AMADA MACHINERY AMERICA, INC.

THE VISION OF PRECISION

Lineup of Grinders
With more than 70 years of industry experience, Amada Machinery America is committed to helping our customers deliver dependable service and top-quality work with exceptional grinding solutions. Whether you need profile, forming, surface, or rotary grinding, we have the right solution for your specific needs.

**Market-Leading Quality**—We believe quality work begins with quality tools designed and built from the ground up to deliver outstanding performance, time after time.

**Customer-Driven Innovation**—Every feature, function and configuration we offer has been developed to address the needs of our customers.

**Proven Accuracy**—We help you take your work to the next level and exceed your customers’ expectations.

**Reliable Productivity**—We understand productivity is the heart of your business, and we can help you optimize it in multiple ways.

**A History of Cutting-Edge Manufacturing**

Since we began building profile grinders back in the 1940s, our goals have always been to provide our customers with increased accuracy and productivity. Throughout our history, we’ve maintained our time-honored tradition of hand-fitting our grinders to deliver the ultimate in quality and precision.

And, as technology has evolved, we’ve embraced CNC automation as a core strength, improving throughput and helping new operators become productive more quickly. Today, we are uniquely positioned to help you expand your capabilities and grow your business.

**Solutions Designed Around Customer Needs**

No two manufacturing needs are exactly alike. Finding the right solution means thoroughly understanding your objectives and configuring a solution to match them precisely. Our engineers bring decades of industry experience to help you achieve your specified goals with a process that fits—and enhances—your workflow.
When the tightest tolerances and accurate repeatability matter, Amada is a world leader in optical profile grinding and high-precision surface and profile work. Suppliers to high-tech electronics and semiconductor manufacturers have trusted Amada grinders for years to deliver the flexibility, precision and productivity they need to stay ahead in a rapidly changing industry.

- Integrated measuring technology
- Award-winning innovation
- Maximum accuracy optimized through use of the most modern construction/design
- High speed for increased efficiency
- Integrated automation for higher efficiency
- Automatic swiveling grinding head during the grinding cycle
- External programming software to optimize part production
- Modular construction for versatile and economic specification

Amada Grinding Technology

Engineered to Perform

Optimum Balance Supports High-Reciprocating Grinding—As a pioneer in high-reciprocating grinding and processing, we have achieved a superb, dynamic balance between the machine and the grindstone to deliver superior performance with the widest range of work materials.

High-Quality Grinding that Exceeds Specifications—The accuracy of our grinding and processing work goes beyond simply measuring RZ to deliver mark-less and sharp-edge mirror finishes.

Reliable, High-Rigidity Structure—The form of the machine has been developed by advanced three-dimensional design and finalized through a comprehensive series of demonstration tests to create high-dimensional rigidity.

Consistent Repeatability—Through superior design and meticulous assembly practices, Amada grinders are engineered to account for thermal displacement, ensuring maximum accuracy throughout the working process.

Advanced, Easy-to-Use CNC Software—Every Amada grinder has dedicated software to allow your operators to take full advantage of each machine’s capabilities.

From Surface Grinding to Molding to Profile—Amada’s exclusive WAPS platform gives you complete control of all forming processes—rough, semi-finish, and finish processing. It also prepares charts for optical profile grinding and data for profile dressing.

Original Measurement Technology on Equipment—Save time and steps while ensuring maximum accuracy with built-in measurement technology.

Optical Grinders

Amada’s optical grinders have set new standards in machining high-precision components for tool and die, mold shops, and the industry in general. With an uncompromising approach to manufacturing standards and extensive engineering expertise, we have helped our customers expand their capabilities and improve their productivity.
GLS 150GL

It took a fresh perspective—and 70 years of industry expertise—to deliver an advanced profile grinder with a light touch. Whether you’re making mold slides, machine parts, punches and dies, or core pins, the GLS 150GL delivers the precision and efficiency you need to meet your customers’ specifications.

