

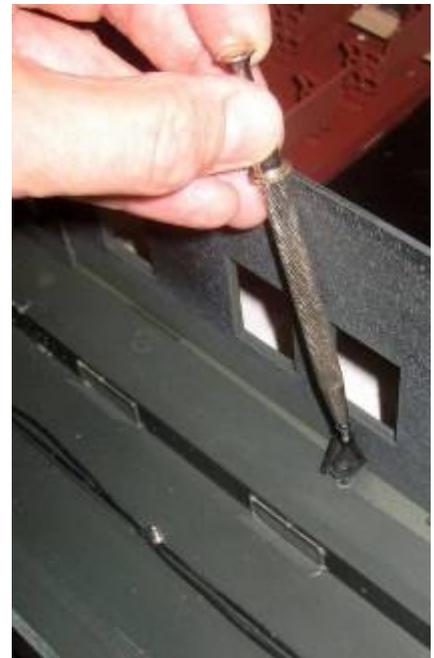
Tools.



The usual tools for working with plastic kits are needed. I find an Xacto chisel blade useful, along with their small saw and miter. Small and medium files, plus some old, fine sandpaper for tidying up the edges. Small drills in a pin vise. An assortment of small screwdrivers, rulers, metal squares, weights and clips/clamps. 400 grit wet-and-dry or other sanding block is useful for cleaning up the parts. A metal ruler at least 18" long - preferably longer. A soldering iron unless you want to cut the wires to the lights - they are under the seats and have to be moved. Good plastic glue - I like the Testors "Model Master" liquid cement in the little bottle with the syringe-like metal applicator - makes it easy to control where you are putting it and how much. (Note that the coach itself doesn't glue with the styrene compatible glue!)

The Accucraft coaches are ABS or some such plastic, so Plastruct Plastic Weld (or similar) is needed if you are gluing something to the existing coach part.

Two special tools are really helpful. A long reach Phillips screwdriver - mine has a shaft about about 6" long, sold for taking computers apart - to reach the screws. And a grabber - Micromark calls it a Gripster - <http://www.micromark.com/G RIPSTER-HOLDING-TOOL,6734.html>. (Photo right.) It is like those 'automatic pencils' that you press on the end to get the lead to come out, but these have 4 or 5 small bent little metal grippers that will pick up a screw (or other small part you dropped where you shouldn't,) and allow you to put it in the hole and start it for the screwdriver.



Finally, a flat surface big enough for the coach ten times over - when it is dismantled you'll need to lay out the parts. I had the underframe, trucks, the old sides, roof, interior and the new sides all separately stored on shelves over my work area.

Before you get started.

You are going to need a template for the new side(s). It will be 22 9/32" long and 4 1/4" deep - you may be making your new side from 3 or more pieces that have to be glued together accurately. I printed my drawing with Scaleprint (you'll see it underneath the parts on several photos.) Any rectangle will do, so tape together a few pieces of paper, tape it flat on the bench and draw the outline of the new side. *When you get the old sides off, check that your rectangle is exactly the same size.* The depth isn't critical, as the new sides are cut to size/height, but the length is very important. Your kit has to mate with the existing ends and frame, so it must be the correct length and must be square.

Dismantling the original coach (type1, pre-summer 2010)

Lay an old towel or similar on your worktop and turn the coach over. [I didn't bother with the towel half the time - the coach rests on the vents and chimneys.] Remove the 8 screws around the perimeter of the floor just inside the outer frame rails. Then, with a flat blade, pry the coach sides away from the frame in the center - there is a groove in the bottom of the side that fits over the metal floor and over the ridge along the side of the frame. Hold the center open (that's the easy bit) and pry the sides over the ridge and floor at the ends.

If you do both ends of one side, the frame will come out on one side, and then you can work on the other side. With care, the whole thing will pop out easily. [It's a strange design - the ends hold the sides firmly over the ridge, but there's no way to separate the ends from the sides until they are off the underframe!] There's a plug/socket for the lighting connection to the roof - just unplug it. [I had one where the wires were twisted together, so take it easy as you try to separate top from bottom.]



