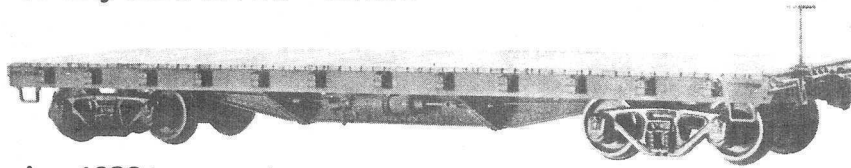


40' fifty ton **FLAT CAR**

Kit #4021



circa 1928 to present

PROTOTYPE HISTORY

The prototype for this 40' fifty ton flat car was built in 1928 by American Car and Foundry for the Nashville, Chattanooga and St. Louis Railroad. Designated ARA Class FM, ("ordinary flatcar for general service") it is typical of the 50 ton capacity, riveted construction "workhorse" of the railroads. This car type is easily identified by the straight side sills and deep fishbelly underframe. Since this car was so common, it is correct to letter it for almost any railroad.

It's use is obvious — loads can range from lumber to tanks and heavy machinery: in fact, almost any load that can be transported un-protected or under tarps, and too large or awkward for house car loading.

This kit is unique in that it features complete prototypically correct underbody and brake gear detail. This is a common feature of our kits, as it adds a great deal of "up-close" eye level realism, especially as more layouts are being built at higher levels.

The added feature is that *you* know the finished model is an accurate scale miniature reproduction, and you will have a greater sense of how freight cars are designed and built.

SO — let's get to work!

PLEASE READ BEFORE ASSEMBLY.

Each sprue, or group of parts, has an identification number and letter, and each part (or identical parts) has a number. Example: 4021-B-3, or simply B-3.

Each part is attached to the runner by a small "gate". When removing a part, cut close to the sprue, then carefully trim and file gate to the part. Don't let the part "snap" off into the carpet! DO NOT remove parts until called for in the instructions, and DO NOT twist them off, as they will be damaged.

All plastic parts have a sharp witness line, usually on an edge, where the mold halves come together. This line should not be confused with "flash" which is a very thin area of plastic extending from this line. We try not to ship parts that have "flashed" as this indicates that the mold was not properly clamped, the part is thicker than intended and may not fit. For a neater appearance, this sharp line may be removed by scraping with the knife.

We recommend using ONLY "liquid cement for plastic". Use ACC cement for plastic to metal joints. Test fit each part to see where cement should be applied. Apply sparingly with a sharp pointed brush, allowing cement to "draw" into joint by capillary action. For larger surfaces, several "paint" passes may be required to soften the plastic.

We suggest you clean your workspace, and provide adequate lighting. Work on a piece of white paper to provide contrast. And — one of the most common problems is simply tipping over the cement jar or laying a wet cement brush on the plastic parts.

Yes — the parts DO FIT. If you think a part does not, STOP — you may be making a mistake. Check the drawings and instructions before proceeding. There are a few places that will require minor adjustments, but this is intentional, and you will be instructed when and how.

PARTS LIST

Quantity required in ()

(1) 4021-A DECK

4021-B sprue:

- (1) 1 "A" END BEAM
- (1) 2 "B" END BEAM
- (2) 3 SIDE SILL
- (2) 4 BODY BOLSTER
- (1) 5 FISHBELLY, right
- (1) 6 FISHBELLY, left
- (2) 7 FISHBELLY SPACER
- (1) 8 SMALL CROSS SILL
- (1) 9 SMALL CROSS SILL
- (1) 10 SMALL CROSS SILL
- (1) 11 SMALL CROSS SILL
- (1) 12 MAIN CROSS SILL
- (1) 13 MAIN CROSS SILL
- (2) 14 COUPLER POCKET COVER

4021-C sprue:

- (2) 1 COUPLER POCKET
- (1) 2 BRAKE CYLINDER BRACKET
- (1) 3 LEVER END (brake cyl. clevis)
- (1) 4 LEVER END
- (1) 5 BRAKE CYLINDER
- (1) 6 BRANCH LINE SEGMENT
- (1) 7 LEVER END (long)
- (4) 8 STIRRUP STEPS
- (2) 9 CURVED TRAIN LINE SECTION
- (1) 10 BRAKE WHEEL
- (1) 11 RATCHET PLATE
- (1) 12 BRAKE STAFF BRACKET
- (2) 13 SPACER WASHERS, for Athearn trk's.

