



Barber 50-, 70- and 100-ton Roller Bearing Trucks

Featuring Rotating End Caps and Brake Shoes/Beams

(S Scale) • Smoky Mountain Model Works, Inc.
www.smokymountainmodelworks.com • Asheville, NC, USA

Images are of 50-ton truck.
Assembly steps for 70- and 100-ton truck are same except for screw size and quantity of springs.

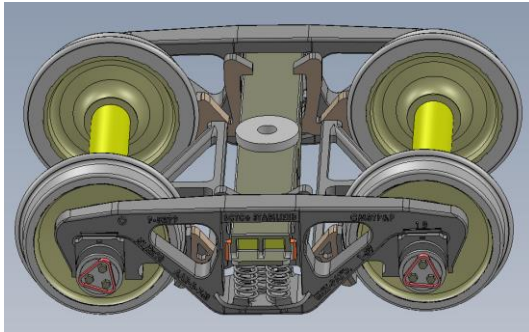
These instructions are available in COLOR on the **SMMW freight car trucks web page**.

(Left) >> Solidworks 3D CAD screen shot of an assembled Barber 50-ton roller bearing truck with 33" wheels, triangular rotating end caps and brake shoes/beams.

Each truck consists of hi-resolution, SLA 3D printed sideframes and brake beam/shoes unit with cast urethane bolster and bolster center plate. Wheelsets are comprised of machined brass, bright Nickel-plated tires with injection molded ABS centers, (2) styles of ABS bearing caps and telescoping brass tubing for axles.

Step 1: Use a #11 X-Acto blade to deflash bolster along the edges, especially between the (4) pairs of "guide ears". Missing these areas may cause the bolster to bind in the underframe. Use a flat file to remove 3D printing "layering" along the top/bottom and connecting tabs on each end. Some filing of the sideframe walls may also be required to allow easy "floating" of the bolster.

Thoroughly scrub the wheels and bolster with "Dawn Ultra" liquid, water and toothbrush to remove mold release or paint will not adhere. 3D printed parts are fragile ... exercise care when handling them, especially around small features like the spring tabs in front and rear.



Step 2: Use a #50 bit for 50-ton bolster/ring and #43 bit for 70- and 100-ton trucks to align bolster screw hole and ring. Place a drop of slow-set CA on each side of the bolster hole, slide the ring/plate over the bit and attach to the bolster. Smooth the inner surfaces of each sideframe axle hole with a round jeweler's file. Test-fit axles in each hole to verify there is free rotation (enlarge axle hole as necessary to achieve free rotation).

Step 3: Test-fit the bolster and sideframes to ensure the bolster slides smoothly. Remove the parts and paint using acrylic or solvent-based paints. Acrylic may require primer; lacquers do not. I recommend the latter because they dry flat, ready for weathering and tend to cover surfaces using less paint. Use thin strips of "painter's blue tape" to cover wheel treads. New wheelsets and axles would be rust-colored (by law, wheel faces cannot be painted to avoid hiding cracks). Well-used sideframes have traces of the original carbody color with a heavy accumulation of road dirt. Painting the truck sideframes and bolster to match the carbody followed by "Grimy Black", "Earth" and "Grime" to highlight details and sideframe text yields a typical appearance.

Step 4: Each sideframe and bolster contains alignment bosses that keep the springs in place without glue. Each truck design requires a different number of springs per sideframe (50-ton = 5, 70-ton = 6, 100-ton = 7) to limit the tendency for the sideframe's bottom to tilt outward due to offset spring loading. The 50-ton requires all (5) springs. Fill the outer (2) rows plus (1) on innermost row for the 70- and 100-ton. **THERE ARE NO SPARE SPRINGS** so if you lose one, replace with Kadee #637.

Insert both wheelsets thru a sideframe, insert the bolster, then slide the 2nd sideframe over the other end of the wheelsets and bolster. Note that there are (2) guide tabs (blackened in photo) on the INSIDE of each sideframe used to limit vertical bolster travel.

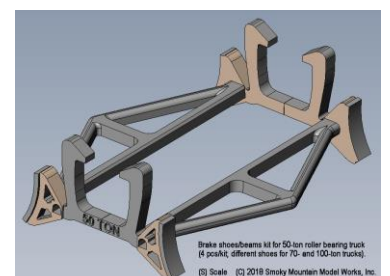
Step 5: Pick up a spring using VERY sharp tweezers with smooth jaws. Place over the middle boss in the 2nd row of the sideframe, compress it slightly, row then align over the matching center boss in the bolster. Repeat for all springs across the front (2 or 3). No glue is required to hold springs in place. Repeat for the other side of the truck.

Step 6: Axles are intentionally a little long to accommodate manufacturing tolerances and tapering required to align wheel on tube. Once the truck is assembled, you can remove some of the axle extension by pressing the wheelset against the sideframe and gently filing off a little at a time, testing often. Be sure the filed axle end is parallel to the sideframe "bearing" or the end cap will wobble.

New trucks have matched sets of roller bearings (Timken, in this case). Bearing designs changed over the years with the most visible changes being the end cap appearance. It is quite common today to see two end cap styles on the same truck because a wheelset was replaced. **Each wheelset** has the same end cap. There are (10) of each style included on the sprues, providing spares if you lose one or two along the way. Trim off the desired end cap from the sprue, add a drop of thick CA to the axle's end and attach, noting that each cap has a centering pin to aid assembly.

Step 7: Shoes and beams are now a single, 3D printed part to greatly reduce assembly time (see CAD image at right). From the bottom of the assembled truck, press this piece over the bolster until the upper tabs "snap" on top of the bolster. No glue is required to hold the part in place. Be sure that the part clears the spring plate area on the sideframe's bottom.

Lubrication is not required to achieve long life or good rolling qualities once installed on a car. If lubrication is desired, Marvel's "Mystery Oil" is a good choice. Pick up a tiny drop with a length of wire and place behind each end cap.



Brake shoes/beams kit for 50-ton roller bearing truck
(4 pcs/kit, different shoes for 70- and 100-ton trucks)
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