Dismantling the ver2 coaches imported from summer 2010

The latest version of the coach dispenses with the slot along the bottom of the coach which makes it much easier to take apart. The photo at right shows the first type (green) with slot and the newer coach (red) on the bottom. That also means the metal floor is narrower – it lost quite a bit of width and is now screwed down to the frame. (Ver1 coaches usually didn't have the screws, as the slot in the side held the floor down.)



Differences in the rest of this doc are noted (ver1) or (ver2) as necessary.

The rest is easy. The roof is held on by 8 more screws around the periphery [see Grabber photo above] and there are 4 screws holding each end to the sides. Don't lose the screws - you will need them again.

Underframe

The plastic underframe may be held onto the metal floor with very short screws around the perimeter, accessed from the top (typical of ver1.) The seats are held in place by more short screws but these come up through the metal floor. The wires for the lights come through the floor and under the seats - which is a problem when you try to remove them. The wires connect to a voltage regulator which is screwed to the metal floor in the center. Take it off and the plastic pad that insulates it from the floor.

The metal floor has screws holding the truck pivot supports - but one or two of us have removed the metal floor as the coach is quite heavy. If you decide to do that, you will need a new styrene floor to support the seats and for the baggage area and you'll have to figure out how to mount the truck pivots. Note that, without the screws bolting the floor to the underframe, the only thing holding the sides to the underframe are the two bolts through the trucks – the pivots. If you use a styrene floor,

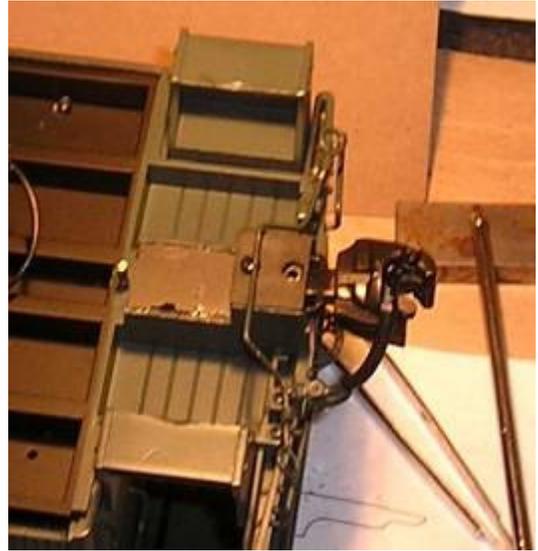
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you'll probably need to screw it to the underframe near the holes where the sides have tabs that are screwed up through the floor.

Flip the underframe/floor over and either un-solder the wires for the lights from the truck pickups then pull them out of the pickup mounts, or cut the wires. Unscrew the trucks from their pivots. (Don't lose the pivot springs!) Unscrew the body support plastic parts from the top of the truck and throw them away if you are not a D&RGW fan, or keep them if your railroad needs them. If you take them off, you'll need some washers to fit over the truck pivots to support the trucks - the whole thing will wobble if you don't give it a bit wider surface to pivot on. I used some nylon ones about 3/4" OD and 1/2" ID from the hardware store. There's 4 screw heads on top of the truck that you have to avoid or use - just don't use a washer that only sits on two of them.

Note: if you decide to lower the coach by removing the body support piece, the coupler will have to be raised. Unscrew it and file down the mounting pad and side supports.

Note: The couplers on the original coaches (ver1) were known to break off, as they are only held by the screw through the long plastic support. It is recommended that you fill the hole around the screw pad with epoxy, or take a scrap piece of plastic, drill a 1/4" hole in it, slip it over the peg and glue it in place. (See photo right.) Ver2 coaches have reinforcement on the peg, which hopefully will stop the peg breaking.



Trucks, Truss Rods and Wheels

I found it easiest to continue without the trucks fitted. They are quite heavy and make it difficult to manipulate the frame and body. The underframe/floor sits flat on the bench resting on its end platform steps and the queen posts for the truss rods.