- (8) 14 GRAB IRONS
- (1) 15 BRANCH LINE SEGMENT w/elbow

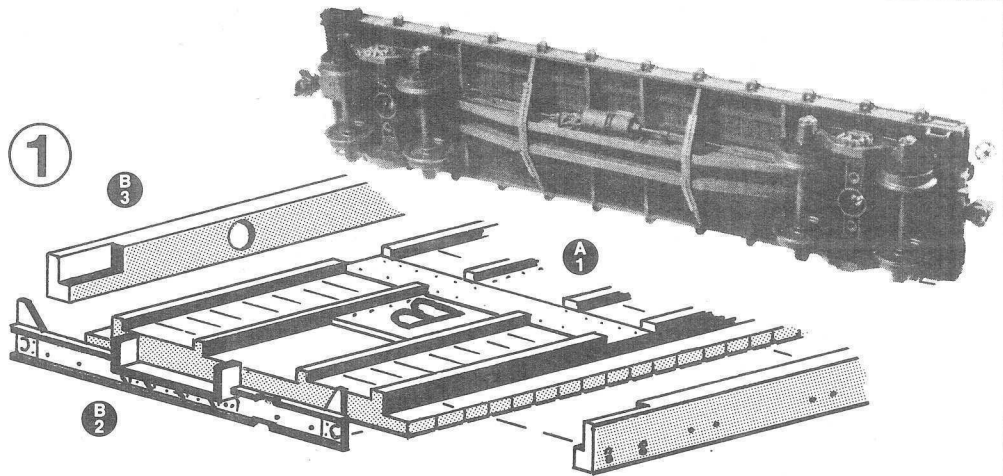
- (24) 3007 STAKE POCKETS
- 1 pc. .020 PB WIRE
- 1 pc. .010 PB WIRE
- 1 ea. WEIGHT
- 2 ea. 2-56 screws
- 1 pr. ATHEARN BETTENDORF TRUCKS

1 BASIC ASSEMBLY

Fig. 1

Note the "A" and "B" engraved on underside of deck. The "B" refers to "Brake Wheel" end of car, and will be referred to throughout the assembly.

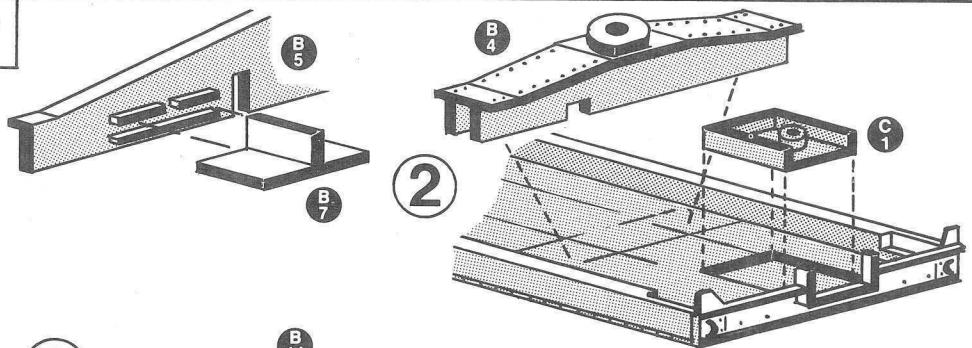
- (1) File or scrape gate scar and parting line from ends of deck. Just remove, don't alter length.
- (2) Cement ENDBEAM B-1 to "A" end of deck.
- (3) Cement ENDBEAM B-2 to "B" end of deck.
- (4) Check SIDESILLS B-3 for length — they fit between end beams. If slightly long, carefully file or scrape to length. (this is one place where you may have to "fit" a part due to "differential shrink" of the plastic. However, this is the only place!) Cement sidesills to deck, with gate edge down, away from the deck boards, or "toward the track". Be sure deck is flat, not warped, and sidesills are tight into corner. After cementing, place deck on a flat surface, board side down, and place some weights on to keep it flat while cement sets up.



