

Greater accuracy and productivity through powerful new technology

With many recent advances in software and hardware, jig grinding continues to play a critical role in a wide range of small and large scale production applications, where consistency and the highest levels of accuracy and surface finish are required. From mold making to complex part manufacturing, today's jig grinders deliver the highest degree of accuracy and repeatability required to successfully compete in today's marketplace.

When effectively integrated into other machining operations including EDM and high-speed hard milling – utilizing manual or automated part palletizing system solutions – the enhanced capabilities of today's jig grinders can create new opportunities with existing customers and open doors to completely new markets.

Taking advantage of these developments, Moore Tool, a leader in building ultra-precision jig grinding equipment, is continuously enhancing the productivity of its jig grinder product line -- making it more user friendly and relevant in today's tool room and higher-volume production environments. While building one of the world's most accurate grinding machines has been and continues to be the foundation of Moore's long-term success, a cornerstone of their strategy is to help define customer-specific processes and to help customers fully utilize all the advances in technology in order to create better parts -- faster and at a lower cost. Through collaboration with Moore's experienced Applications Department, customer's are finding more and more innovative ways to, cost-effectively, utilize jig grinding in their most critical operations.

BUILDING ON A TRADITION OF EXCELLENCE

With over 85 years of leadership in machine tool design and manufacture, Moore Tool continues to evolve its line of four- and five-axis, CNC-controlled jig grinders. Integrating new enhancements with proven continuous path contouring capabilities, Moore Jig Grinders enable customers to more effectively grind complex two- and three-dimensional surfaces.

500 Series

- 500 mm (19.6 in.) in X-axis travel
- 300 mm (11.8 in.) in Y-axis travel
- Improved base assembly provides expanded travels and increased stability
- Featuring Moore ProGrind® for applications requiring wet grinding
- FANUC 31i control and new, state-of-the-art sensor technology

1280 Series

- 1320 mm (52 in.) in X-axis travel
- 820 mm (32.3 in.) in Y-axis travel
- Larger travels for large work or multiple part setups
- Featuring Moore ProGrind® for applications requiring wet grinding
- FANUC 31i control and new, state-of-the-art sensor technology





Moore ProGrind®

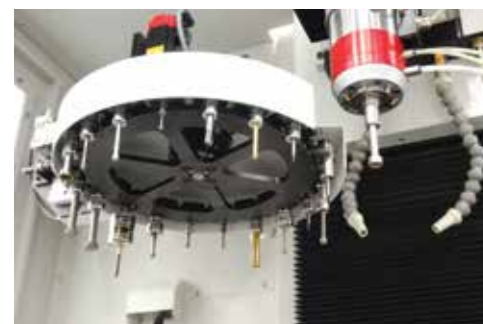
In today's competitive markets, manufactures must achieve greater and greater levels of productivity to remain cost effective.

In response to our customer's requests, Moore has introduced a number of grinding enhancements, including the Moore ProGrind® platform, to support their precision applications – from both small- and large-scale production runs. These new features help empower manufacturers to realize even greater efficiencies, while still achieving sub-micron positioning and surface finishes.

With Moore ProGrind®, users reap the time and tool-cost saving benefits that the latest grinding wheel advancements and wet grinding provide. Moore ProGrind® features a powerful electric grinding spindle and coolant system for dramatically improved stock removal rates, better surface finishes and longer tool life. Along with the proven grinding spindle and coolant system, companies are grinding with greater confidence, both attended and unattended. These machines are completely CE-compliant and use state-of-the-art sensor technology. Companies are also benefitting from other time saving enhancements such as the 20 position automatic tool changer for unattended operations.

Moore ProGrind® Electric Grinding Spindle

With today's electric grinding spindle technology, constant torque is maintained throughout the speed range of 3,000 to 60,000 rpm. High accuracy radial run-out and superior repeatability tool to tool, helps ensure accuracy when using the 20 tool ATC. The spindle accepts a full-range of HSK-E25 tool holders.



20-Position Automatic Tool Changer

Updated sensor and tool management software

As part of the Moore ProGrind® platform, the company has updated its sensor and tool management software for faster part setup and cycle time.

This technology is fully integrated with Moore AutoSize® and enables the dynamic measurement of effective wheel diameter and automatic compensation of wheel edge to part edge for precise size finishing of holes and contours. This technology allows unattended cycles and, in an ideal environment, repeatability to within ± 5 microns.

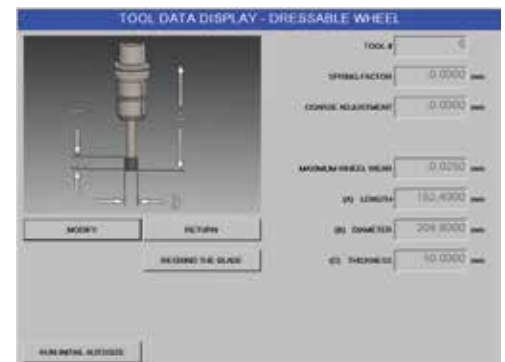
In addition, the sensor technology is fully integrated with Moore AutoGrind, an adaptive response system for automatically adjusting feed rates based upon stock encountered in tool path. The system minimizes time spent “grinding air” on work pieces with varied initial stock condition.

Moore Tool has recently enhanced its tool management software. The tool management system better enables the management of dressable and non-dressable wheels. For dressable wheels, the user can now select the maximum amount of allowable wheel wear, in mm or inch, before the wheel should be changed. For non-dressable wheels, the system enables the user to set the maximum amount of time the wheel can be used before a replacement tool is required. These enhancements help improve the grinding process by automatically keeping track of the tool’s life.

