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The C&S Type II Coal Cars
Assembly Instructions

History of the C&S Type II Cola Cars (Gondolas)
In 1907 the Colorado & Southern built a series of coal cars (gondolas) for operation on their three foot lines. These coal cars had wooden frames, truss rods, and cast steel Bettendorf trucks. These cars were referred to as the Phase or Type II coal cars. The Type II coal cars are distinguishable from the Type III coal cars in that the Type III cars had steel under frames. The Type II cars were also distinguishable from the Type I coal cars in that the Type I cars rode on arch bar trucks whereas the Type II rode on cast steel trucks. The Type II coal cars were numbered 4408-4497.

Before you begin assembly
There are several pieces of information that will help during the construction of this kit. Being aware of them will help you to make assembly more enjoyable.

About the kit
During the design stages of this kit, every effort was made to ensure simple construction on behalf of the modeler. With this in mind we have molded pilot holes for simplified drilling of holes. These holes are molded as deep as is possible but still may not be deep enough for every modeler's preference. It is **recommended** that you drill these holes all the way through before beginning construction. Should you decide to pre-drill the holes, you will need a #78 drill for the grab irons, a #57 for the truck mounting screws, and a #76 for the delrin brake system.

Check each part carefully before beginning construction. Clean off any flash and check for missing or damaged parts. If parts are missing or damaged, send us an SASE with a description of the part and we will gladly replace it.

During the design stage of this kit every effort was made to ensure an accurate representation to the C&S Type II coal car. But as there are differences between prototype standards and S scale NMRA standards, we have had to make some very slight modifications in the layout of the floor beams. These modifications were necessary to allow optimum operating characteristics for your model railroad.

During construction you are given the option of using brass wire for the truss rods or nylon fishing line. The choice is entirely yours. We have included supplies for both. The views in these instruction show brass wire but the accompanying text also gives instructions for fishline.

If you prefer to form your grab irons before assembly, you will need the following:
- eighteen (18) of the 21" grab irons (17 if you choose not to install the "A" end top board cover)
- two (2) 21" grab irons with longer leads for the lower right side safety grab irons. These can be simply formed from a regular 21" grab iron by making a third and fourth bend in the grab iron inwards 3" above the initial bends.

