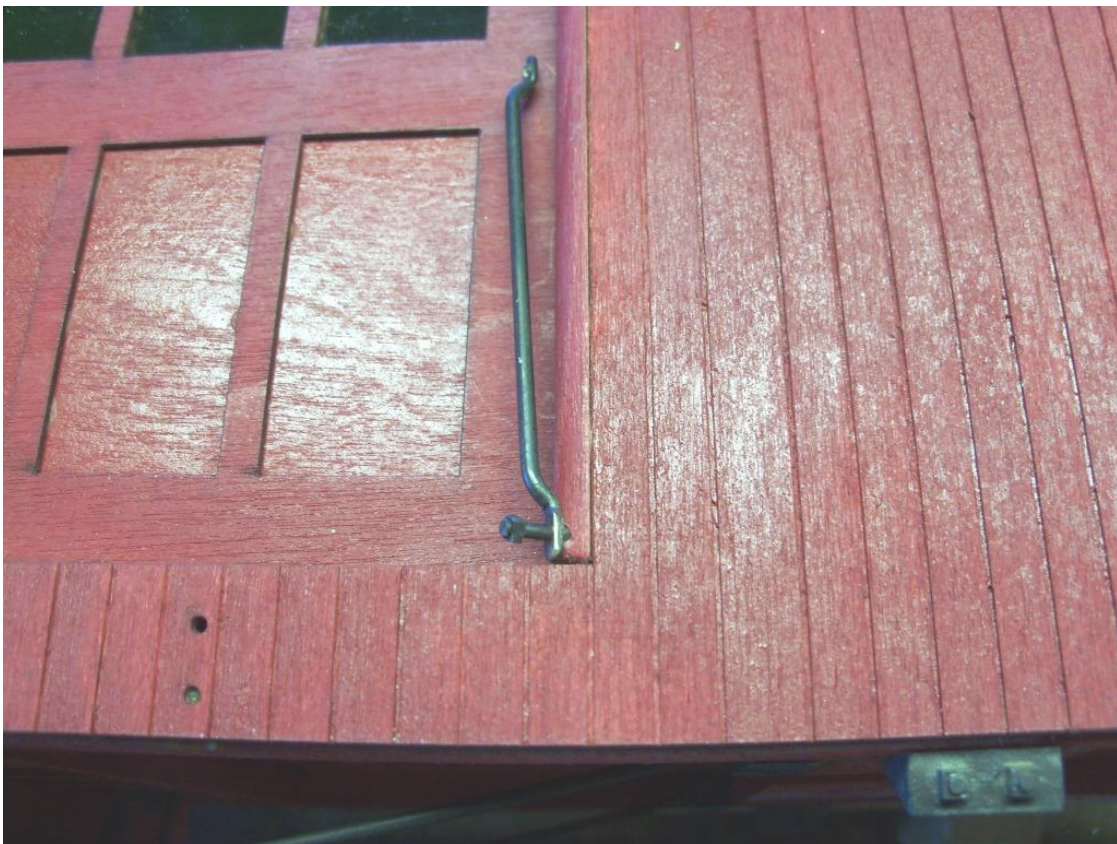
Sort out the 4 handrails as to which side and which end, they attach to. Slip on an eye pin to each one. I drilled the mounting holes with a pin vise for a little better control. Use a #56 bit for these holes. Start the first hole next to the square NB. Press an end into the hole and position for the hole next to the door. Use a #66 bit for the eye pin.



Repeat for the other side and other end of the car.



