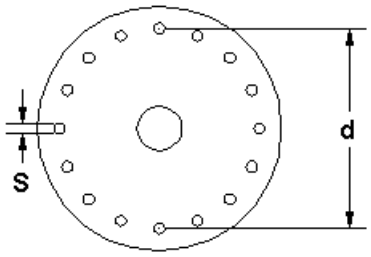
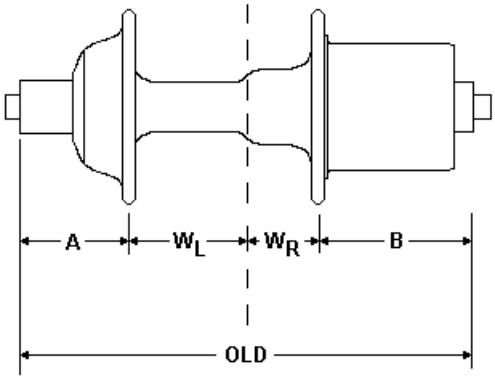
How to Measure Hub and Rim Dimensions (for use with Spocalc)

There are five hub dimensions: d_L, d_R, S, W_L, W_R



d, flange diameter is measured between centers of opposite holes in the hub flange. It is usually between 38 and 67 millimeters. Note that it is NOT the outside diameter of the hub's flange. Left and right flange diameters are often, but not always, the same.

S, spoke hole diameter, is the through diameter of any spoke hole. It is usually 2.6 mm.



W, width from center to flange may differ between left and right sides of the hub. In this illustration, W_L and W_R are the dimensions you enter into the spreadsheet for the left and right sides of the hub, respectively. You can use a hub listed in Spocalc's database, or measure your own hub by following these steps:

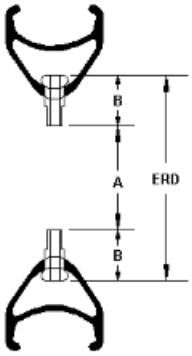
1. Measure OLD (Over Locknut Distance).
2. Measure Dimension A.
3. Measure Dimension B.
4. W_L = (OLD/2) - A.
5. W_R = (OLD/2) - B.

Not a lot of precision is needed in the width dimensions. A few millimeters error in width will only lead to a fraction of a millimeter error in spoke length.

I usually measure A and B dimensions by holding the hub lock nut against a flat surface (like the edge of my work bench), then measuring from there back to the hub flange with a ruler or caliper.

Note that you must hold the lock nut (not the axle end) against the edge.

There is one rim dimension: ERD



Effective Rim Diameter (ERD) is the diameter on which you want the ends of the spokes to lie. Most people prefer it near the end of the spoke nipple. If you want to measure your own rim (recommended, just to be sure), then follow these instructions:

1. Insert two old spokes into holes exactly opposite each other on the rim. Count holes to be sure.
2. Screw some nipples onto the spokes.
3. Pull them tight and measure dimension **A** in the figure (the diameter to the edge of the nipples, where the spokes dissapears into them). Do this at several spots around the rim and average the measurements.
4. Measure the length of a nipple (dimension **B** in the figure) and add it twice (once for each nipple). The result is Effective Rim Diameter (ERD). Thus,

ERD = A + 2B.

Effective Rim Diameter (ERD) is the dimension you type into the spreadsheet for "ERD, effective rim diameter". Of all the dimensions you actually might measure, ERD is the most critical dimension affecting spoke length, so it makes sense to measure it a few times at different places around the rim. Always count to make sure you use spoke holes that are actually opposite each other!