



The Gates Carbon Drive Bicycle Calculator is a tool that can help you select sprockets and a belt for a new design, or to see what other options you may have for a current belt drive bike. Additional tools available are the [Sanity Check](#) and the [downloadable calculator in excel format found in Tools](#).

**Instructions:** There are two main pieces of information needed to run this program: Gear Ratio and Chainstay Length.

**Gear Ratio:** The final drive ratio that you would like to achieve. If you would like to compare it to a ratio you currently have, you can enter in your front chainring and rear sprocket.

**Chainstay length:** This distance is measured from the center of the BB to the center of the axle.

Once you have entered the chainstay length in millimeters and the gear ratio (or front chainring and rear sprocket), click the Find Solutions box. You will see sprocket and belt options populate the bottom of the screen. These options are sorted to offer the best possible belt and sprocket solutions to fit your drive needs.

**Design Considerations:** Belt Installation and Take Up: To allow for belt installation and tensioning, adjustment in the chainstay length or “center distance” is required. If only one ratio is desired for the application, a minimum range of movement of 12mm is needed – 10mm shorter than nominal for installation room, and 2mm longer than nominal for tolerance take-up. More center distance range may be desired to enable the bike to use different sprockets enabling multiple gear ratio combinations. A common recommendation for this is an adjustment range of 25mm.

**Front Sprocket Chainstay Clearance:** Belt sprockets are wider than chain sprockets. You will need to be sure that the front sprocket you choose has at least 2mm clearance between it and the chainstay.

**Rear Hub Choice:** The particular rear hub that you are using has a large effect on the choice of sprockets you can use. For instance, our Alfine/Nexus rear sprocket is currently only offered in the 24 and 22 tooth sizes.

For more explanation, considerations, and a complete guide for designing a bicycle belt drive, please see our [Technical Manual](#).

**Advanced Functionality:** The Gates Carbon Drive Bicycle Calculator has a few advanced options for those looking for a more in-depth comparison of drives.

If you check the Advanced Options box, you have the opportunity to select your tire size, and enter your crank length. If you enter your tire size, the program will calculate Development and Gear Inches for the highlighted drive. If you enter crank length in addition, the program will calculate Gain Ratio. Clicking on a drive will show the Development, Gear Inches, and Gain Ratio for that specific setup.

Clicking on the up and down arrows next to the column headings will allow sorting by column.

If the drive you are looking for is not on the page, click either the right or left arrows near the bottom right of the screen.