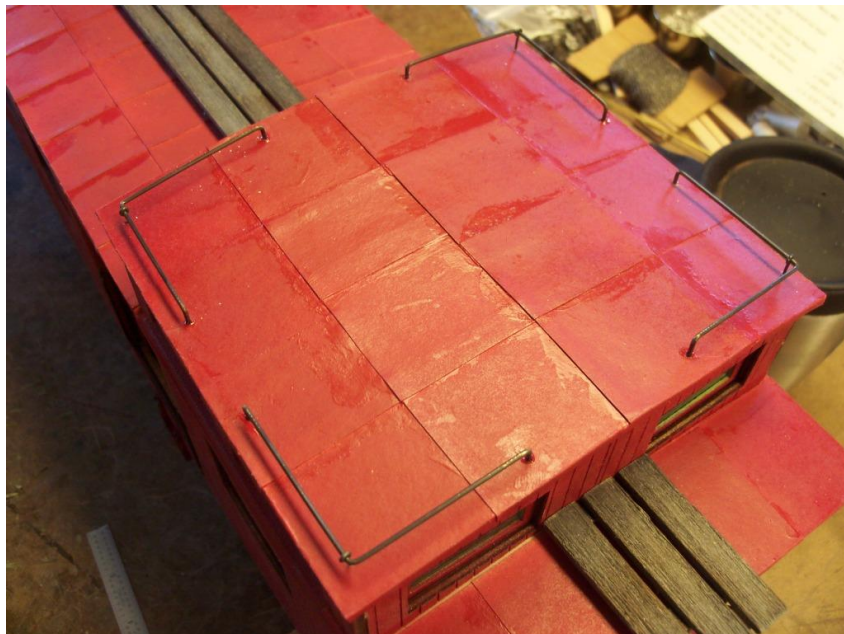
Gather the 4 side door handles and 8 NB's.



These will attach to the quarter round, carefully so you don't interfere with the sliding door. Use a #56 bit to drill through the handrail (as a guide) into the quarter round. Press an NB in but not all the way. Drill the top hole again using the handrail as the guide and press in the second NB. Press both all the way in. The door opening is fragile so don't use your gorilla strength.



Repeat for the other handle. The 4 holes for the strap step are probably filled with glue or paint. Drill then out with a #56 bit and attach the step with 4 NB's. Watch the step arm curve so you don't attach reversed. Turn the car over to do the other side and repeat adding the handles and step.



Now add the 4 cupola handrails like you did the car end rails. Use a #56 bit for the .047" wire and a #66 for the eye pins.

Step 25.

Side Windows.

Gather the 9 side windows, all painted and window glass glued in. Test fit each window first before adding glue, just incase you have to “play” with the window opening to get the window to fit in. The windows are a snug fit but if you got the letter board glued to low, it will interfere with placement. If you got fingerprints or smudges on the glass, clean them now. Glue all 9 windows into the car.



Step 26.

Coupler lift bars.

The CLB's are premade but you do need to mount them, so they don't interfere with the left end rails.



Placement



Slip a left end rail into the 4 lasered holes in the end beam and then hold the CLB as close to the edge and positioned so the handle side bracket clears the left stanchion. Mark the holes needed for both brackets and drill with a # 51 bit, 1/8" deep or so. Enough for the cast mounting pin. Fit the CLB into place and again, test fit the left handrail. When good, glue the CLB into place. Repeat for the other end of the car.

Step 27.

End Rails and ladders. Now we're going to see if you got the number boards level when you glued them to the car side. Mine were a tad off on all three of the cars I built.

I have stressed this with every kit I've produced. White metal can be amazingly strong and depressingly weak at the same time. It is not brass or steel so repeated bending or stressing will break it like a twig. I have drilled out holes in the ladders and brake wheel where they fit over the studs in the end rails so they are oversized. I found if the hole was exact, and a little twisting was done to fit either a ladder or the brake wheel onto a stud, it would break the stud off in a heartbeat. Trying to keep the end rails and ladders close to prototype required the studs be where they are. So Use the upmost care during these steps.



Desired position with a perfect fit. Fiddling will be required!!!



If the distance between the platform floor and the end rafter is too short, you may have to carefully cut away a little wood. I had to do this on all three cars I built at one or both ends of the car. We're talking 50 thou off. Not a huge space. If the distance is too great, you'll need to add a couple of the brass nuts I supplied between the ladder and wood and use the brass bolt versus the NB's for attaching to the rafter. You might get lucky and both ends fit perfectly. This is not a poor design. The end rafters glue between the letter boards. If the letter boards weren't glued to the car side perfect level, one end could be high and the other low. This is a kit, deal with it.

