

DRY CREEK MODELS

HISTORIC DESIGNS FOR CALIFORNIA RAILROADS

SP W-50-3 HART CONVERTIBLE GONDOLA

MODIFIED, 1926 AND LATER

MODEL 102: OPEN HOPPER DOORS.

MODEL 103: CLOSED HOPPER DOORS.



Contents:

- freight car body, primed
- freight car end
- 2 end bulkheads
- K-style brake cylinder
- 4 2-56 nylon screws

Tools Needed:

Pin vise, #76 and #78 drills for grab irons
Flush cutting side cutters for wire and for
cutting screws flush with body
File for fitting car ends.
Paint
Super glue (ACC)
Model putty for fixing gaps.

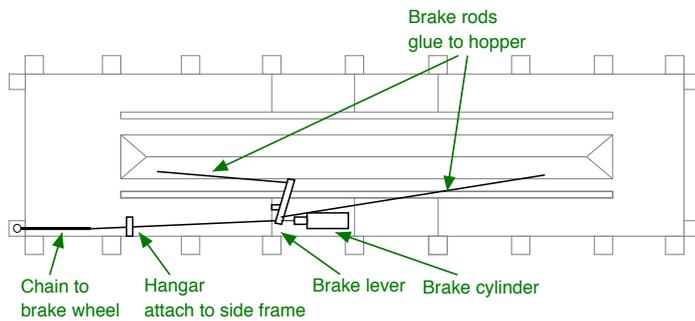
Not included:

- 0.010 brass wire for grab irons
- 0.015 brass wire for brake wheel shaft.
- brake wheel
- Kadee 509 Andrews trucks
- Tichy #3039 or A-line 29000 straight stirrup steps. Tichy #3040 improves truck clearance.
- Builders in Scale #250 chain (for hand brake)
- 1x4 styrene for brake lever
- Plastruct #262 0.080" styrene channel for bulkhead supports and for brake lever mount.

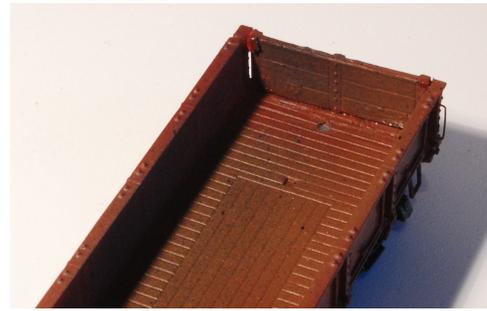
Background: The Hart Convertible Gondola was a Transformer toy for early 20th century maintenance-of-way crews. Designed by the Rodgers Ballast Car Company, the Hart patented design used movable side and floor partitions to turn the car into a gondola, center-dump car, or side-dump car. With the hopper doors open, ballast could be dumped between the tracks. With the hopper doors shut, plows pulled through a line of cars and across bridge plates could push dirt out the side doors for fill. With the hopper doors closed and bulkheads in place, the car could be used as a gondola, hauling rail or ties.

Many Hart gondolas were sold to different railroads with a range of designs. Rodgers never actually built freight cars, but instead allowed car manufacturers to build cars based on the patent and stock designs.

Your model is for the Southern Pacific's variant on the Hart Gondola, built in 1910-11 by American Car and Foundry. In 1926, the Southern Pacific began removing the side dump doors and instead placed solid boards the length of the car. At this time, the railroad added standard grab irons on the car side, and removed the bar that held the doors shut as well as the latches on each door. However, they did not remove the castings that held the locking bar in place on each post. Most photos after

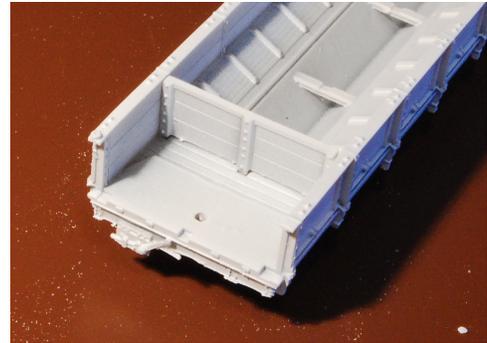


Simplified brake rigging, from bottom.