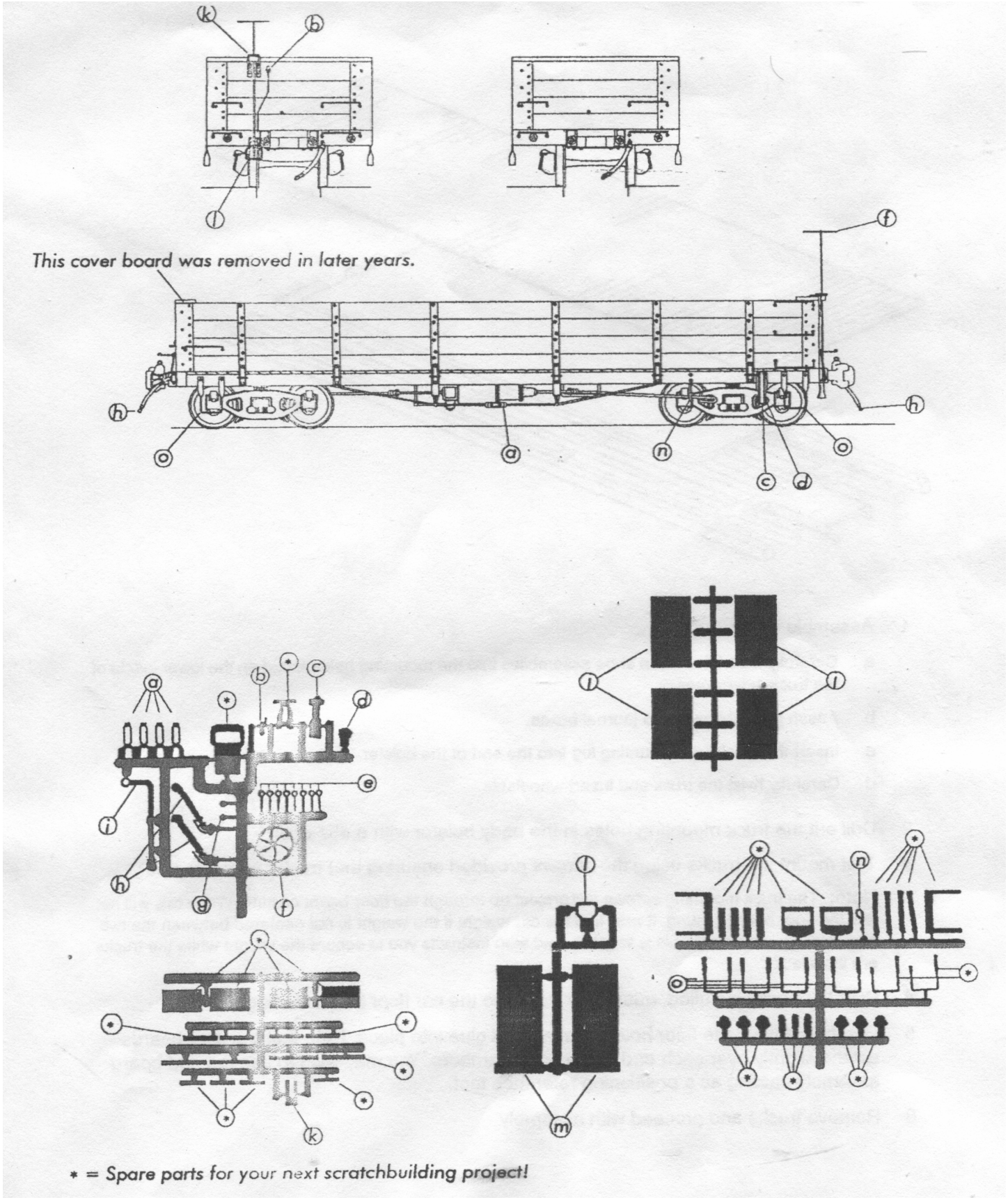
Tools you should have handy:
- sharp hobby knife
- pin vice with #57, #74, #76, and #78 drill bits
- solvent type cement with #000 spotting brush for application
- ACC type cement
- wire cutters
- needle nose pliers

How to use these instructions:
These instructions are broken into the phase of model construction:
- Assemble the floor
- Attach the brake system
- Attach the sides and add details
- Attach brake staff hardware