Talking about truss rods - this is an option for ver1 coaches. Accucraft makes their truss rods with threaded ends (though they are not opposite threads so you can't tighten and slacken the rods like the real thing.) They are very tight and sometimes bow the underframe/floor up in the center. The ridges on the original sides of the coach keep the thing flat, as does the weight of the body. We won't have ridges when we're done, so it would be better to flatten the underframe a little. The rods are held behind the cross beams molded into the underframe by the 90 degree bend in the end. Remove a few screws holding the metal floor to the underframe over the truss rod end and pop out one end of the rod(s). Unscrew it a couple of turns and put it back - repeat on the other rod. Paint the exposed threads at the turnbuckle.

Note: you probably noticed when you unpacked the coach that the wheels don't rotate very easily. A problem is the wheel wipers picking up power for the lights (there are other problems which can be resolved by fitting ball bearings. Phil's Narrow Gauge sells a kit.) A much better solution (my opinion) is to remove the wipers and fit a battery and on/off switch or similar in or under the coach. I used a standard 9V non-rechargeable type, as I don't use lights very often. If you do use them, I'd suggest a 4 x AA pack in the bathroom or baggage area, if you have one, with a recharge socket in the floor. Or hang the 9V battery underneath the floor by removing a bit of the underframe. The voltage regulator will provide the bulbs with the 5V they need.

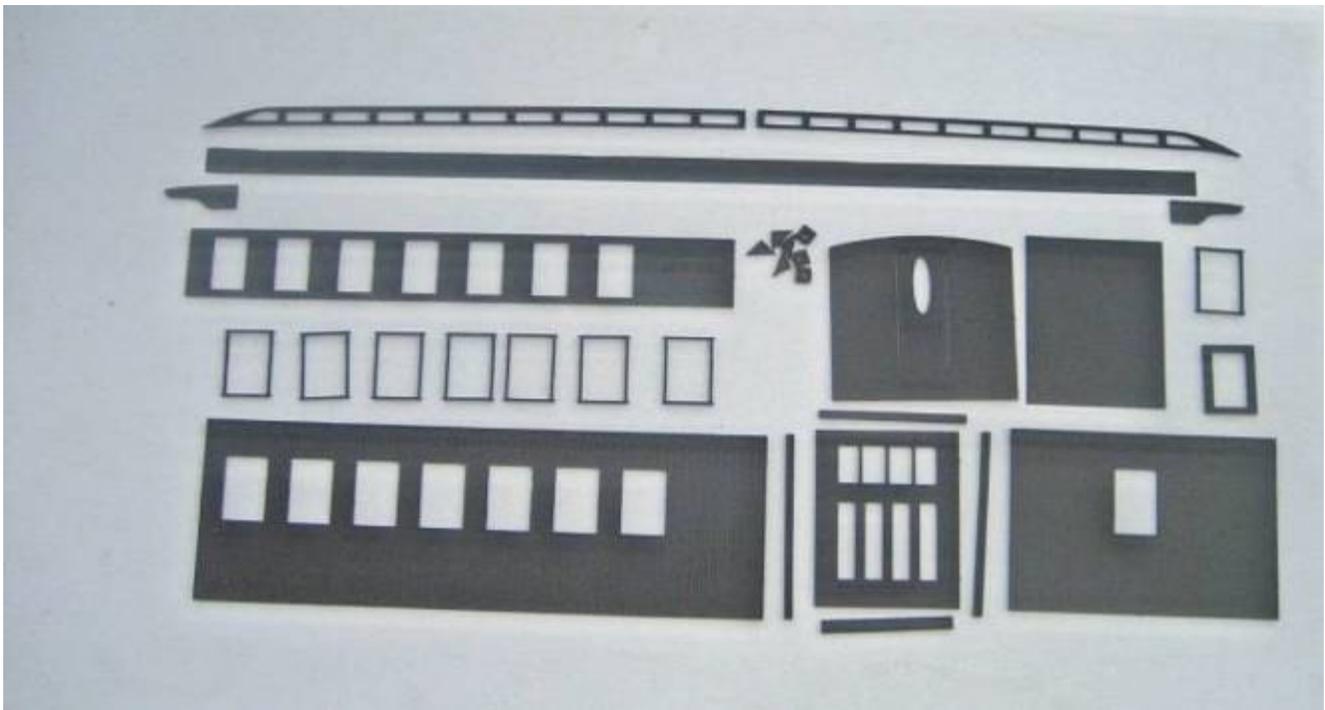
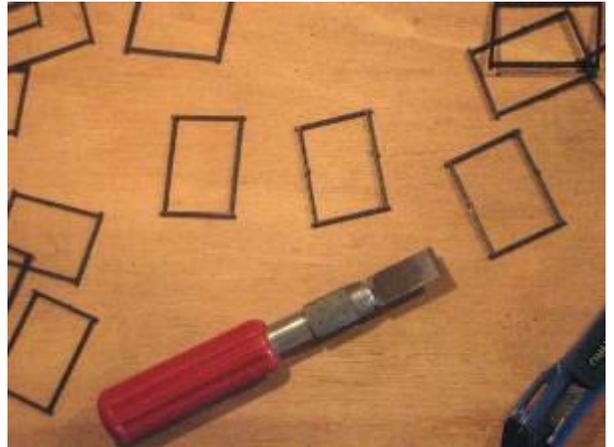
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Preparing the parts