Right angles bracing bulkhead top

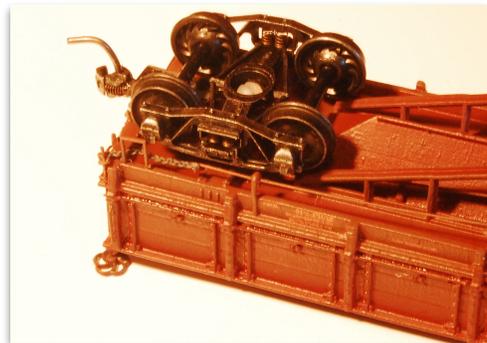
9) **EXTRA CREDIT:** Add opening mechanism for hopper doors under car. The two lever mechanisms on each end of the car connected to a rod that ran the length of the car. Chains wrapped around each rod stretched to the hopper door on the opposite side. Turning the rod loosened the chain and caused the doors to fall open. The brackets for the rod have been cast into the body. The turnbuckles where the chains connected are cast into the door on the opposite side of the car. Insert a 0.015 wire through the brackets, then wrap 8 pieces of chain around the rod and stretch each to the turnbuckle. We never figured out a way to do this neatly, but would love to hear if you figure out a way!



Bulkhead when hopper doors open

10) Stirrup steps were also on the prototype car, attached to the bottom of the side sills just below the grab irons. Find the pilot holes on the underside of the car, drill these holes with a #74 drill, and glue the Tichy stirrup steps into the holes. The steps will need to be bent away from the car to clear the wheels. Some cars had shorter steps; Tichy #3040 can be substituted for more clearance.

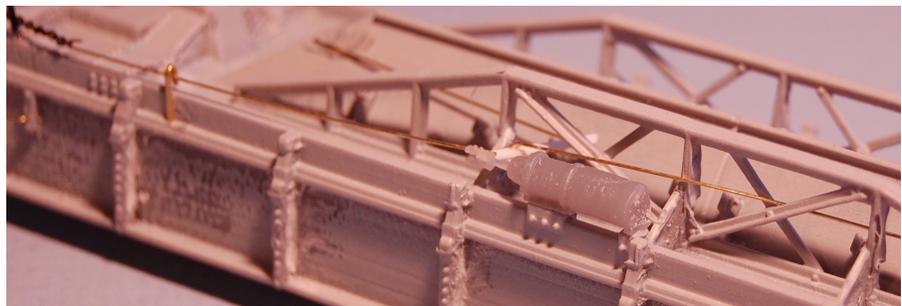
11) The car needs a bracket to mount the brake lever in front of the brake cylinder. The gusset near the brake cylinder's position has a depression cast in for the bracket's position; I used an 8" scale piece of Plastruct 0.080" channel to serve as the mounting bracket for the brake lever.



Brake chain and hangar.

12) Attach the brake cylinder to under frame of car along one side frame.

13) Add additional brake details as needed. Possible options include having only the brake cylinder, adding a brake lever, or adding rodding for hand brake and/or rods to trucks. You can make a brake lever from 1x4 styrene (round the ends, then drill holes to provide a physical connection to wire brake rods. Add two brake rods heading towards both trucks. Also add a brake rod at the far outside, attached to a short length of chain going around the brake wheel. Use 0.015 brass strip to make a hangar for the brake rod leading to the brake wheel. For the brake chain, thread the chain over

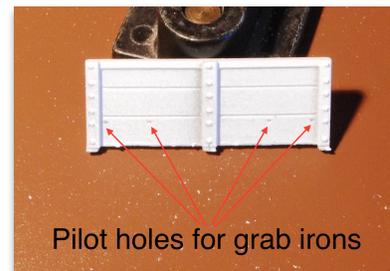
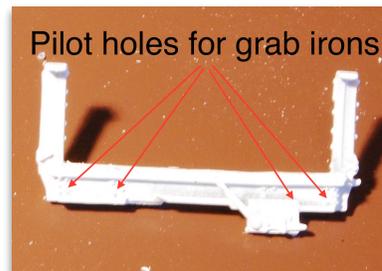
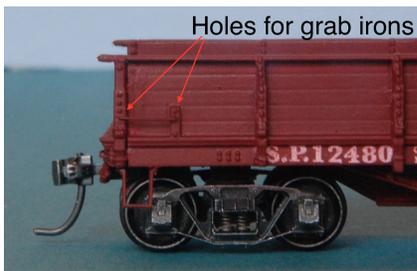
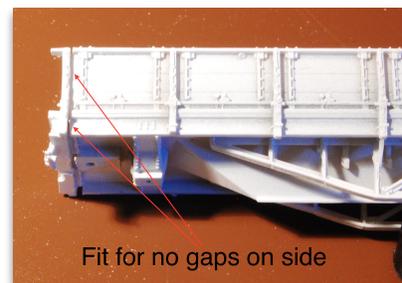
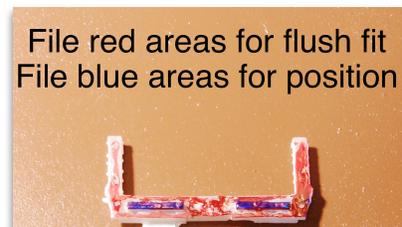