2 UNDERFRAME ASSEMBLY

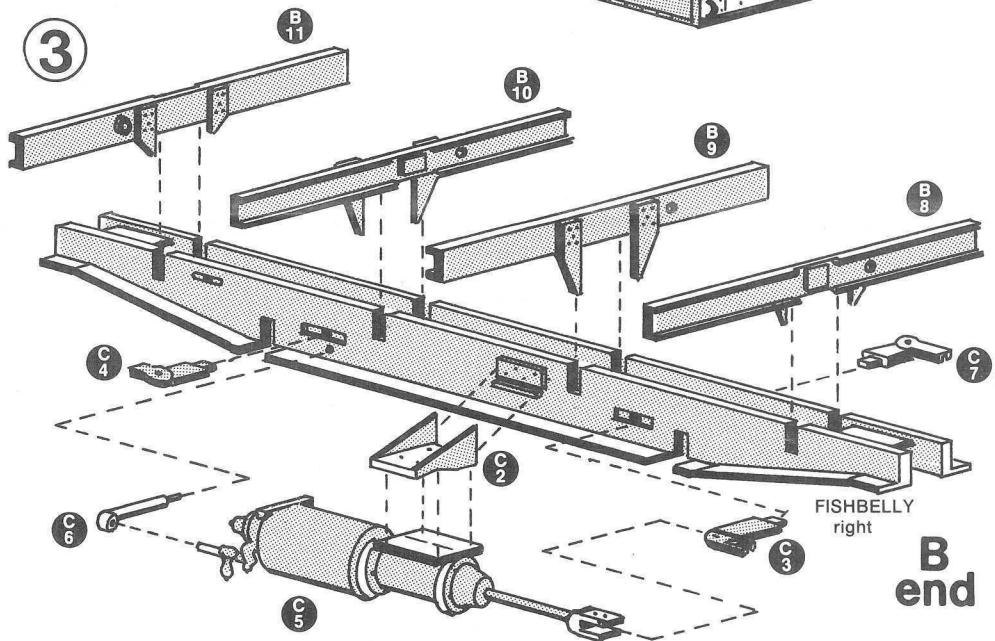
Fig. 2

- (1) Cement FISHBELLY SPACERS B-7 to FISHBELLY RIGHT SIDE B-5.
- (2) Cement opposite FISHBELLY B-6 to spacers. Set aside.
- (3) Cement COUPLER POCKETS C-1 to deck, tight against endbeam.
- (4) Cement BODY BOLSTERS B-4 to deck. Note raised locators that fit into notch in bolster. The slot formed will pass the train line later in assembly.



Refer now to Fig. 3. NOTE: To avoid confusion, remove parts from sprue ONLY when called for below. The small cross sills are numbered in sequence, and when properly installed should read in sequence, starting from the "B" end. THE CROSS SILLS ARE NOT INTERCHANGEABLE

- (5) Cement END CROSS SILL B-8 to frame.
- (6) Cement CENTER CROSS SILL B-9 to frame.
- (7) Cement CENTER CROSS SILL B-10 to frame.
- (8) Cement END CROSS SILL B-11 to frame.
- (9) DO NOT install Main Cross sills B-12 or B-13 at this time.
- (10) Cement BRAKE CYLINDER BRACKET C-2 to fishbelly right.
- (11) Cement LEVER END C-3 to slot, with clevis "prongs" facing to end of car.
- (12) Cement LEVER END C-4 to slot, also with clevis pointing to end of car.
- (13) Cement BRAKE CYLINDER C-5 to bracket and lever.
- (14) Cement BRANCH LINE STUB C-6 between dirt collector pipe on brake cylinder and hole in fishbelly.
- (15) Cement long LEVER END C-7 to slot in opposite side of fishbelly, with clevis pointing to "B" end.
- (16) Set underframe aside to dry.