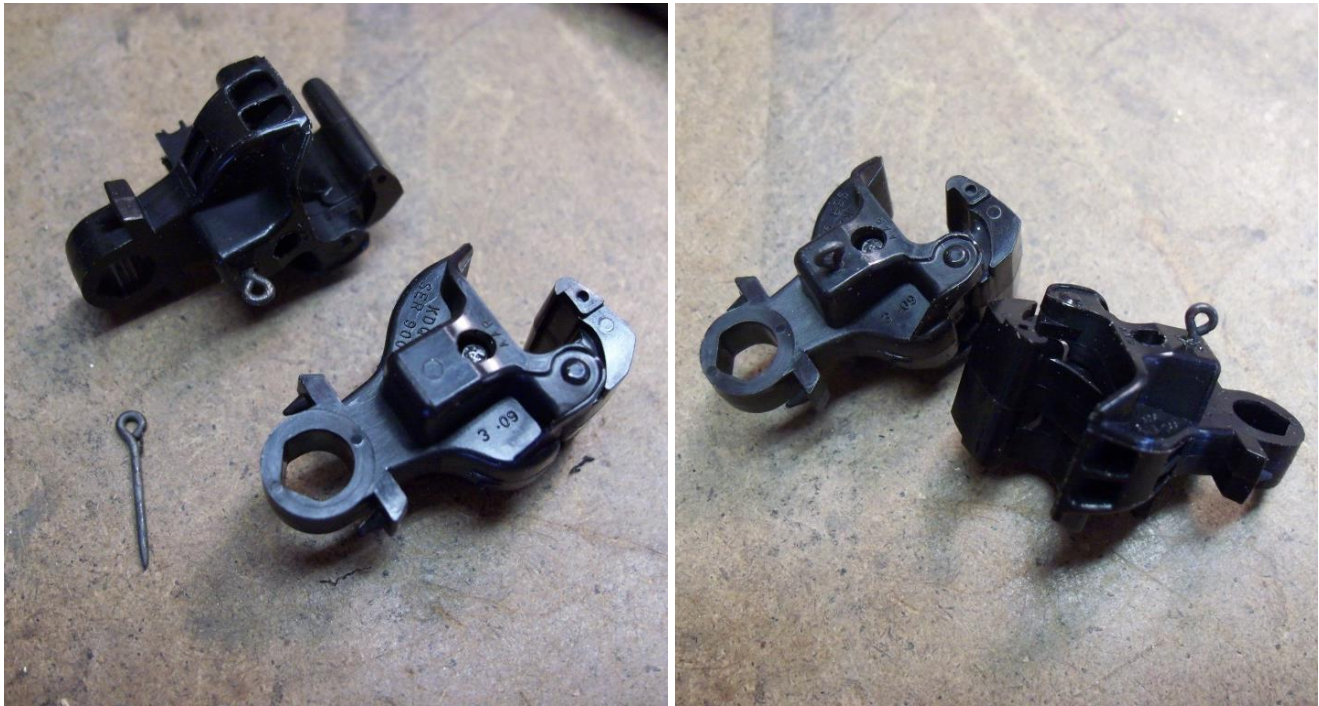


This is the end with notches. The other end came out perfect. I did glue the brake wheel on but left the ladder to rail connections un-glued. I didn't glue the rails into the end beam either. If they get bumped during operation, I didn't want them to break.

