

### Car 3- HO Reading Combine Car



A picture of the Passenger Car being modeled.

Photo by Charles A. O'Hay (2003)

During research on various types of railroad cars I found a kit made by Bethlehem Cars that I found interesting. The car was a Combine passenger/baggage car (CVI) that was built under AFE #13978 by the Bethlehem Shipbuilding Company (Harlan and Hollingsworth) in Wilmington, Delaware in 1923. The car had a cost of \$20,792.73 at the time of construction. The car had a body length of 63 feet with a baggage compartment of 20 feet (1,275 cubic feet) and seated 56 passengers. It had 4 wheel steel equalized passenger car trucks, weighed in at 110,470 pounds, and was considered a lightweight car. Other equipment included electric lights, a 3KW body hung electric generator, and 300 amp hour 16 cell battery, and a thermos-jet heating system. In the 1950's and 60's it would have been seen as part of the Reading Company Iron Horse Ramble Trains. The car is now located in Kempton, Pennsylvania and part of a scenic railroad. I picked this passenger as my third project and following the instructions that came with the kit and other information found through research the car was built in HO scale.

#### CAR COMPONENTS

##### Parts purchased

##### Body of Car

Bethlehem Car Works, Inc. – Reading Company Class CVI 63' "Suburban" Steel Combine- lit number 220

##### Coupling assembly- (parts purchased)

- 2- KD #31 couplers
- 2- KD #234 gear boxes
- 2- KD #634 centering springs
- 2- KD 256 Nylon insulated screws

##### Trucks-

- 2-Walthers #920-2124 Pullman 8' wheel base 4 wheel trucks- Black
- 3- Preiser Modell HO #17104 Pallets

Badger Model X # 16-17 Pullman Green Paint for the exterior of the body of the car.

Badger Model X # 16-05 Weathered Black for the roof and the interior of the car vestibules.

Badger Model X # 16-03 Grimy Black for weathering of wheel bearings.  
 Badger Model X # 16-172 Rust for weathering of the trucks, wheels, and other steel parts of the body and roof.  
 Badger Model X #1650 Insignia Yellow for highlighting sets, stirrups, grab rails, and hand rails.  
 Badger Model X # 16-173 Mud for weathering of the car.  
 Polyscale Concrete paint for painting the interior of the body.  
 Northeastern Scale Lumber #???? (HO scale 2"x4"x11') basswood (used as interior door framing material).  
 Kadee #438 Air hose and angle cocks  
 A Line Products #29220, tie down chain-black- 27 links per inch  
 Precision Metals #497 (.039" diameter) metal music wire (used for grab, hand rails, and cut lever.)  
 Plasticstruct #90856 (.045" diameter) round rod styrene (used for luggage racks)  
 Evergreen # 293, .100" styrene plastic angle (used for luggage racks)  
 24 pound white paper (used for printing the checker board flooring in the passenger and baggage areas.  
 Evergreen # 253 square tube (used for construction of the boxes in the baggage compartment.  
 Evergreen # 9101 plain sheet (used for the construction of the boxes in the baggage compartment.  
 Kadee #440 Ajax brake wheel.  
 A-Line Products #29220 tie down chain- black 27 links per inch. (manual brake connection chain)

### HOW THE CAR WAS CONSTRUCTED-

The project started the removal of the various kit parts from sprues and removing any residual flash from the parts. The parts were then cleaned and placed to the side and used as needed to fabricate the car.

The body sides and ends were then attached to the car floor using Plaststruct Plastic Weld cement and set aside to cure and dry.



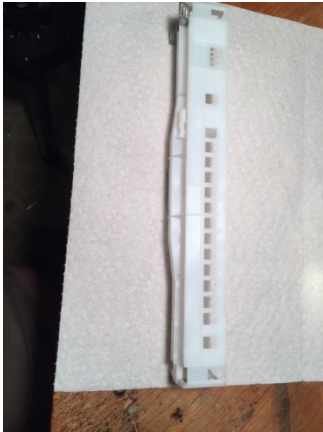
The four car stairs were cleaned and glued in the appropriate location on the body.

The roof vents were then added to the roof as indicate in the kit assembly directions using Plaststruct Plastic Weld and set aside to cure and dry. The roof assembly was then dry fitted and set aside for painting.





The three (3) interior partitions (two divide the vestibules from the passenger and baggage area and one separates the passenger and baggage areas) were then fitted and glued in place on the body assembly.



The undercarriage support beams, brake assembly, generator, and other undercarriage parts were then glued to the underside of the body. Care was taken to assure that the generator assembly would not block the movement of the car trucks.



The passenger seat assemblies were prepared for installation by removing any residual flash, sanding, and painting with Model X # 16-17 Pullman Green paint using a small paint brush and set aside to dry.



The body was then painted using an Aztec A430 air brush and Badger Model X # 16-17 Pullman Green paint. The body was then set aside to allow the paint to cure and dry.