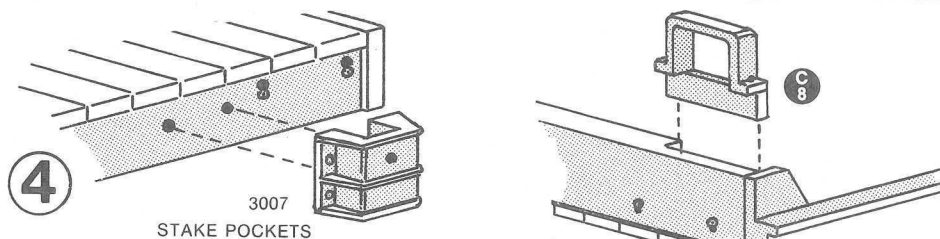


3 STAKE POCKETS, etc.

Note: 8 spare stake pockets are provided should you lose one. It also allows us to do a 52' car sometime!

(1) Cement STAKE POCKETS to side sill, with "spike hole" up, or toward floor side of deck. See fig. 4. Small pins are molded on back of pockets for alignment.

(2) Cement STIRRUP STEPS into notches in corner of side sills.



4 FINAL ASSEMBLY

Fig. 5

(1) Place underframe assembly into floor, with brake cylinder clevis pointing toward "B" end of car. Put deck, board side down, on a truly flat surface, and have your weights handy. If all is ready, "run" your cement brush between fishbelly plates to cement underframe to floor. Also tack the cross sills to side sill. Hold firmly for a moment, then gently place some weights on the underframe until the cement has set up.

(2) Clean any flash from the white metal weight and drop in place between fishbellies.

(3) Cement MAIN CROSS SILLS B-12 and B-13 in place. NOTE: Main cross sills ARE NOT interchangeable, so study fig. 5 to be sure first. The rivet side of flanges face to center of car.

(4) Cement one CURVED TRAIN LINE SECTION C-9 between small end cross sill and right fishbelly, "A" end of car. HINT: Locate into fishbelly first, then snap into hole in cross sill.

(5) Cement other CURVED TRAINLINE SECTION C-9 between left fishbelly and main cross sill, "A" end, as in step 4.

(6) From .020 (larger) wire, cut and bend the two straight trainline sections as shown, fig. 5a.

(7) Pass short segment thru slot in body bolster on "A" end, and into hole molded on small cross sill. Cement against floor.

(8) Feed long segment thru body bolster, "B" end, and thru holes in small cross sill, main cross sill, two center cross sills, and into pocket on main cross sill. Whew! cement in place.

(9) Locate "T" of BRANCH LINE C-15 over train line and cement into hole in fishbelly.

(10) Cut two BRAKE RODS from .010 (smaller) wire to length fig. 5b.

(11) Cement brake rods between clevis and tabs molded on body bolster.

(12) Cut one piece of .010 wire to fig. 5c. Cement into pocket formed by brake cylinder clevis/lever, and other tab molded on body bolster. "B" end.

(13) Cut brake staff to length, fig. 5d, de-burr ends.

