Calfee Design 783 San Andreas Rd. La Selva Beach, CA 95076

Instability and Speed Wobble

Calfee Design has identified a cause of speed wobble (a.k.a. shimmy) and instability that can be prevented. Speed wobble is a dangerous condition that can cause the rider to lose control of the bicycle and crash. While loose headsets and out of true wheels and frames can contribute to speed wobble, we have found that fork asymmetry can also cause speed wobble.

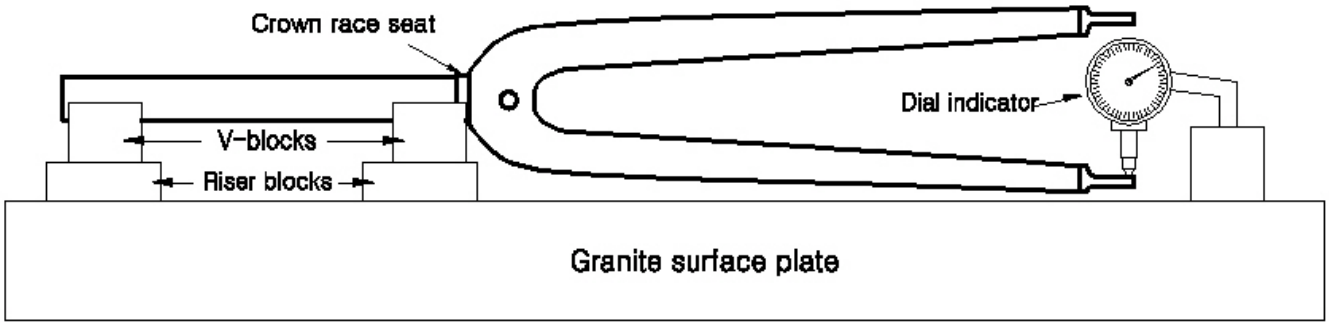
Fork symmetry is defined as the symmetrical position of the fork dropouts in relation to the steering axis. Specifically, the equality of the distances from the dropout faces to the steering axis must be within a certain tolerance for the bike to ride in a stable and confident manner.

Traditionally, steel forks were cold set after welding or brazing to realign them after possible distortion caused by the heating and cooling of the metal. A diligent steel frame builder can align the fork blades to within a millimeter of symmetry.

Carbon fiber forks cannot be cold set. They must be molded straight to begin with. We have found that a small percentage of carbon forks by various makers were molded with asymmetrical fork blades. Some are off by a little over a millimeter and others are off by two or more. Forks that are off by over 1.8 millimeters in symmetry have a good possibility of being prone to speed wobble. A symptom of a fork that is off by 1.8 mm or more is a noticeable difficulty when riding no hands at a slow speed (less than 10 mph). One has to lean to the side slightly to keep going straight. A bike with asymmetrical forks seems to corner better in one direction but not so well in the other. At speeds of 30 mph or more, the bike can develop speed wobble.

If your bike has the above-mentioned symptoms, the fork should be measured for symmetry. This is difficult to measure without proper tools. Calfee Design measures all forks for symmetry and is equipped to measure any fork. If any Calfee customer wishes to have their fork checked, please send it to us with a letter requesting a fork inspection. Non-Calfee customers may send their forks for inspection for a nominal fee. Replacements may be available for asymmetrical forks, depending on the individual fork maker's policy.

Fork Symmetry Measuring Setup:



1. Fork blades must be square to the surface plate
2. Rotate fork in V blocks to measure other dropout
3. Difference between the two measurements must be no more than 1 mm (Calfee tolerance)

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