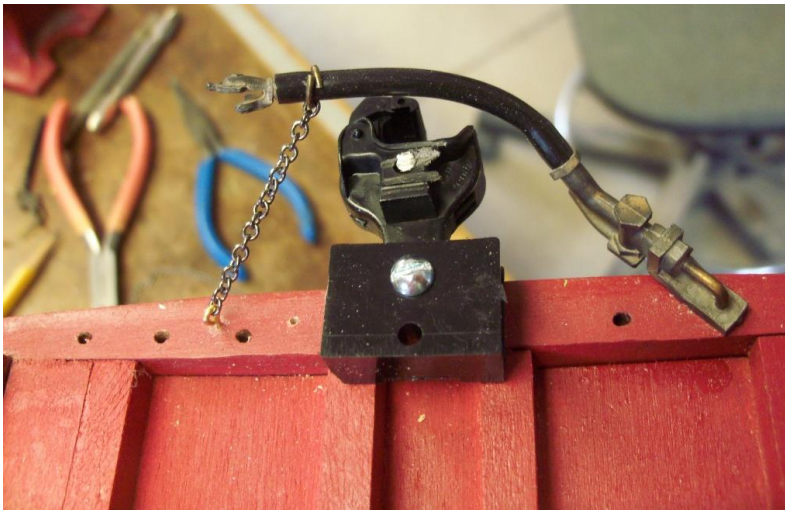
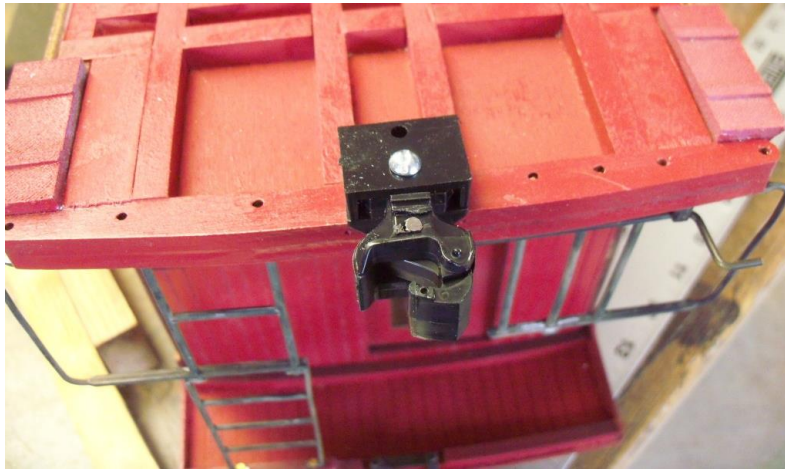
Step 28.

Couplers, Brake Hoses, Smokestack, Truck Mounting.

Turn the car over and place on something soft. Gather the coupler bag. I cut the factory uncoupling bar off my couplers. With my brake hoses, the extra bar was a distraction. Drill a #66 hole in the top and press in the eye pins. The right picture shows the eye pins inserted. If you drill to close to the coupler jaw pivot pin, it will jam it from free operation.



Center a lid and drill a #47 hole into the end beam. Assemble the coupler and screw to the car with the #6 wood screw.



Fit 19 links of chain onto an eye pin. Fit a 5mm jump ring around a brake hose with the other end of the chain. Drill a #52 hole for the brake hose and a #66 hole for the eye pin and press in.



Cut 12 links of chain and fit one end into a 3mm jump ring and the hole in the coupler lit bar. Open the eye pin in the coupler and fit the other end of the chain into it and close the eye pin.

Glued the smokestack to the roof over the location of the stove inside the car.



Step 29.

Trucks and finishing.

The trucks are pre-build. Being steel, probably a bit of real rust of them. If you need to oil the bearings, you should be able to get to the axle and bearing with the truck upside down. If you need to remove the axles and journals for some reason, remove the 4ea. 2-56 hex head bolts on the bottom strap, both sides and the wheels and journal boxes will drop out.



Add a spring to an 8-32 screw and press it into the nylon barrel washer from the underside. Add the nylon flat washer at the top and into the cavity in the cast bolster pivot.



Add the fender washer and screw into the threaded insert in the car bolster. If you find the screw works out, add a tiny drop of clear silicon caulk to the ends of the threads. It will dry rubbery and will allow removal at any time.

This completes the build. Hopefully this was more enjoyable than not. It is a complex build with lots of parts. It took me 3 different builds to “discover” the many areas I thought I had mastered but had missed crucial fittings.

The trucks alone took me close to a year to design, source parts and build. While not 100% prototype in appearance, they do capture the essence of Maine 2 footers. I wanted a rugged truck to standup to operating sessions.

I will carry parts for mishaps for a while. I do intend to “finish” the 7/8ths “project” in the near future.

As usual, comments are welcome. This is a one time run so there will not be future runs.

Phil Dippel
Phil's Narrow Gauge
<https://www.philsnarrowgauge.com>