Take the kit and remove the parts from the styrene sheets. I use a chisel blade in an Exacto #5, but a knife will work. Sand and file off the tabs where the parts were attached. In particular, do a neat job on the window surrounds as they are pretty visible when you're done.

I used my 400 grit wet-and-dry sandpaper, wet, with a flat wooden block, to smooth the surface of the sides, doors and partition. It helps get rid of any microscopic styrene that may have bubbled above the surface.

You should end up with roughly twice as many parts as shown in this photo (combine kit – others are similar):



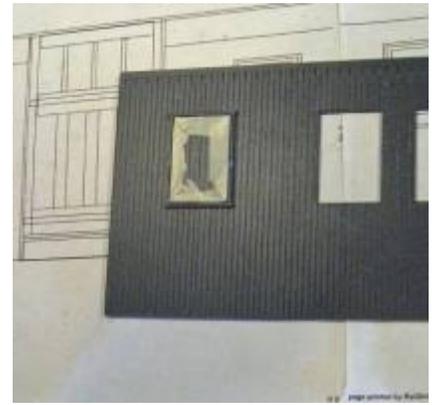
Note: I ran glue along the back (hidden side) of many of the joints after they had been glued and had dried. Many joints can't be reached until the first glue application has dried, and the second application fills the small gaps, if there are any.

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Window Frames

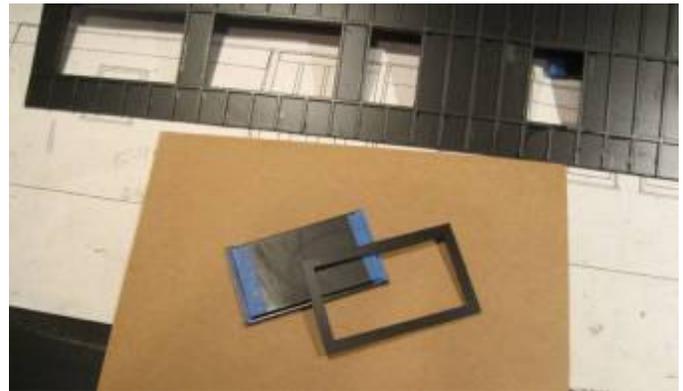
I glued the window frames first, while the sides are easy to handle. Make an alignment jig by gluing two pieces of the scrap that came out of the opening together, and wrap them when dry with some tape to make a snug fit in the window cutout. You'll find the jig makes it very easy to align and glue the frames in place.