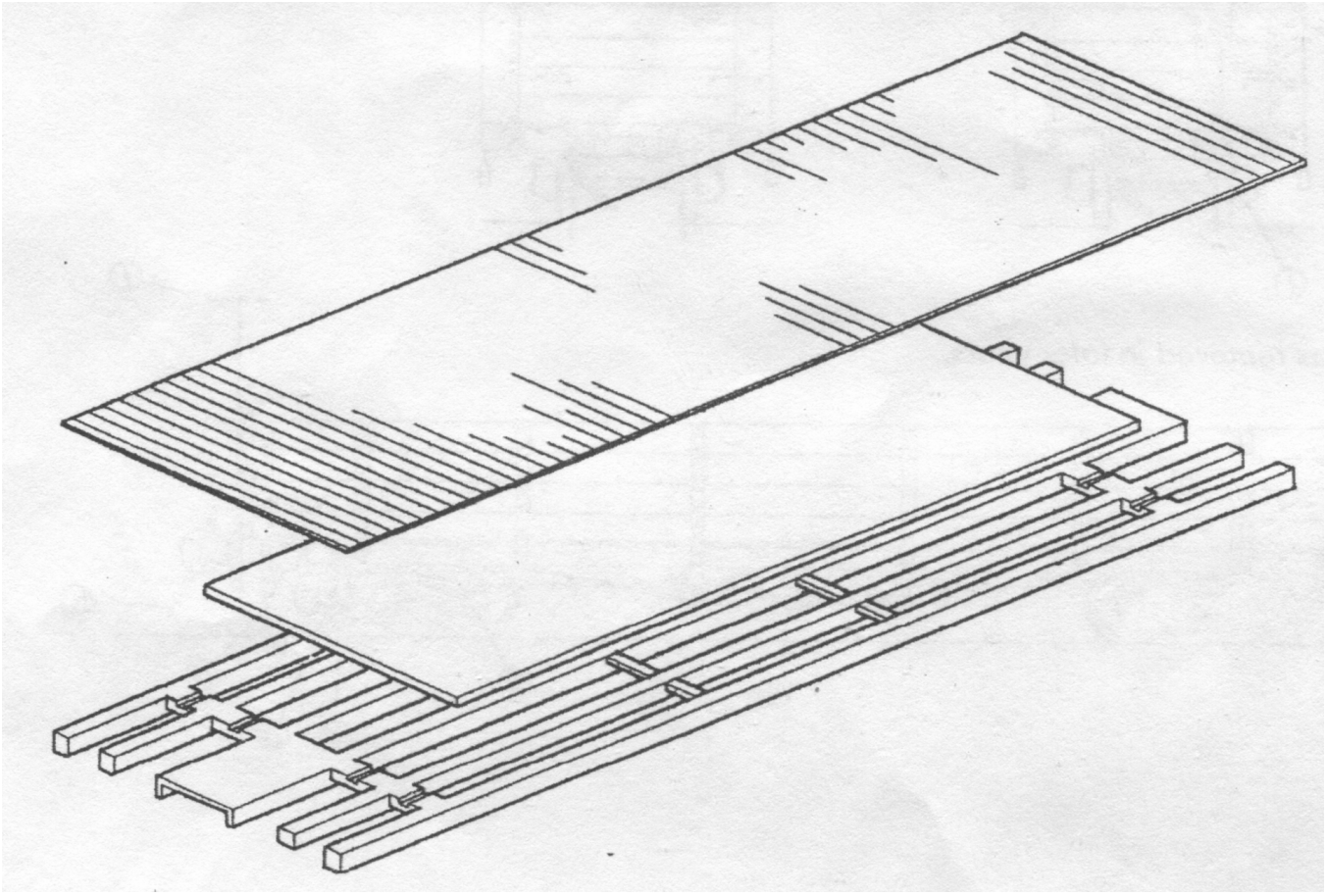
The instructions consist of exploded view isometric drawings and supporting text. While every effort was made to ensure the accuracy of the 3D isometric views, you should always double check the small part placement with the drawings of the car as shown on page 3.

We hope that you enjoy building this fine scale replica of a C&S/RGS Type II coal car. **Precision Vintage Classics** welcomes all comments, criticisms, and suggestions with respect to both current and future model railroading products.

Small part identification



Assemble the Floor Components



1. Assemble the trucks:
a. Carefully insert the brake shoe assemblies into the mounting holes found in the lower inside of the truck sideframes.
b. Attach journal box lids to journal boxes
c. Insert the sideframe mounting lug into the end of the bolster.
d. Carefully twist the truck and insert wheelsets.