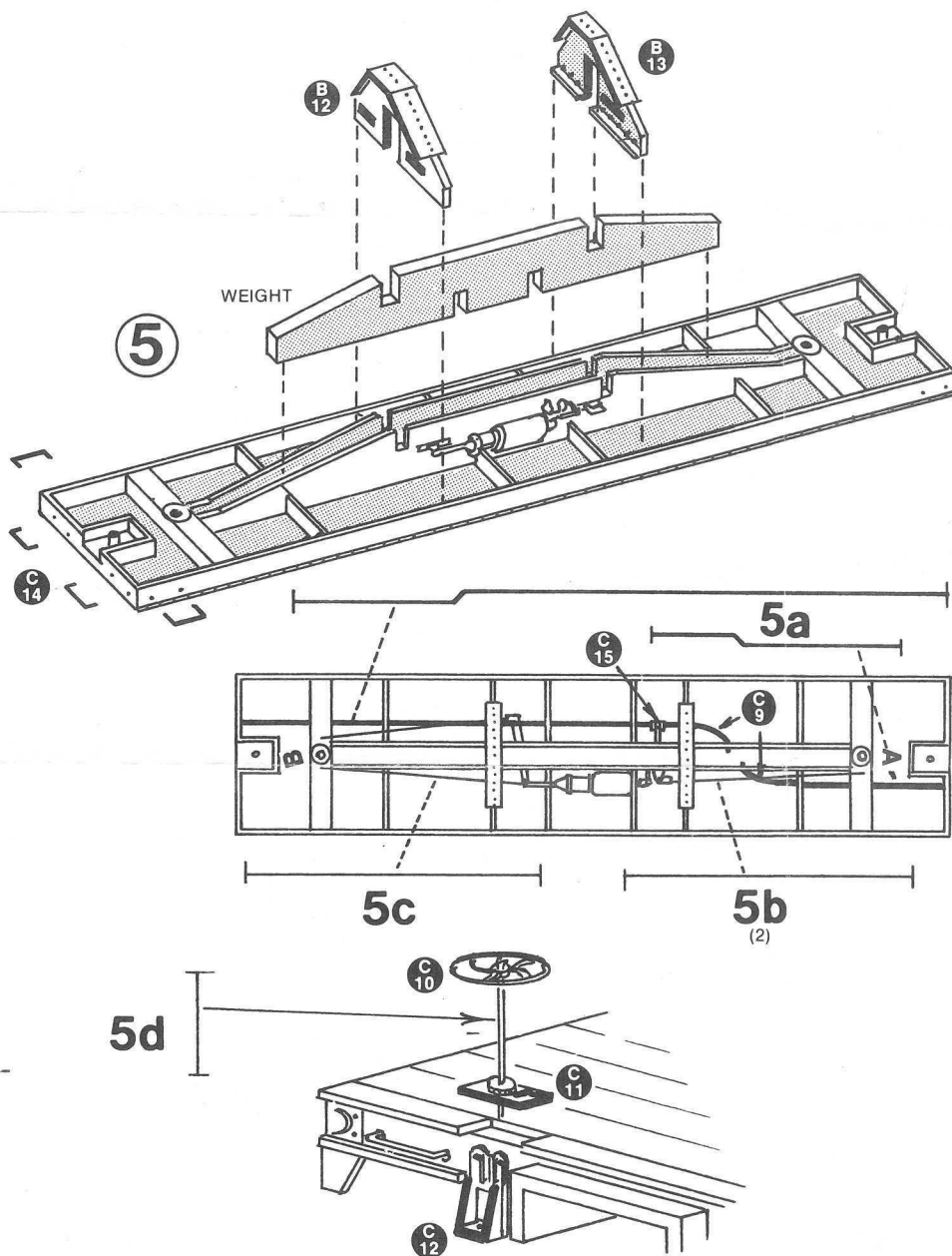
(14) Cement BRAKE WHEEL C-10 to staff.

(15) Cement BRAKE STAFF BRACKET C-12 to "B" end beam.

(16) Cement RATCHET PLATE C-11 to recess on top of "B" end beam, insert brake staff and make sure staff is truly vertical. Cement brake staff to bracket/plate.

(17) Cement 8 GRABIRONS C-14 as shown.

(18) It is wise not to paint the couplers, so simply snap COUPLER POCKET COVERS B-14 in place to mask off pockets.



5

PAINTING and DECALING

The most obvious feature of a flat car is the wood decking, and as such deserves careful painting. Creating "wood" from a plastic part sounds formidable, but actually breaks down to several simple steps.

As usual, there are several options — one, simple paint the entire car body color, then apply washes and dry-brushing to the deck to indicate use. However, most prototype decks are not painted, but are pressure treated creosote, left natural.

Here again are several options. Wood weathers to a "silvery grey black", often with raw wood gouges from load shifting. Many modelers, however, prefer a more "woody" color.

Our recommendation is half way between — greyish-brown. And here's how to get it — Plan to paint the deck first, then mask off for the body color, usually freight car red, or black. Decal catalogues or instructions usually indicate the correct color for the prototype being followed.

