

Wheel profile drawing and cross sections of 16" demountable wheels. Note flange wear on bottom two sections.



Method of measuring flange/tread interface with wheel thickness gauge.

The lesson here is that wheel thickness should also be measured at the flange/tread interface as illustrated in this photo. Several things can give a false thickness reading. Any mastic or sound proof coating applied to the wheel will give a false reading. Fairmont wheels with these coatings normally have a small portion left bare for thickness measurement. Measure at those locations. Some wheels have a rubber hose stuffed in the flange for sound deadening. Remove the hose then take the thickness reading. If you find any wheel thickness readings less than 1/8", replace them before your next excursion.

Brake Shaft Wear

Another accident waiting to happen involves the brake shafts on MT14 and MT19 chain-drive cars. The brake shaft is made from 7/8" OD steel tubing with a 1/16" wall. The drive chain is guided up and over the brake shaft by the idler sprocket. Poor maintenance, excessive chain slack, and/or elongation of the chain due to wear, allows the chain to rub on the brake shaft. See the following photo. We have had



MT19 chain path showing chain slack, which can lead to brake shaft wear and failure.



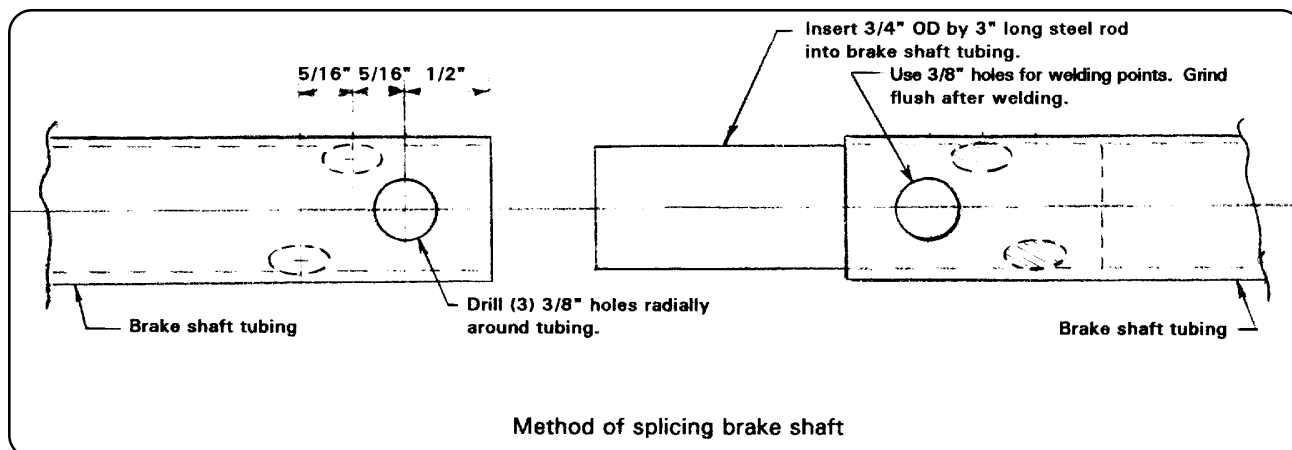
Brake shaft worn nearly half way through. Note twist and bend in shaft from brake application.

incidents in which the brake shaft tubing is cut through by the chain, to the point that during brake application the shaft shears in two. The resulting loss of brake effort provides a challenging problem to the operator! Hopefully there is dry track and plenty of distance between motorcars.

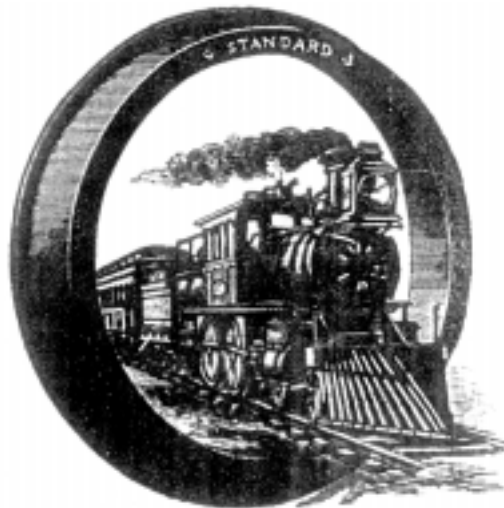
The easiest way to check for brake shaft wear is to feel with your finger the top of the brake shaft, just below the chain. The shaft should be round and smooth, but if you feel any roughness or wear, remove the drive chain, wipe the grease off the brake shaft, and observe the shaft surface. Remove the housing seat assembly (engine cover) and look down onto the brake shaft. If the original paint is intact you are home free. If it is worn you will need to determine to what extent. In my opinion, if it has cut through the wall of the shaft, and you can see a hole into the tube it must be repaired.

How do you repair the shaft? I've used the following method to splice brake shafts. See the attached drawing. First note the position of the brake arm ends. Once you cut the shaft in two, you will need to reassemble with the brake arms in the same position. I place the entire brake shaft on a flat surface, with brake end arms also flat on the floor. I then use a protractor to measure the angle of the brake lever plate from the flat surface. I actually cut a small block of wood to use as a guide to maintain this angle. Then cut the shaft in two at the chain wear site. Drill three 3/8" diameter holes in each tube end, to be used as welding points. Drill these holes radially around the tube, the first hole 1/2" in, the second 13/16", and the third 1-1/8" in from the tube end. Use a 3/4" hand reamer to prepare the tubing ends. Ream slightly over 1-1/2" deep so that a 3/4" OD by 3" long piece of steel rod can be inserted halfway into each shaft end. Align the shaft so that brake arm ends are positioned correctly. Weld the rod to the shaft at each hole. Then grind flush with the outside of the shaft. This is essentially the same method that Fairmont uses to weld the brake shaft ends to the brake shaft.

After reinstalling the brake shaft, be sure you eliminate the original problem causing the shaft wear. If your chain has stretched, put on a new chain. Maintain the correct chain tension. Most chain manufacturers recommend chain slack to be 4% of the span. One even suggests 2% slack for variable speed or reversing drives. You don't want it too tight, but too loose will cut the brake shaft lever.



Method of splicing brake shaft.



THE Standard Steel Works

MANUFACTURERS OF

Locomotive and Car-Wheel

TIRES.

OFFICE, 220 SOUTH FOURTH STREET,
Philadelphia, Pa.