In addition to these enhancements, the tool management system allows a user to easily update tool information (tool length, wheel diameter, wheel thickness). Once tool information is loaded, it is stored for use by the AutoSize and the Wheel Dressing programs. These programs have been enhanced for faster set up whether utilizing a Renishaw OMP400 Probe or a conventional indicating process.



20 Position Tool Life Display Screen



Tool Data Display Screen for a Dressable Wheel

Fanuc's 31i featuring the latest in PC front end controls

Moore and Fanuc have evolved the Fanuc 31i control into the highest performing CNC available for jig grinders today.

With improved reliability and ease of use, operators are seeing significant advances in program set-up and work monitoring, with key benefits including:

- 0.0001 mm (0.1 μ m) Least Command Increment
- 0.00001 mm (10 nm) Detect Unit
- 16X greater velocity feedback (16 million lines versus 1 million)
- Following error optimized to improve contouring accuracy

In addition to the Fanuc 31i, users will benefit from a PC front end, featuring:

- 19" Touch Screen Display
- Ultra-compact, fan-less, Windows® embedded computer
- Celeron M 1.2 GHz
- 2 GB DDR3
- 2 GB compact flash for the Operating System and a 4 GB compact flash primarily for customer storage
- Windows XP Professional embedded
- 100 base ethernet for system communications with the Fanuc CNC
- Exterior USB ports
- Industrial sealed keyboard

In summary

As a manufacturer, staying ahead of the competition with the latest advances in equipment, software and processes is essential. In keeping up with these challenges, machine tool makers must continuously innovate to provide their manufacturing customers more accurate and more productive equipment. Today, Moore Tool jig grinders come standard with features that make the machine extremely productive and easy to operate. With these advances, the modern jig grinder continues to play an essential role in the most complex operations requiring superior accuracy, productivity and surface finish.



500 with New Enclosure Design

- Large windows allow more ambient light
- Features latest in LED lighting
- Better work piece access
- Precision guided doors
- Removable side doors for easy maintenance
- Durable powder coating finish

About Moore Tool

Today, the Moore Tool Company offers a complete line of jig grinders and accessories. In addition, the company operates a precision manufacturing business certified to ISO 9000 and AS 9100 standards, including 5-axis milling and precision jig grinding. Moore Tool also designs and manufactures tooling for the food packaging, metal stamping and plastics forming industries. The company operates out of a 10,000 SM (80,000 SF) facility in Bridgeport, CT, U.S.A. and through Moore Special Tool AG in Zurich Switzerland.

The Moore Tool Company has a long history of providing precision machine tools and measuring machines to the world's most demanding customers who need to machine and measure parts to the tightest tolerances achievable.

Founded in 1924 in Bridgeport, Connecticut by Richard F. Moore, the Company has remained true to his standards of mechanical excellence. In 1974, the American Machinist magazine awarded Richard Moore their prestigious AM Award and described him as the man who “gave the world’s industry an additional decimal place of accuracy!”

The Moore Tool Company started out as a tool & die company, but soon, Richard Moore realized that the machinery he needed to work to close tolerances was not available. Early in the 1930's, Moore developed a jig borer for his own work and that of fellow die makers; these machines were the first to utilize the famous Moore lead screw and double-vee construction. As tool and die making progressed in the 1940's, the Company added the jig grinder to grind hardened steel components. Before long, measuring machines were added to the product line to inspect the higher accuracy parts manufactured on Moore jig borers and jig grinders.

Richard Moore understood the underlying engineering principles necessary to build high precision equipment. He collaborated with a wide range of university researchers, as well as government and private laboratory scientists around the world to refine these mechanical design principles. Perhaps most importantly, he was able to train others to use these principles and apply the craft skills necessary to generate the geometry that was so uniquely “Moore quality.”

Over the years, many different machine applications were developed that took advantage of the superior Moore geometry and stability. Ruling engines and



Moore Tool
800 Union Avenue
Bridgeport, CT

diamond turning machines were two prominent examples of Moore geometry. Moore Tool has also designed and manufactured a wide range of accessory items for its machine tools as well as metrology products. Over 6,000 jig borers and 8,000 jig grinders have been manufactured, most of which are still in use today. In addition, several hundred ultra-precision special machines have been designed and built by the Moore Tool Company to serve a wide range of industries including optics, aerospace, and defense.

In 1994, the Moore Tool Company and its European subsidiary, Moore Special Tool AG were acquired and became part of the PMT Group. The PMT Group is the parent of three operating companies – Moore Tool Company, Inc., Moore Nanotechnology Systems, LLC, and the Producto Corporation.

Moore Nanotechnology Systems, LLC (“Nanotech”) was established as a stand alone subsidiary of the Moore Tool Company in October 1997. Nanotech is dedicated to the continual development of state-of-the-art ultra-precision manufacturing systems and processes for the production of advanced optics — primarily for the consumer electronics, defense, aerospace, lighting, medical, and automotive sectors. These ultra-precision machine systems support single point diamond turning, deterministic micro-grinding, precision micro-milling, and glass press molding for the production of advanced optics including diamond turning sphere, asphere, freeform, conformal, lens array, and plano surfaces.

Producto Corporation is an industry leader in precision tooling and services for the metals forming, plastics forming and original equipment manufacturing industries. Ring Precision, a part of Producto Corporation, manufactures precision hardened and ground parts from various tool and stainless steels, powdered metals, as well as carbide. Typical parts include die and mold components and precision-machined OEM components. Ring Precision is located in Jamestown, New York.

The PMT Group, through its three operating companies, remains dedicated to maintaining world leadership in precision engineering and applying measurement science to develop machinery, system and precision tooling components that exceed customer’s expectations.