2. Drill out the truck mounting holes in the body bolster with a #57 drill.

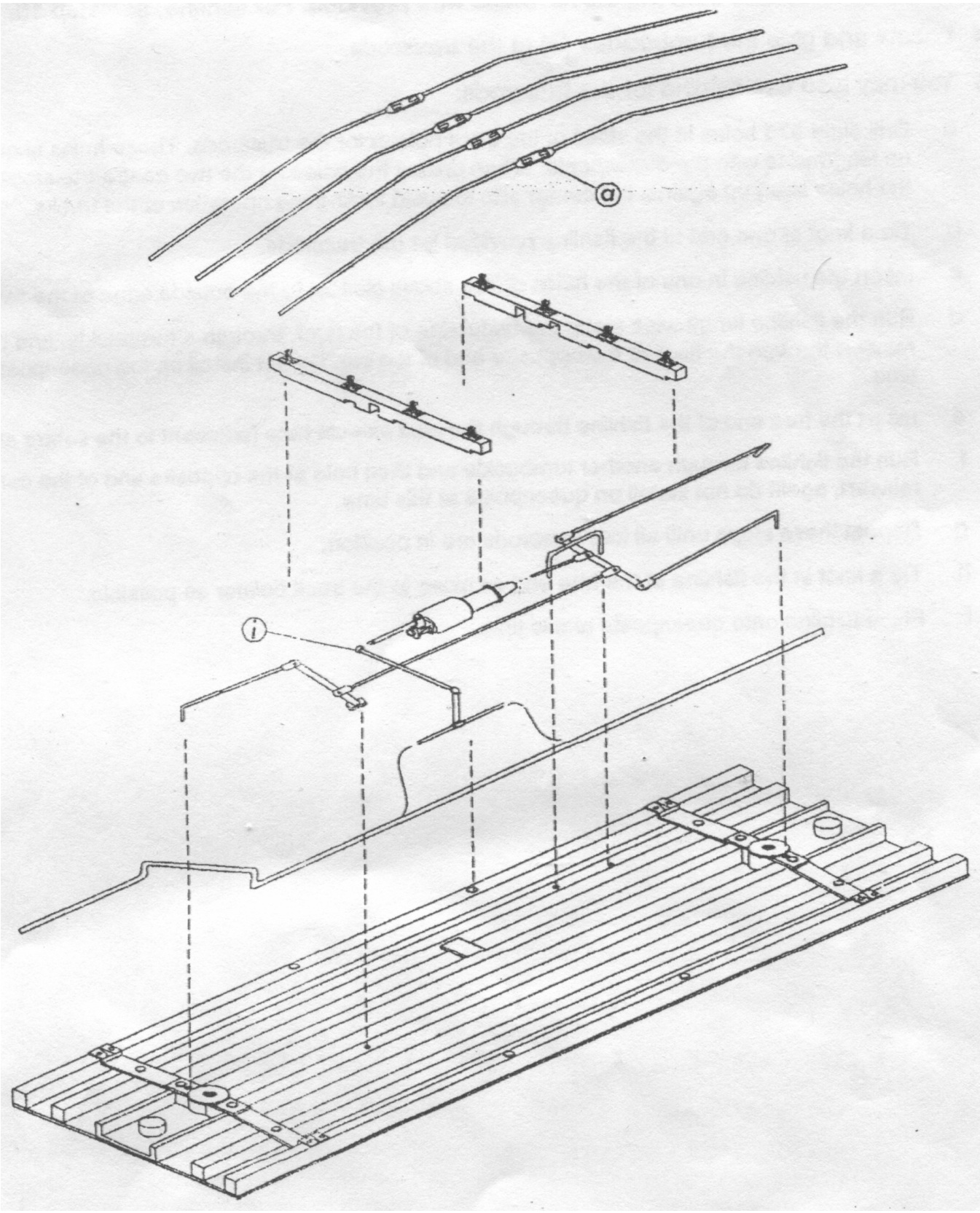
3. Test mount the trucks using the screws provided ensuring that truck can rotate freely.
Note: The truck mounting screws will project up through the floor beam casting. While this will not foul the floor board casting, it may if the weight is not centered between the two truck mounting screws. This is why the next step instructs you to secure the weight while the trucks are installed.

4. With the trucks installed, attach the weight to the car floor beam casting.

5. Carefully line up the floor board casting and glue into place. Note that the floor boards extend slightly over each end of the floor members. You may wish to use the end board assembly casting as a positioning reference tool.

6. Remove trucks and proceed with assembly.

Attach the Brake System



7. Form the air brake line from the 0.025” brass wire provided. Note it runs snug against the center sills except where it crosses them; at this point the airline drops.

