

Application Handbook

Industrial Robots

Harmonic Drive LLC 6-Axis Robot Shoulder Axes

- Low Inertia Wave Generator
- Special Circular Spline

The primary axes of 6-axis robots must be capable of providing high peak torques during the acceleration and braking phases of a movement cycle. The primary axis gears must also exhibit high repeatability and high positioning accuracy to enable the robot to execute precise assembly tasks or accurate path following applications, such as arc welding or adhesive application. These requirements are fulfilled completely by Harmonic Drive® strain wave gears.

In this design example, the CSF component set features a special low inertia Wave Generator design. This design reduces the acceleration torque required from the motor. Another interesting feature of this design is the arrangement of the input shaft and the output flange, which are both on the same side of the gear. The input shaft passes through the output flange, which is supported by a cross-roller bearing. The special Circular Spline design simplifies the integration of the gear into the housing of the joint.

