

KITBASHING 101:

Building an Hcs-uvwy Closed Wagon from a Roco Gs Wood Box Car



by Blaine Bachman

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Here's a simple conversion that is well within the capabilities of even the most inexperienced modeler. With just a few tools and basic materials, you can kitbash a model of a unique and otherwise unavailable multi-purpose closed car.

This article was inspired by a similar article written by Giuseppe Mutolo on making an HO scale model of this car. That article was published in Issue #87 of the Italian Magazine *iTreni*_{oggi}. I used it as a guide, simplifying the process as necessary to incorporate materials and techniques available to those of us modeling in N scale. As with all how-to articles, read this one beginning to end a couple of times before you start.

The Hcs-uvwy Wagon

The Italian Railways (FS – *Ferrovie dello Stato*) modified 249 standard box cars for passenger train as well as freight train operation. The basic design of the **Gs**-style from which the **Hcs** cars were built is similar to that found in several western European countries:

- Composite wood-side construction with outside metal framing
- Sliding side doors and ventilation panels
- Half-round roof profile
- Two axle, rigid frame design

A little background on car classification nomenclature: **G** indicates a closed (box) car of standard design having eight or more ventilation panels, a load limit of 25 tons, and an inside length between 9 and 12 meters. The small **s** indicates that the car is able to travel at speeds up to 100 kilometers per hour. Here's the breakdown for the **Hcs** car:

- **H** = Closed car of non-standard design with a load limit of 25 tons, and an inside length between 9 and 12 meters
- **c** = With end doors
- **s** = Able to travel at speeds up to 100 kilometers per hour

Additionally, the FS outfitted these cars with brake systems that can be switched between passenger and freight settings, and with steam heat lines and electrical cabling to transmit passenger car services to the next car. These specifications are expressed in the four letters that follow the hyphen:

- **u** = fitted with a steam heat line
- **v** = fitted with cabling for 1000V/1500V heating
- **w** = ?
- **y** = ?

Gather the Needed Materials...

For each car you will need:



- One Roco Gs wood box car
- One pair of rubber or plastic passenger car diaphragms
- Two short lengths of insulated single-strand wire
- Two small pieces of 0.010-0.020" thick plastic sheet
- Tiny (0.008") brass wire

...and tools:

- Hobby knife for scribing plastic
- Pin vise and a small (#70 – #80) drills
- Brown paint to match car
- Silver paint
- Black or rubber-colored paint
- Jeweler's Files
- Paint brush
- Liquid plastic cement
- Rubber cement (if using rubber diaphragms)

Preparation:

Cut two pieces of plastic sheet the same size as the diaphragm. With the hobby knife, scribe a

line down the center of each piece to represent the joint between the left and right halves of the end door. Paint the face and edges of the pieces with the brown paint and set aside to dry. Cut two parallelogram-shaped pieces of plastic to represent the walkway drop plates and two rectangles (which will be bent into a curve) to serve as the diaphragm "roof". Note that these pieces do not cover the full length of the diaphragm when extended.

Cut four tiny "T" shaped pieces of plastic for the diaphragm hanger brackets. The leg of the "T" should be as long as the diaphragm is deep (the distance from the striker face to the body end).

