



# 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](http://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.

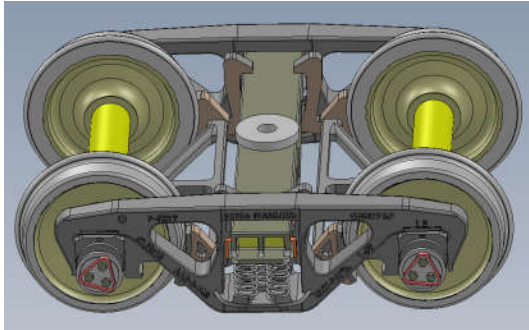
These instructions are available in COLOR on the SMMW freight car trucks web page.

(Left) >> a 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, tinted, 3D printed sideframes and cast urethane bolster/bolster center plate, brake shoes and brake beams. 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.

**Thoroughly scrub all parts 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:** (Lower-left photo) 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. 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 jeweller's file. Test-fit axles in each hole to verify there is smooth rotation.

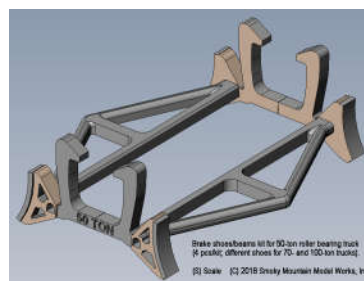
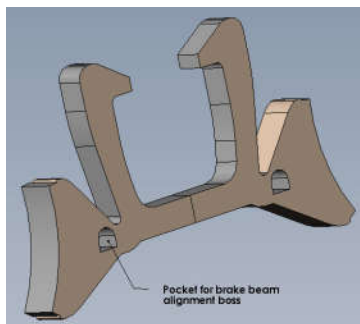
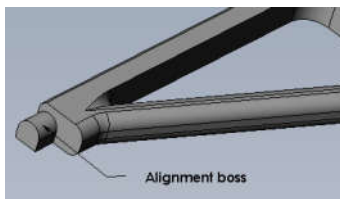


Refer to upper-right. The sideframes are designed for "sprung" operation using up to (9) Kadee #637 springs per sideframe but only enough springs are provided for adequate springing plus a few spares. Sideframes and bolsters contain a "boss pattern" related to the number of springs (5 per side for 50-ton, 7 for 70-ton and 9 for 100-ton). (3) to (5) springs are required to provide adequate springing for an average-weighted car. Insert both wheelsets thru a sideframe, insert the bolster (on an angle), then slide the 2<sup>nd</sup> 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 (raised text is on outside). These **FRAGILE** tabs limit vertical bolster travel to maintain a slight load on the springs.



**Step 3:** (Lower-right photo) Pick up a spring using VERY sharp tweezers with smooth jaws. Place over the middle boss in the 2<sup>nd</sup> row of the sideframe, compress it slightly, 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 4:** (3) CAD images below) Shoes and beams are cast on a sheet, then sawn off, leaving "fuzz" that's easily removed with a #11 blade. Shoes are cast in a semi-rigid urethane to reduce chance of breakage. Beams are cast in a rigid urethane because these are the "backbone" of the assembly and features are thicker. Beams have a "shaped boss" on each end used to properly orient them in each brake shoe casting. Use the #11 blade's tip to ream alignment hole behind each shoe, use slow-set CA to assemble the (4) pieces, then assemble to the bolster from the underside ... the small hooks on the top of each brake shoe casting will flex slightly along the bolster sides, then snap into place once past the bolster.



**Step 5:** (Photo at far-right) 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 6:** 3D-printed parts and urethane castings accept acrylic and solvent-based paints. 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.

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.