

# Application Handbook

## Measuring & Testing

### Harmonic Drive LLC

### Optical Microscope Focusing Drive

- Pancake-type component set

Harmonic Drive® strain wave gears are applied frequently in precise positioning applications. This design example is unique because the gear is hand-driven, forming part of the focusing drive of a microscope used for biological and medical investigation.

The FB component set can be easily integrated within the focusing knob, which enables a very simple and compact co-axial design. The high accuracy of the gear is essential for high resolution, stick-slip free movement of the table carrying the specimen to be investigated. The Circular Spline is connected to the outer housing of the knob, which is used for rough focusing. In this case there is no relative movement between the component parts of the gear, therefore, the Circular Spline, the Dynamic Spline, and the Wave Generator rotate together. The gear rotates, acting as a toothed coupling and transmits the movement of the knob directly to the table.

The Wave Generator is connected to the inner part of the knob, which is used for fine focusing. In this mode, the gear acts as a reducer, with the Circular Spline held in a fixed state by the shaft seal, which acts as a friction brake. The Dynamic Spline acts as the output element, driving the output shaft connected to the table via a rack and pinion arrangement.