Similar jigs can be used to locate the board-and-batten overlays on some coaches – I found having two or more at hand made the alignment easy.



Incidentally, it doesn't seem to matter whether you glue the sashes inside the windows before painting or after. With separate ones you do have the option of making the sashes a different color – varnished teak, perhaps?

Another jig is useful for aligning the sashes behind the frames, especially on coaches that have individual windows. Take the piece cut-out from the sash frame, and glue it in the center of a window cut-out piece. Tape it to make it a snug fit.



Attaching the sides to the roof

When you have the two sides, you need to make them fit to the roof. Put the roof flat on the bench, upside down. Take the two ends and place them upright in the roof against the end, exactly where they were. Mark the two ends and their corresponding roof end, as the tabs may not end up totally symmetrical. The new sides will fit between the ends and in the slots in the roof - except if the (e.g. combine) door is set back and interferes with the raised rib that holds the wall in place. Mark where it interferes and cut that piece of rib down to the roof level. [See photo - green ring.] The sides should now fit snugly down into the slots in the roof. File the cutout you made for the door if necessary.



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Now put one side down while you fit the other into the roof. (Use one of the original sides to support the ends by screwing it back in place to the ends while you work on the first side.) Take 4 of the tabs with larger holes and, using the screws you removed, screw them into the roof. Screw 4 more to the tabs on the 2 ends. They should fit against the inside of your new side, just like the tabs on the original coach side. The one next to the combine door will need to be trimmed as the door is behind the side. [See photo above – yellow ring.] Another 4 tabs are attached to the tabs on the end with the larger screws, which go through the end tabs and into your new tabs. (The original has two screws coming up and two going down – I screwed all mine from the bottom up, as shown in the photo (left) upside down. If the screws don't seem to grip the tabs, flip them over as the holes are tapered. If necessary, glue a thin piece of 0.5mm in the hole.)

Once you've got them all where you want them, file and otherwise make them fit and glue them in place. Note that if you have an older coach (ver1) the bottom of the side needs to be leaning ever so slightly outwards so that it is flush with the end at the bottom. [See photo above, pink ring – exaggerated.] That lets the side clear the ridge on the side of the underframe, (which is removed in later versions of the coach and the metal floor is narrower.) If the slight lean bothers you, then file/sand off some of the ridge along the side of the underframe and off the metal floor (or replace the floor. Use the end and press it into the underframe end platform slots to figure out where the side is going to fit.)



Glue the triangular gussets on to the tabs to reinforce them (photo above.) I had a couple fall off, and some I had to break off and refit as I put the gusset where it obstructed the screw. (In the second photo of the end tabs, you can see the side is leaning inwards instead of outwards – that one had to be 'adjusted' when I tested the fit.) This process is really fiddly, but take your time, let the glue dry, and you will get a good joint. In fact, the side is held in the slot molded into the roof, so those tabs are fairly easy, (until you accidentally knock the roof and it falls outwards, tearing off all your just-glued tabs! Yes, clamps or elastic bands are good.)

