

SPOKE CALCULATOR

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Hub Settings

Custom Hub ▾

Flange Diam. mm

Flange Spacing mm

Dishing Offset mm

Spokes

Axle Length mm

Hole Diam. mm

Paired Holes mm

Rim Settings

Custom Rim ▾

Nominal Diam. (55c ▾)

ERD mm

Left Offset mm

Right Offset mm

Rim Width mm

Lacing Options

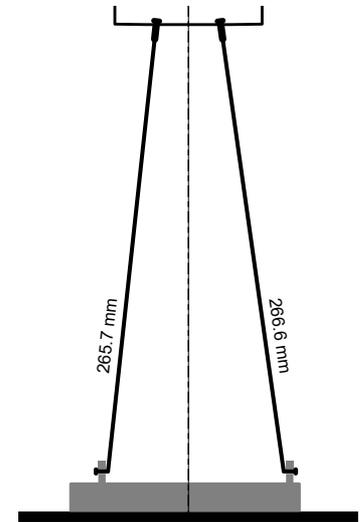
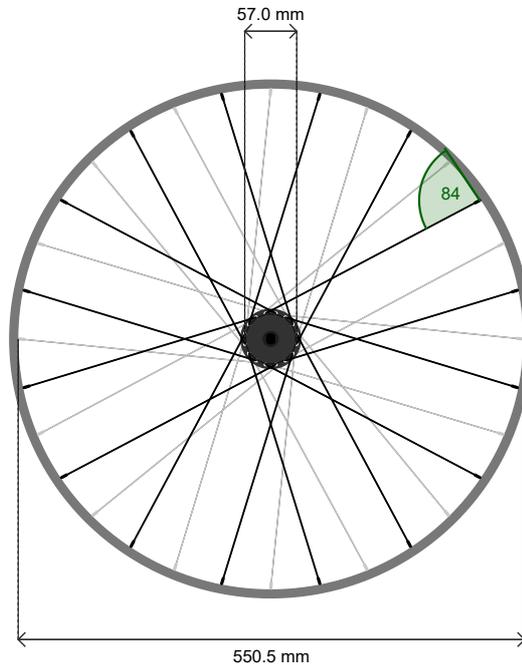
Cross Pattern ▾

Left Elbow Out In

Right Elbow Out In

Swap Spokes

Hub Shift mm



Left Spoke Length
265.7 mm

Right Spoke Length
266.6 mm

Spoke Angle
84.3 °

Tension Ratio
56 : 44

413377 spoke calculations made so far!

Hub Settings

The drop-down menu at the top has the parameters for a large number of popular hub motors, so if your motor is on this list then you should be set. If your motor is not listed, or you aren't totally sure, then you can easily measure all of the necessary parameters with vernier calipers.

- **Flange Diameter:** This is the diameter of the circle of spoke holes on the motor flange. It is the distance measured from the center of one hole to the center of the hole farthest away on the same side of the motor.
- **Flange Spacing:** This is the distance between the left and right spoke flanges, as measured from center to center.
- **Dishing Offset:** This is the distance between the midpoint between the spoke flanges and the midpoint of the axle. If it is zero, then the hub is drawn with the flanges centered on the axle and requires no dishing. Rear motors often have the flanges shifted to the left to allow space for the cogset, and require a negative dishing offset here to account for that. Front hubs with disk brakes often have their flanges further to the right to leave room for the disk caliper, and so have a positive dishing offset.
- **# Spokes:** Almost all hub motors are drilled for 36 spokes. That's a bit unfortunate, since most conventional rims these days have 32 holes. This calculator assumes that the number of holes in the rim matches the number on set here for the hub.
- **Axle Length:** This only affects the length of the axle that is drawn in the edge view diagram for visual reference, it does not enter into the spoke length calculations.
- **Hole Diam:** This is the diameter of the spoke hole in the hub flange. Some motors are drilled out to >3mm for 12g spokes, while hubs meant for just 14g spokes are usually ~2.5mm.
- **Paired Holes:** Put a check in the "Paired Holes" checkbox if the motor does not have a uniform hole pattern but instead groups the spoke holes in pairs of 2, and then type in the measured distance between adjacent paired holes.

Rim Settings

The dropdown menu has all the rim types that we stock here at GRIN. If you are using a 3rd party rim, then usually there is no problem looking up the ERD and offset specifications from the manufacturer or measuring them yourself. There is also comprehensive table of rim data at the [FreeSpoke website](#).

- **Nominal Diameter:** This is just the nominal bike wheel size (26", 24", 700c etc). It is only used for drawing purposes, and does not affect the spoke length calculations.
- **ERD:** This is the most essential measurement for determining the spoke length required for a particular rim. It is the diameter from where the very end of the spoke should sit in the laced up wheel. Generally speaking that is at the back of where the nipple fits in the rim. YPedal had a decent photo page illustrating [how to measure](#)