Allow plenty of time for each paint coat to dry, or at least until no odor can be detected. Although we do not normally recommend a specific product, in this case the technique works simply and effectively, so we will. Many of you will no doubt have perfected a system for wood, so if it's different by all means, use yours.

Materials:

FLOQUIL (do not use Polly S)

R-84 Foundation (or R-81 Earth)

R-70 Roof Brown

R-12 Reefer Grey (optional)

Dio-Sol thinner

TAMIYA hobby acrylic paint (from your hobby shop)

X-1 Black

X-20A Acrylic thinner

Medium #0 or #1 brush

piece, 120-150 grit NoFil or wet/dry

sandpaper

#0000 steel wool

(1) Mask side sills, over stake pockets, to prevent a buildup of overspray onto side sills. NOTE: When mixing Floquil for spraying on plastic, use less thinner than normal, and spray a little "drier", to prevent crazing the plastic. Test each mix on a scrap piece of sprue to make sure. Also, perform each operation that follows on scrap to check your technique. When you're finished, the sprue will look like telephone poles!

(2) Spray a light even coat of Foundation (or Earth) over entire deck. LET DRY THOROUGHLY. This is the most important step, and success depends on this coat being truly dry.

(3) Fold a small 1/2" square of coarse sandpaper to form a cutting edge. Lightly sand or "grain" each board in a random pattern, just breaking thru the Foundation into the grey plastic. Don't over do it — leave about 75% of the painted surface untouched. This will add traps for the washes at a later stage.

(4) Using Roof Brown/DioSol wash, greyed a little with the Reefer Grey if desired, streak the individual boards in a random pattern. This is a semi-transparent wash, not "wood grain". Start light, you can always darken it later. Also, do one board, skip 5 or 6, do another, and so to end of deck. Then vary your mix and technique and fill in some more boards, then complete with even another mix.

The result should be an overall "family" of color, but made up of individual boards. They should be darker in the areas that you sanded, but you should also see the Foundation color thru the brown. Don't forget the board ends!

(5) When the brown has dried, again lightly sand thru brown to the foundation, and a little grey plastic. Try to leave most of the brown intact. Hint: if the foundation was dry, you only have to wait about 15 minutes for the brown to set up. But, as always, Test!

(6) Using Tamiya Color acrylic and thinner, apply several thin washes to entire deck. Don't get it too dark, but do try to get it into the grooves and areas that were sanded. Acrylic dries very quickly, so work fast. Remember to test first on your sprue scrap!

(7) When dry, lightly steel wool the surface to even out the finish and add subtle graining.

The final result is a "brown" (or grey-brown) deck, somewhat transparent, with the Foundation undercoat providing a background. The black washes have collected in the grooves and details, as well as the areas that have been sanded, completing the effect of wood grain.

When the deck is finished and completely dry, mask off and spray the body color. Remove masking carefully as soon as possible. When dry, proceed with decaling, following the decal manufacturers instructions. Hint: The finish should be glossy if using decals. Apply flat finish, some weathering with airbrush and pastel powder, and finish off with a light coat of flat.

6

FINISHING TOUCHES

(1) Install couplers (coupler pockets accept Kadee® #5 or NMRA hook). Coupler pockets can be snapped on or lightly cemented. Note: Polish off any overspray that may have gotten into pocket, and burnish the inside of covers with a soft lead pencil for lubrication.

(2) Install trucks with 2-56 screws provided. It is best to adjust the screws so that one truck is tight against bolster but still free to rotate easily, while the other truck is a bit looser to allow sideways pivoting as well as rotation. A simple three point suspension.

Note: If using Athearn trucks, provided, also use spacer washers C-13 to put car at correct coupler height. If you use Kadee® trucks do not use the washers.

So load it up and head it out!

and THANK YOU from TICHY TRAIN GROUP

If you should irreparably damage or lose a part it will be replaced without charge. Please return the part/s to us with \$1.50 for shipping and handling — a replacement will be sent immediately. And, do drop us a line, we enjoy hearing from you with ideas, comments and suggestions for new products.

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