1929 show the cars with the side dump doors removed. With the modifications, some cars served into the 1950's.

Building 3D Printed Models: Your Hart Gondola kit is made by 3d printing the entire body in one piece, giving you a detailed model with little construction work. The resin material used hardens in sunlight or UV light. Now that it's finished and painted, it should be insensitive to light. However, like any plastic model, keep out of strong sunlight and heat to avoid warping and other damage. The 3d printing resin is a bit more brittle than styrene, and is similar to cast resin models or plexiglas. If you need to modify the body or trim flash, use a file, side cutters, or a milling bit in a Dremel rotary tool to remove material. Be very careful trimming with an X-acto knife; don't expect to carve it like styrene.

Building Your Model: The model comes mostly complete as a single casting, so almost all the work is done for you. You will need to do some additional work to complete the model.

- 1) Check the 3d printed parts for flaws. Trim extra material with files, side cutting pliers, X-acto knife, and Dremel as needed. In case of any voids (such as on the gussets joining the truss to the side sills, or on top of the bulkheads), use modeling putty to fill the voids.
- 2) On car end sill casting, remove nubs left from 3d printing process. File back side flat so it will fit flush against car body. On car body casting's A (flat) end, lightly file and trim to remove nubs. Test fit car end against car body; the two raised sections on back side of car end will be flush against bottom of car body floor. File top edge of bulkheads to remove printing nubs.
- 3) Test that holes for attaching trucks and couplers are clean and threaded for 2-56 screws. Re-tap these holes if needed.
- 4) Test fit car end into body. File as needed for a good fit. Glue car end to car body with super glue.
- 5) The car has 21" grab irons on the side and bulkheads, and 18" grab irons on the end sill. Drill #78 in pilot holes in car sides (one on each corner post, the other on the block set in from the end), end sill (two horizontal grab irons on each side), and end bulkheads (two grab irons on each bulkhead).
- 6) Make grab irons by bending 0.010 wire to fit and gluing into holes. The typical approach for resin models would be to drill the holes through the side, apply glue from the back, then cut and file the extra wire off the back after the glue dries. If your grab iron is crooked, try bending the two legs of the grab iron in opposite directions, and reinserting.
- 7) Note that the top boards extend a little past the sides on one end. These boards supported a brake wheel mounted at a corner of the car, rather than at the usual traditional place on the end of the car. The brake wheel is mounted on a piece of 0.015 wire which passes through the top board and car frame. Drill hole #76 hole in corner of top board and in car floor as marked, and insert wire with brake wheel on top. Brake wheel should be 6 scale inches above top of car.
- 8) If your model has the hopper doors open, the end bulkheads are placed towards the center of the car against the raised hopper doors. If your model has the hopper doors closed, end bulkheads can be placed at the ends of the car, set at the sockets towards the center of the car, or left off entirely. Decide on position of end bulkheads. File sides of bulkhead to fit. Cut the styrene channel in half to make two right angle supports for the top of each bulkhead.



the brake wheel shaft, glue, then wrap it around the shaft before attaching it to wire for the brake rod. If your chain can't be threaded on a 0.015" wire, file the wire or sharpen an end and glue the chain only to the tip.

Painting Your Model: We already primed your model with Tamiya Fine Surface Primer to help detail show up better. We've had very good luck airbrushing Tru-Color Paint's SP Freight Car Red (TCP-211). After we applied decals to the car, we lightly oversprayed the entire car with the base color to make the lettering look faded. We also weathered with a gray-brown dirt color from above, and weathered black color from above to simulate ash and other dirt.

