




The semiconductor industry that Hine Automation serves is poised for strong incremental growth as the demand for artificial intelligence accelerates. Shown here is the SL-200C Vacuum Cassette-to-Cassette-Wafer Handling System that employs the Concentric Maxi Torque assemblies.

WAFER-HANDLING MACHINE USES SPECIALLY CLAMPING BELT-PULLEY AND BUSHING ASSEMBLY

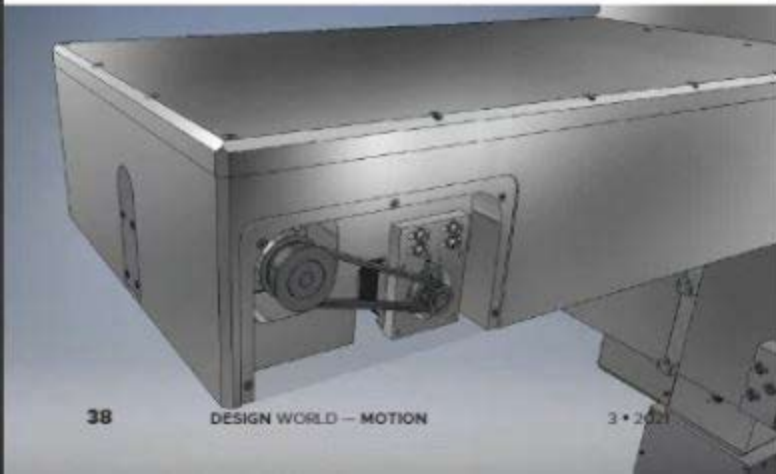
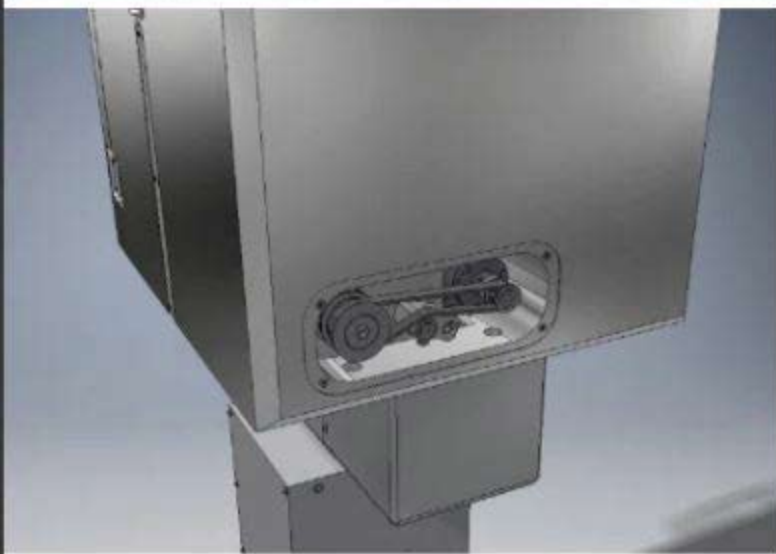


IN ONE recent machine redesign, Florida-based machine builder Hine Automation added precision engineered pulley-bushing assemblies to their SL-200C Vacuum Cassette-to-Cassette-Wafer Handling System for a boost in performance. This machine's function is to transfer silicon wafers from a wafer cassette to a wafer process module under vacuum. The moves are commanded by computer controls.

Hine Automation specializes in building modular and versatile designs for thin-film automation and serves original equipment manufacturers (OEMs) in the semiconductor, solar, flat-panel display, and related industries worldwide.

Shown here are Concentric Maxi Torque assemblies from Custom Machine and Tool Co., Inc.

MOTION SYSTEM TRENDS



Hine's forward-thinking philosophy lets their engineers proactively seek out new and innovative (as well as cost-effective) ways to improve their products and enhance customer-service flexibility. Shown here is a detail of the axis inside the SL-200C that uses the Concentric Maxi Torque assemblies.

Within the SL-200C, the new pulley-bushing assemblies operate on an axis that horizontally moves a robot arm that transfers the silicon wafers into the machine's process module.

The pulley-bushing assemblies are Concentric Maxi Torque assemblies from Custom Machine and Tool Co., Inc., a leading U.S. manufacturer of precision timing pulleys, drive systems, and other motion-system components.

Here's how the mechanical design works: Custom Machine and Tool Co., Inc. sells the pulley and bushing together as an assembly. A mechanical shrink fit clamps down on the shaft via a setscrew axial to the shaft — which serves as a lever to force the tapered bushing into the matching taper in the hub. As the lever forces the two tapers together, the slot in the bushing compresses, thus clamping the pulley to the shaft with a mechanical shrink fit. If needed, that same setscrew can be removed and used in the bushing's opposite hole to act as a jack — releasing the shrink fit and allowing for removal or repositioning.

Hine Automation holds sacrosanct their long-standing commitment to strong relationships with their OEM customers. Close collaboration from the design phase to manufacturing ensures fast delivery — usually within an eight to 12-week window. Their robotic components' quality environments satisfy a wide range of needs ... including everything from flexible R&D to stringent manufacturing environments.

HOW THE COMPONENT SUPPLIER AND MACHINE BUILDER CONNECTED

Hine Automation regularly exhibits at and attends industry conferences and tradeshows to explore new opportunities to innovate. At one such event, Hine engineers discovered the potential afforded by the Concentric Maxi Torque System — to be a real gamechanger by eliminating backlash. Before this encounter, Hine's vacuum load-lock machines had a pulley on their main shaft that introduced the possibility of detrimental play (lost motion) during high-torque operation. In contrast, the Concentric Maxi Torque bushing system entirely avoids this problem by steadfastly holding the shaft — in turn boosting the performance of Hine Automation machines.

When Hine acquired and installed the Concentric Maxi Torque bushing system, they got an immediate increase in machine performance with enhanced repeatability and reliability. This in turn supports the demanding accuracy and throughput requirements of semiconductor-related automation. ■

For more information, visit www.hineautomation.com and www.cmtco.com.