

### Deep Hole Drilling Machines

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The ML-Series machines are designed as versatile production machines that can be manually or automatically loaded. Loading options can include transfer, robot or gantry solutions.

The machines are available in one-, two-, three- or four-spindle versions. The drilling spindles are designed as AC frequency-controlled motor spindles, which are said to eliminate unwanted external vibrations and reduce required maintenance.

The spindles are mounted in precision bearings and packed with grease for lifetime lubrication, the company says.

The drill unit feed movement is by a precision re-circulating ballscrew and an AC Servo drive. The drill unit is said to be mounted on heavy-duty linear guideways.

The machines come standard with a tailstock to clamp workpieces. The clamping motion is executed hydraulically, and the clamping force is adjustable. As an option, counter-rotation for the workpieces is offered to help reduce bore runout.

The drill bushing carrier and chip box are a rigid cast iron design. A variety of workpiece clamping systems allow fixturing of cylindrical or cubical components, the company says.

Different tooling systems are available to keep the drills as short as possible. When required, tool steadies are mounted on the same linear guideways as the drill unit.

Special machines designed for drilling parts from two sides simultaneously are available upon request.

A PLC and HMI with gundrilling specific screens result in simple operation of the machine, according to the company. The drilling parameters such as drilling depth, feed rates, spindle speed, coolant pressure and its limit values, as well as the drill spindle power monitoring functions, are said to be logically arranged to facilitate machine operation and programming.

The coolant system incorporates high-pressure radial piston pumps to create coolant pressures up to 2,400 psi and the coolant flow levels and pressure are adjustable from the HMI. In these machines, the coolant pressure is monitored per spindle. This allows it to accurately monitor the drilling process for small and mid-size diameters.

For the larger diameters, the power consumption monitoring of the frequency- controlled motor spindles will accurately indicate tool wear and potential process problems, the company says.