

## Harmonic Drive LLC Machine Center NC Rotary Table

- High precision output bearing
- Input shaft

Increasingly Harmonic Drive® strain wave gears are being used to replace worm or planetary gears in the precise rotary axes of machine tools. High accuracy is usually only possible with worm or planetary gears that are pre-loaded to eliminate backlash.

The natural pre-loading of the gears combined with their high efficiency means that the temperature rise during operation is much lower, with positive results for the stable positioning accuracy of the machine. When assembly and lubrication is carried out according to our recommendations, there is no increase in backlash with a Harmonic Drive® strain wave gear during its operating life. This means there is no need to re-adjust gears to remove backlash, as is common with worm gears or planetary gears. In this design example, the Flexspline of a CSF component set acts as the output element. The output flange is supported by a precision output bearing (needle-roller bearing). The Circular Spline, as the fixed element, is located in the machine housing. The Wave Generator, as the input element, is driven via a toothed belt. To keep the height of the table to a minimum the motor mounted parallel to the gear. In this application the cutting forces are not very high, so there is no need for output-side clamping of the table. In the event that very high cutting forces are expected, it is advisable to use a coupling mechanism to lock the output flange.