After drying, the trucks (Walthers # 920-2124), coupler boxes (KD # 234), and couplings (KD#31) were added to the body. The undercarriage was then painted using Tru-Color Paints, TCP-805 paint.

The next step was to begin detailing of the interior of the car. It was determined that the roof assembly would not be glued to the car to allow its removal for viewing. I was able to research the Reading Railroad Historical Site on the Internet and find a picture of car 408's interior taken in 2007. Seats were added to the passenger section of the car by gluing the seat assemblies to the floor using Michaels Aleene's tac glue. Flooring was created by making a table in Microsoft word, then filling in alternate black and white squares to simulate a checkerboard flooring, and printing the table on 24# white paper. The paper was cut to size to make the aisle, in the passenger area, and the entire baggage area using ordinary scissors.

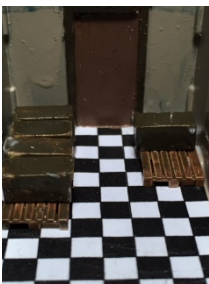
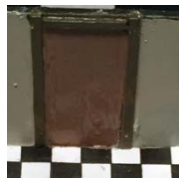


The pictures above (left to right) depict the picture from the Internet, the aisle in the passenger area, the baggage room floor, and the entire flooring area of the car.



With the flooring and seats completed I then added passengers to some of the seats gluing them with tac glue. These passengers were hand painted using various paints using a small brush. Windows were also added to the car using the clear styrene plastic material supplied with the car kit.

I then painted the interior doors and added 2"x4" (HO scale) door trim around the interior doors using Northeastern Scale Lumber # HOSCAL2411 scaled lumber which I cut with my Northwest Chopper 2 at the appropriate lengths, glued them in place using Pliobond adhesive, and painted with Railroad Tie Brown. Preiser Modell HO #17104 Pallets were also added to the baggage room, using tac glue, and painted using the Railroad Tie Brown paint. The pictures below depict the doors and door trim.



2 foot by 3 foot (HO scale) packing boxes were then made from square and plain styrene plastic which I glued together using plastic solvent and painted Railroad Tie brown. The boxes were then glued to the pallets as appropriate.

I then constructed luggage racks of approximate 2 foot width using Plastruct # 90856 styrene plastic rod and Evergreen # 293, .100" styrene plastic angle. Using the angle I cut HO scale 2 foot pieces to create the supports. A pin vice I drilled holes into the angle every HO scale 6" using a drill bit the same size as the rod material. I then threaded the rod material through the holes in the supports to create the luggage rack. The rod was glued to the angle material using a plastic cement. One end of the angle was sanded to remove the bottom portion of the angle near the aisle. Additional supports were made to attach the luggage racks to the car interior using the same angle material cemented the car walls in three places (each end and in the middle on each



side). The pictures below show this above process (left to right) marking of the holes, drilling of the holes, assembly of the luggage rack, and the luggage racks installed (after painting of the racks with Railroad Tie brown paint.



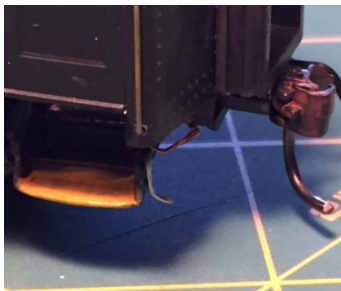
Next exterior car details were installed. First, hand rails, grab rails, and stirrups were fabricated using piano wire cut to appropriate lengths and bent with a pair of pliers. Next holes were drilled at the appropriate locations on the car body using a pin vice and a #72 drill. The hand rails, grab rails, and stirrups were then attached to the car using a small amount of gorilla glue using a toothpick to apply the glue.



The pictures below (left to right) show the above, the stirrups at the baggage doors, the hand rails at the passenger stairs, and the grab rails at the ends of the car.



Next I painted the roof using Model X # 16-05 Weathered Black paint applied with an air brush.



Then cut levers were added to each end of the car using a small wire bent with a pair of needle nose pliers into the shape needed. A manual brake wheel and chain were glued in place inside the B end vestibule area.

The car was then weathered using various Badger Model X paints, such as weathered black, grimy black, rust, earth, and mud using a small brush. The pictures below show some of the weathered areas of the car. Rust was applied to the truck assembly followed up with an application of grimy black in the area of the wheel bearings.



The entire undercarriage was weathered using the rust color as well as grimy black, earth, and mud. The roof area was weathered using the rust color and earth also.

Next I applied the decals that were supplied with the kit. The car number was not supplied which required me to modified the supplied car numbers to make the "408" number applied.



The final step was to add shades to the windows using 24# paper printed with a light blue color.



A photo of the finished model.



A photo of 408 taken in 2007 by Kevin Painter. This is one of four pictures of the car I found on the Internet all depicting different color schemes as the car went from one use to another in its life. One difference you can note between my car and the 2007 picture is the vent on the roof. This vent is for a wood stove that was installed by the current owner and was not in place on the original car.