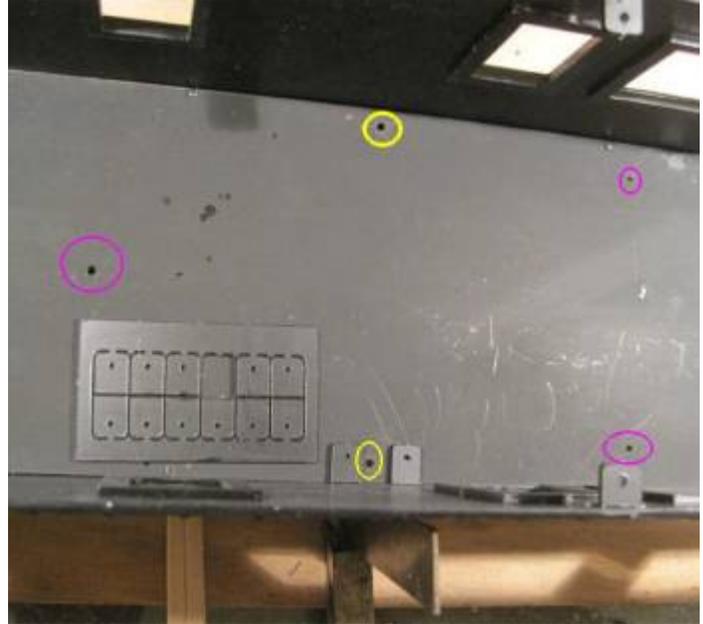
Floor Tabs

Another task is to make and attach tabs to the sides to screw to the floor. Like the roof and side/end tabs, they need to be robust and make the coach look good, as they hold the sides straight along the underframe. (The roof has slots for the sides, so it is stronger and less easy to damage.) However, to align the floor tabs, you have to work with the roof off. When the roof and end tabs are all secure, unscrew the roof and lift the side-end box frame off the roof. Treat it with care, as it is not strong without the roof or floor. You may have to adjust the end tabs as you align this box-frame to the underframe.

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The biggest issue is that these tabs have to fit behind/over the seats when you are assembling the coach. There's a reason Accucraft glues the seats to a floppy styrene floor – it can be manipulated to get the tabs behind the seats as you drop the body over the seats and underframe. I found it is not necessary to screw the seat's plastic floor to the metal floor with all the screws – it is only screwed to hold it if you turn the coach upside down, and is held in place by the side's tabs when they are working correctly.

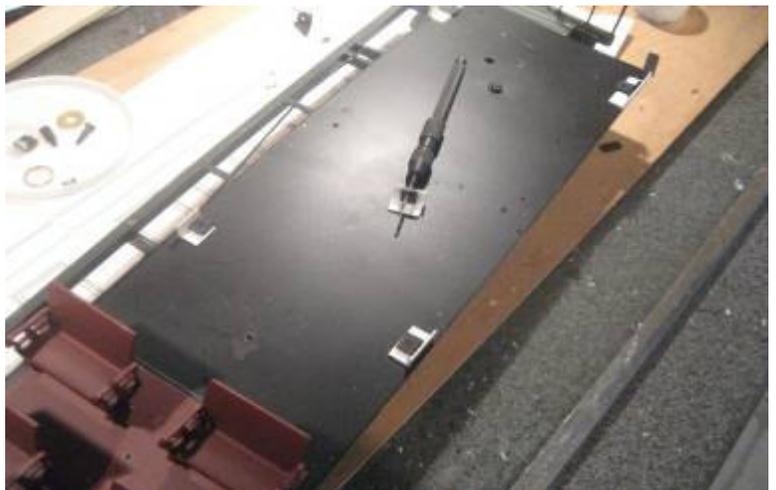
There are tabs supplied in the kit, and plenty of triangular gussets to reinforce them. I used them and they are quite acceptable. The photo shows the tabs with small holes being lined up on the floor of a ver2 coach – which is narrower and therefore the tabs should be cut down to fit. The tabs are screwed from the underside of the metal floor (See yellow rings marking the holes for the tabs. The pink rings show the holes for the seating)



The sequence is to attach the tabs to the floor on top of the floppy seat unit, then drop the box of sides/ends (without the roof) over the underframe and glue the tabs to the sides. There are 4 holes each side, where you removed the original side's screws, and a set of tabs with small holes in them. Three tabs go all the way to the edge of the underframe, but one is next to the baggage door, which is recessed, so that tab is narrower. Screw the tabs to the floor from the under-side. Make the tabs a fit against the sides without gluing anything, then glue them all and clamp or squeeze the sides/ends box to hold it square while the glue sets.

I thought a pre-shaped "L" would work better, and I have two suggestions. The Plastruct range has a 3/8" L shaped strip, which I used on the combine (you'll see the white L shape on some photos.) I also bought 4' of clear plastic 'corner protector' at the hardware store for less than \$1/ft (it will do about a dozen coaches.) The Plastruct can be glued with the styrene/plastic cement, but the larger 'corner protector' material is not styrene and needs ACC (Cyanoacrylate, super glue) or similar. I tested it with ACC and got a substantial joint, so I'll be trying it in future.