Couplers and Wheelsets: Holes for couplers and wheel sets have already been drilled for you and tapped for a 2-56 screw. We recommend nylon screws for the couplers; cut the screws flush with the car body once you've attached couplers and trucks, and use paint to hide the screw.

Andrews trucks were used on the original cars. We use Kadee 509 Andrews trucks for our car, with Kadee #58 "old time" couplers in the standard Kadee #5 coupler box. Cut off the box's "ears" for more truck clearance.

Decals:

Here are the car numbers and build dates for the Hart Gondolas. Lettering style varied widely across the lifetime of these cars. See lettering diagram below for details.

Until 1930, Southern Pacific's freight cars had markings to name the corporate owner - Southern Pacific, Central Pacific, Oregon and California, etc. For the Hart gondolas, the corporate owner appeared on the side sill at the center of the car.

In 1930, the SP also removed periods in the SP initials.

Car numbers	Built	Owner
SP 10880-10959	2/1911	Central Pacific
SP 12220-12340	5/1910 - 6/1910	Central Pacific
SP 12341-12519	5/1910 - 6/1910	Southern Pacific
SP 12520-12639	2/1911	Southern Pacific

Weight: The W-50-3 was a 100,000 lb capacity car, weighing around 40,600 pounds empty, and having a maximum capacity around 120,000 pounds.

Completing Your Model: These models are light - around 2 ounces instead of the recommended 3.5 ounces for a 40 foot car. You can weight these cars with a heavy load. The cars with bottom doors closed will look best with a load of rail or ties; the cars with doors open would look best with a gravel load. For a load of rail, remember that 25 pieces of 39 foot rail would reach the car's capacity. If you intend to model a car with a gravel load, place some spilled dirt or gravel in the ends outside the bulkheads.

Prototype notes:

Photos of Prototype Car:

Anthony W. Thompson, "Southern Pacific Freight Cars Volume 1: Gondolas and Stock Cars", Signature Press, 2002:

- p. 30: end photo of W-50-3.
- p. 35: interior of W-50-1 showing floor panels, hopper, and end bulkheads
- p. 37: end view of W-50-? used for rail delivery.
- p. 38: detail view of end of Hart car showing apron. Shows brake wheel on wrong side. Also Car SP 12100 (W-50-1) in all positions. No center sill under floor panels.
- p. 39: side doors open
- p. 40: non-SP cars and plow removing dirt.
- p. 41: SP 12380, 1910's paint job, details. Also long view of several cars with floor panels open.
- p. 44, several W-50-3 in ballast service, 1930. Brake wheel on right, brake gear visible. Side doors not operational.
- p. 53, SP 12227, 1929.

Historic Southern Pacific Cars: Wayner Publications, New York New York.

p. 47: SP 12380, side view. Older lettering centered on car side. Side doors operational. (Same as p.41 of SP Freight Cars, though higher contrast.)

SP 12267. Southern Pacific "X" photo files, California State Railroad Museum.

Photos of non-SP Hart convertible gondola. <http://bigbluetrains.com/forum/viewtopic.php?f=35&t=6882>. Car differs from the SP version with steel side posts and a solid side truss, but the photos show the dump mechanism clearly.

Union Pacific 84054: In "Common Standard Freight Cars Pt 1" by Ed Workman. Union Pacific Streamliner, v. 10 #4, p. 18.

Drawings of Original Cars:

Work Car Class W-50-3. Common Standard drawing C-1652, adopted Sept. 21, 1906. In collection of California State Railroad Museum. General drawing of entire car.

Siding, Work Cars. Drawing 17325, April 16, 1926. In collection of California State Railroad Museum. Shows removal of side dump doors in 1920's. Detailed side view, detail of doors, and end gate clip.

End Gate Tie Bolt Chain and Staple for Work Cars. In collection of California State Railroad Museum.

Shows chain and staple used to secure end bulkhead. Drawing 11156, Feb. 8, 1927.

Additional Information

Southern Pacific Car Ledgers, 1912 and 1924. Shows builder, corporate owner (SP/CP), and notes on when cars were retired because of damage. In California State Railroad Museum collection.

Union Pacific car numbers from Union Pacific car registers. Thanks to Dick Harley for pointing me at these.

This document is version 1, 12/7/2015.