8. Slide the train line crossover pipe (i) onto the airline but do not glue.

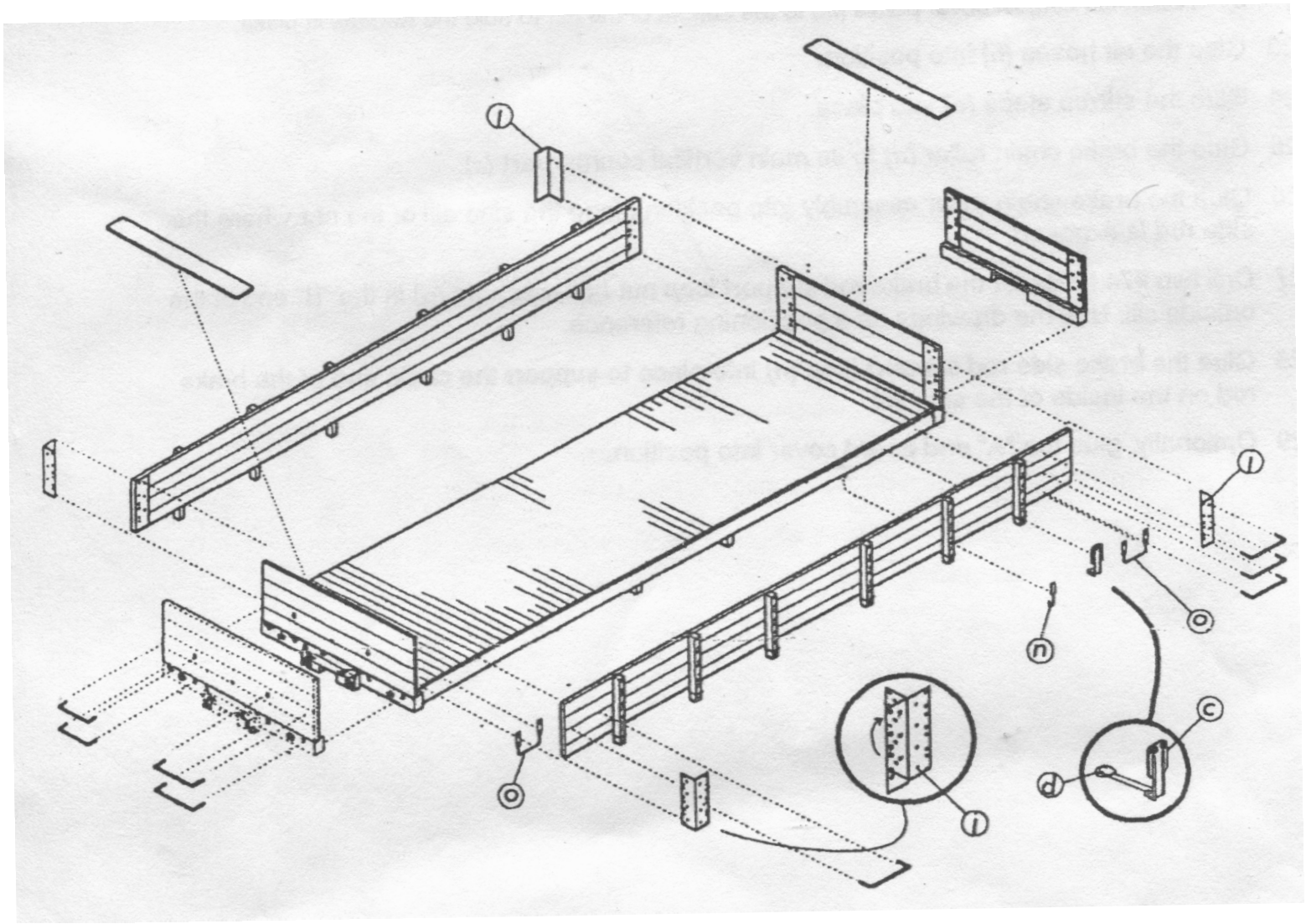
9. Glue airbrake line in position.

10. Carefully push the delrin brake system into place. It should stay in place on its own due to the snug fit, (delrin rejects most glues).

11. Glue the brake cylinder in place.

12. Position and glue the train line crossover(i) in place behind the brake cylinder air reservoir.

Attach sides and add details



13. Glue the walls to the floor assembly. Note that the notches along the edge of the floor boards are designed to mate with the side's vertical stakes.

14. Glue the needle beams in place. (Position between center side stakes). You may wish to clip the reinforcing cross pieces off if you prefer.