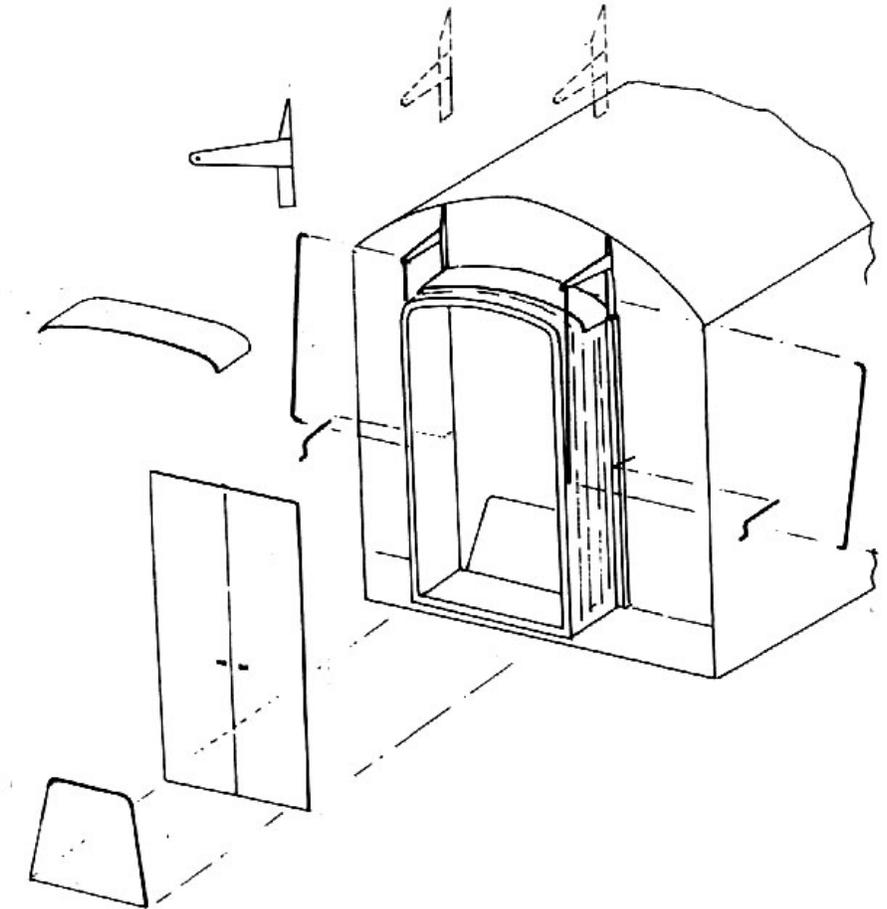


Figure 1 - Exploded Drawing of Modifications

The black dots are holes where the diaphragm suspension rods are attached to the hangers.

The older diaphragms installed on these cars are retained close to the body by 'S' shaped hooks when the car is not coupled to another car having an end door. If you are going to model the Hcs in this configuration, you will have to modify the diaphragm so that it appears to be hanging at an angle with the top extended and the bottom held back against the car end. If you're careful, you can split one diaphragm at an angle, making two that can be installed in this fashion.



Figure 2 - Comparison of Retracted (foreground) and Extended Diaphragm

Make the power cables by stripping all but about 1/16" of insulation from a 1/2" length of solid strand wire (Hint: it's easier to strip the wire and then rethread a short piece of insulation on one end). Attach the insulation with rubber cement or CA.



Figure 3 - Bending the Cable (not to scale)

At a point approximately two-thirds from the insulated end, bend a 180-degree loop in the wire so that it looks like an upside down question mark. Paint the insulation silver and the bare wire a rubber color.

Using the glue appropriate for the materials, glue each diaphragm to its door assembly and set aside to dry.

Body Modification:

The car end is divided roughly in thirds by two vertical ribs. Depending on the width of the diaphragms you are using, these ribs may have to be thinned to provide adequate space for mounting the door and diaphragm assembly. Many jeweler's file sets have a flat square file with no teeth on the face, but teeth on the narrow edge. This is an excellent tool for this work. If you're using a hard plastic diaphragm, an alternative is to narrow the diaphragm by cutting a section out of the middle.

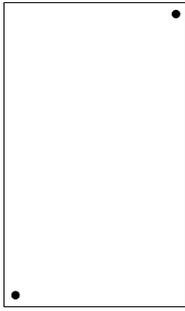


Figure 4 - Location of Holes to Drill in Underframe (not to scale)

The other bit of work is to drill two holes in the underframe for the power cables. Viewing the underframe from below, drill one hole in the upper right corner and the other in the lower left corner.

Assembly:

Using liquid cement for plastics, attach one door/diaphragm assembly between the ribs on each car end. Make sure that the placement does not interfere with proper operation of the coupler.

Glue one diaphragm hangar at each side of the diaphragm flush and just above the top. Paint the hangar to match the car color.



Figure 5 - Car end Showing Placement of Diaphragm and Cable

Test fit the cable by placing the 'hook' end in the hole that you drilled in the underframe and adjusting the bend so that the connector (silver) end lays flush against the car end at a point close to the corner and about one-third the way up the wall. When satisfied with the fit (on the full size car, the connector end is hung on a latch that is attached to the car's end), glue it in place at both locations.

Measure the distance from the hole in the hangar to the center side of the diaphragm and cut four pieces of thin wire to length, allowing additional length to bend both ends 90 degrees leaving a small amount of wire to engage the hangar and the diaphragm. Insert one end of the wire into the hangar hole. Make a hole in the diaphragm for the other end of the wire and glue both ends in place.

Additional Details:

Aftermarket decals are a rare commodity in the Italian marketplace and virtually nonexistent in N scale. However a set (cat # 160-03) that includes correct markings for four different Hcs cars is produced by *DecalENNE*, and available in the US from:

<http://www.decalenne.com/>

These decals are printed on plain decal paper using an ALPS1000 dry ink printer (so you have to cut the various blocks of lettering out individually).

If you have access to the original articles, you will see that additional details can be added. These include:

- The S-shaped hooks that retain the diaphragms in the retracted position
- The receptacles for the cables (located on the underframe on the corners opposite the cables)
- The lever that changes the brake workings over from passenger to freight
- The manual brake wheels.