

MAKING DRIVING WHEEL BALANCE WEIGHTS – a method.

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This description of a method of making balance weights for driving wheels stems from a question I was asked as TIO. It seemed pertinent to pass on the method for more general availability. It is a method I use when no balance weights are provided in a locomotive kit. A more frequent occurrence than you would suppose.

In a step-by-step description I proceed as follows:

1. I generally make my balance weights from 0.040" thick black plasticard. This does not preclude thin brass or nickel silver sheet if you prefer. Depending on the prototype appearance, some do not reach the inside edge of the wheel rim, I measure the diameter of the wheel to the inside edge of the rim.
2. Using a pair of 3" engineer's dividers I scribe at least three circles of that diameter onto the plasticard (three circles as you often can only get two weights per circle).
3. Very lightly scribe a line through the centre of each circle.
4. Using the prototype information I count the number of spokes the weight covers. From this, using the model wheel, with the dividers, take off a measurement across the appropriate number of spokes. This measurement is then divided by 2. The dividers are set to the new dimension and they are placed with one point where the centreline intersects the circle perimeter, the other point then scribes a line each side of the centreline on the perimeter.
5. From the prototype information or photographs set the maximum depth of the weight on the centreline.
6. Now come a bit of guesswork/trial and error. Usually the inside edge of the weight is curved. At the maximum depth set the dividers along the centreline adjusting the radius struck until it goes through the maximum depth and the two end points. If the weight inside edge is defined by a straight line between its ends or has a smaller inside diameter like BR Standard then defining the shape is straightforward. These cases are the easy ones!
7. Once I am satisfied with the resulting shape I use the dividers to scribe ever more heavily to cut through the plasticard. A sharp scalpel (10a blade) helps too. Once the parts are released from the plasticard I rub them on a piece of wet and dry paper to remove the burred edges. Try the weight in position and ensure it is below the level of the connecting rods!
8. To fix them to the wheel I either use superglue or double sided tape. When taping I first stick the weight to one side of the tape and then carefully cut around it, through the tape and its backing. If using superglue it is a good idea to degrease the spokes first.
9. The weight is then located in the correct position on the wheel. Note that in some cases the weights on the front and rear axles are opposite the crankpin. These balance the connecting rod masses at these positions. On the connecting rod axle the weights are often displaced from the crankpin position, either ahead, behind or beside. The latter especially when there is an inside crank. ALWAYS check an illustration. It is then painted at the same time as the wheel.

The same process of marking out can be done on metal, but the cutting out will be best done with a fretsaw and then cleaned up with a file. I find that for me, filing the inside curve can be tricky maintaining a constant curve.