15. From the truss rods from the 0.012" brass wire provided. For fishline, see step 17.

16. Locate and glue the turnbuckles (a) to the truss rods.

17. You may also use fishline for the truss rods:
    a. Drill eight #75 holes in the sides of the truck bolster for the truss rods. These holes should line up lengthwise with the queen posts. When drilling the holes for the two center truss rods, keep the holes snug up against the center sills to avoid fouling the operation of the trucks.
    b. Tie a knot at one end of the fishline provided for the truss rods.
    c. Insert the fishline in one of the holes drilled above closest to the outside edge of the car floor.
    d. Run the fishline lengthwise along the underside of the floor , through a turnbuckle, and then reinsert through the floor at the opposite end of the car. Do not install on the queen posts at this time.
    e. Insert the free end of the fishline through the next closest hole, adjacent to the center sills.
    f. Run the fishline through another turnbuckle and then hole at the opposite end of the car and reinsert, again do not install on queen posts at this time.
    g. Repeat these steps until all four truss rods are in position.
    h. Tie a knot in the fishline at the free end as close to the truck bolster as possible
    i. Place fishline onto queen posts at this time.

18. Glue the corner reinforcement braces (j) on the outside of each corner

Note: it is easier if you apply a small amount of solvent along the inside seam of the brace to allow the area to soften Doing so will help prevent the braces from breaking when you bend it around the corner of the car. (Please note, there are left and right hand corner pieces.)

19. Drill #78 holes for the grab irons using the molded pilot holes as a starting reference.

20. Form the grab irons using the bending jig provided.

21. Glue the grab irons into place using ACC. The grab irons should be approximately 0.040" (3/64") from the sides of the car.

22. Install the Kadee couplers provided
    a. Insert the centering spring over the coupler pocket mounting lug so that when the car is sitting on the track the open side of the spring is facing downwards.
    b. Position coupler shank ring over the coupler pocket mounting lug thus sandwiching the spring to the bottom of the car.
    c. Attach the coupler cover plates (m) to the bottom of the car to hold the Kadee in place.

23. Glue the air hoses (h) into position.

24. Glue the stirrup steps (o) into place

25. Glue the brake chain roller (d) to its main vertical counterpart (c).

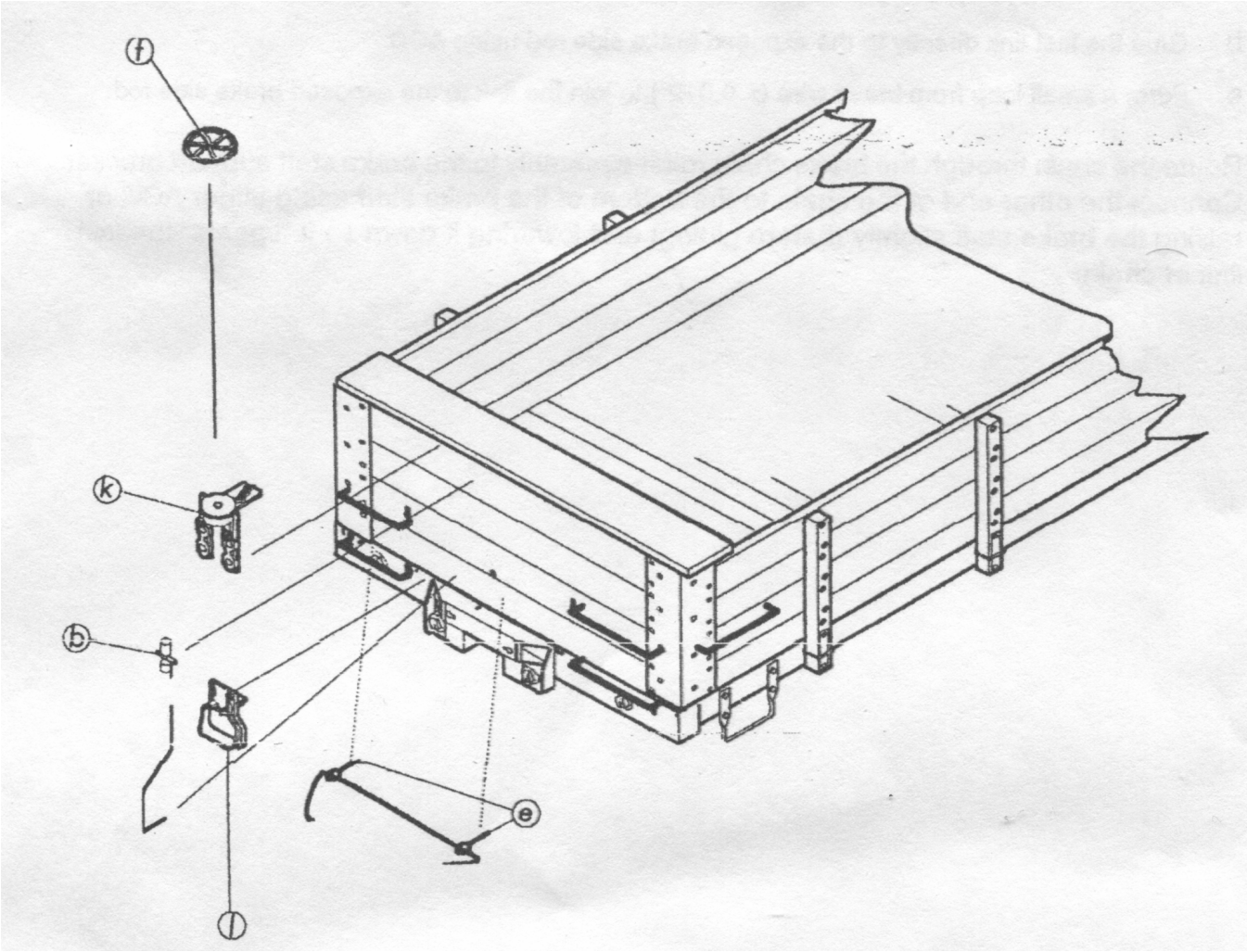
26. Glue the brake chain roller assembly into position along the side sill of the car where the side rod is exposed.