The 3/8" "L" isn't quite wide enough, and they don't make a wider 1/2" one (as far as I could ascertain,) I used some of the kit tabs as additional plastic to take the screws, by making the hole in the L and the tab with a small drill then gluing them together with the drill or a pin through the hole. The hole needs to be placed so the L is just at the edge of the underframe. If anything, make them too short - i.e. not quite at the edge - as it is fairly easy to shim them with a thin piece of styrene - not so easy to re-drill after the fact.



Once the tabs are glued and you are satisfied with the fit, you should carefully unscrew the sides from the floor and see if you can lift the body off around the seats. It can be a tricky fit. If not, re-arrange your seats; moving the

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tabs is a lot more difficult (but not impossible - just re-drill the holes in the metal floor, but make sure you clear the plastic underframe.)

Interior, Seats and Lights

The seats are held in place by the screw through the voltage regulator in the center and a few screws along the sides (see photo above – pink rings.) Take it out and remove the (floppy) seat unit, and figure out what you are going to do with the interior.

The photo at right shows an unpainted seat unit cut to fit the combine with the voltage regulator in place and wires running under the seats. (The tabs on the sides to attach the sides to the floor can also be seen.) You can also see the clear styrene glued onto the window sash frames inside the coach.



The seats are difficult to remove from their plastic sub-floor; they are firmly glued in place. If you want to change the spacing, I

suggest cutting the sub-floor around the seat frame. Make up a new sub-floor from a sheet of thin styrene and glue them in place on top of it. A quick spray of brown will blend it all in. (The styrene has to be thin as you have to wriggle the wall tabs behind the seat units as you fit the walls/ends/roof. See below.)

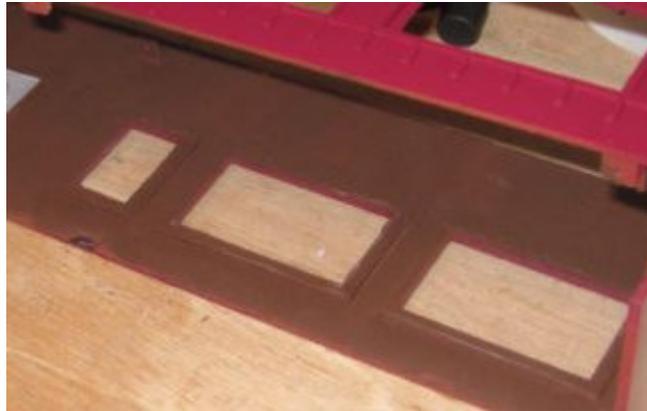


Finally, on my coach conversions, I paint all the seat arms black with a small brush - a very tedious process but it improves the view through the windows. I also ran a brush with a darker brown along the center of the floor between the seats, but that isn't so obvious. Now is the time to consider whether you are adding passengers, and if so, to paint and glue them to their seats. (And anything else you want to do to the interior.) Another option is to mask the sitting part of the seat and spray the whole thing black. Then paint the floor brown with a brush. (Photo left – the business car interior.)

Attach the seat unit to the metal floor with the short screws and re-rig the wiring for the lights. You will probably have to make new holes in the sub-floor for the mounting screws and the wires to pass through to the truck. Accucraft runs the wires under the seats where they are almost invisible. (See photo above.) If you un-soldered the wires from the trucks, you can just poke them through the holes in the floor and leave them until final assembly.

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Windows are finished with clear 0.015” styrene cut and glued inside the sash frames. I also found it desirable to paint around the edges of the windows after fitting glass to hide the glue. In fact, on the business car that has such large windows, I painted the whole of the interior walls with a brush using a darker brown and then ran brush around the clear styrene over the glue.



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Final Note

There are additional Construction Notes for each coach kit that cover specific points

- Combine
- Business Car
- Full Baggage/Express
- D&RGW Baggage (?)