27. Drill two #74 holes for the brake rod support loop nut-bolt-washers (g) in the "B" end of the outside sill. Using the drawings as a positioning reference.

28. Glue the brake side rod support loop (n) into place to support the chain end of the brake rod on the inside of the side sill.

29. Optionally, glue the "A" end board cover into position.

Attach brake staff hardware



30. Glue the brake staff support bracket (l) into position.

31. Form the retainer valve line from 0.009" brass wire and using ACC, glue the line to the bottom of the retainer valve (b). (Optionally), you may want to drill out the bottom of the retainer valve first.)

32. Glue the retainer valve and line to the "B" end wall of the car.

33. Glue the brake ratchet and pawl (k) to the top/side of the "B" end cover board ensuring that it is dead center over the brake staff support bracket.

34. Insert the 0.019" brake staff into the ratchet and pawl. Drill out the styrene casting with a #76 drill if needed.

35. Glue the brake wheel (f) into position on top of the brake staff.

36. Form the coupler cut bars from 0.009" brass wire. Insert cut-off bars onto two "eyes" (e) and glue the assembly into the holes located on both end board castings.
Note: The cut-off bars are different for each end; one has a dip in it to clear the brake staff.

37. Attach the chain provided to the brake side rod. This may be done in one of several ways:
   a. Using a straight pin, insert the pin into the last link of the chain and press the pin into a soft surface (example: homasote). Press the pin into the link until it is rounding out large enough to fit onto the cast delrin exposed side brake rod. Using tweezers, grasp the link of chan next to the link which you just expanded and connect the chain to the brake rod.
   b. Glue the last link directly to the exposed brake side rod using ACC.
   c. Form a small loop from brass wire (> 0.012") to join the link to the exposed brake side rod.

38. Route the chain through the brake chain roller assembly to the brake staff support bracket. Connect the other end of the chain to the bottom of the brake staff using either ACC or raising the brake staff slightly (before gluing) and lowering it down so it "spears" the last link of chain

Painting and Lettering

When these cars were built they were painted freight car red. You should check your references for other schemes used. For example; "Narrow Gauge Pictorial Volume VIII" by Robert Grandt, or the "Up Clear Creek" series by Harry Brunk in "Narrow Gauge and ShortLine Gazette"