GLS 150GL Optical Profile Grinder

**GLS 150GL Features**

- **High-Accuracy/High-Definition LED Projector**—A redesigned long-life LED lighting system increases brightness by approximately 15% compared to existing machines.
- **High-Reciprocating and High-Accuracy Wheel Heads**—High-accuracy and high-resolution optical scales ensure ultra-precise feeding while an extremely rigid frame and a stable, balanced structure deliver high reciprocation rates of 400/min. Reciprocation stroke length is 6.1” (155mm). An oil-cooled inverter (allowing ±0.1°C control) is mounted as standard equipment.
- **Gravity Center Design Bed**—The newly developed bed features an optimized allocation of jack bolts and ribbing, solving flexure at the center and supporting high static accuracy.
- **User-Friendly Controls**—A large 10.4” screen LCD panel and easy-to-use software improve operability and support high-accuracy processing.
- **Shortened Setup Time**—The positioning speed of each spindle axis is increased for improved efficiency, including their fast-forward speed (59”/min., 1,500 mm/min.) and table up-and-down speed (11.8”/min., 300 mm/min.). Dedicated software also enables automatic work setup.
- **Space-Saving Design**—The GLS 150GL is approximately 25% smaller than the previous model, thanks to optimized design based on structural analysis.
- **High-Precision and High-Rigidity Spindle (TS-6)**—The standard low-speed, high-power spindle delivers 6,000 RPM and supports a large-diameter grinding wheel.
- **Optional High-Precision and High-Speed Spindle (TC-20)**—The TC-20 spindle provides high speed (20,000 RPM) and precision with low heat generation.
- **Newly Designed Ultra-High Speed and High-Precision Wheel Heads**—Mirror surface finishing can be achieved in less time, and the 6.1” (155 mm) stroke accommodates a wide range of workpieces.
- **Tool Grinding Combining NC Swiveling Axis**—The edge sensor and three-axis teaching function make grinding of blade edges with lead easy.
- **Coping with Wet Grinding**—The newly designed wet grinding cover allows for bulk flow wet grinding of hard workpieces while reducing heat generation and wear on the grinding wheel.

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Optical Grinders

GLS 150GL OPTICAL PROFILE GRINDER

Optical Profile Grinding to Meet Your Highest Quality and Operation Demands

Operators can easily deliver ultra-precise machining with in-process optical inspection via the projector. This unique technology is what makes the GLS 150GL so popular. Contour accuracies down to 1µm can be achieved, and the operator can select the most suitable method of operation—manual, NC-assisted, or CNC controlled with up to three-axis interpolation. Using the teach-in playback function, even grinding wheel wear can be easily compensated.

- High-resolution projector with magnifying glass
- High-capacity and friendly FANUC CNC unit
- Fast-stroke system with up to 400 SPM
- Teach-in playback system/macro/external programming
- Built-in coolant systems for maximum accuracy (option)
- Optional C axis for three-axis interpolation

Examples of Mirrored Surface Polishing

Designed to deliver extreme precision, the GLS 150GL can consistently produce outstanding surface finishes to the tightest tolerances.

Teach-In Playback System

- Ra 0.0236 μm
- Rz 0.1568 μm

Wheel Head Design Based On Structure Analysis
The GLS 150GL offers a choice of operating methods to match their desired way of control or operating skills.

- Manual operation using the hand wheels
- Using the teach-in playback system
- Using standard cycles (macro programming)
- Using external programming software

**Machine Specifications**

<table>
<thead>
<tr>
<th>Working surface (L x W)</th>
<th>15.7&quot; x 9.8&quot; (400 x 250 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traverse feed</td>
<td>11.8&quot; (300 mm)</td>
</tr>
<tr>
<td>Cross feed</td>
<td>5.9&quot; (150 mm)</td>
</tr>
<tr>
<td>Minimum input increment</td>
<td>0.000010&quot; (0.00001 mm)</td>
</tr>
<tr>
<td>Position detection system</td>
<td>Semi-closed loop</td>
</tr>
<tr>
<td>Reciprocating stroke</td>
<td>0-6&quot; (0-155 mm)</td>
</tr>
<tr>
<td>Reciprocating speed</td>
<td>30-400 RPM</td>
</tr>
<tr>
<td>Traverse feed</td>
<td>7.87&quot; (200 mm)</td>
</tr>
<tr>
<td>Cross feed</td>
<td>5.9&quot; (150 mm)</td>
</tr>
<tr>
<td>Minimum input increment</td>
<td>0.000010&quot; (0.00001 mm)</td>
</tr>
<tr>
<td>Position detection system</td>
<td>Full-closed loop</td>
</tr>
<tr>
<td>Relief angle</td>
<td>-2° to +2°</td>
</tr>
<tr>
<td>Axial direction of wheel</td>
<td>±15°</td>
</tr>
<tr>
<td>Swivel slide swiveling angle</td>
<td>±15°</td>
</tr>
<tr>
<td>Screen size (W x H)</td>
<td>21.25&quot; x 16.5&quot; (540 x 420 mm)</td>
</tr>
<tr>
<td>Magnification</td>
<td>20x, 50x</td>
</tr>
<tr>
<td>Wheel spindle size (OD x width x bore)</td>
<td>Ø4.72&quot;<del>7.08&quot; x 0.12&quot;<del>0.39&quot; x Ø1.25&quot; (Ø120</del>180 x 3</del>10 x Ø31.75 mm)</td>
</tr>
<tr>
<td>Wheel spindle speed</td>
<td>1000-6000 RPM (TS-6)</td>
</tr>
<tr>
<td>Motor capacity</td>
<td>2 HP<del>4 P (1.5</del>4 kW-P)</td>
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<tr>
<td>Floor space (width x depth)</td>
<td>69.29&quot; x 68.89&quot; (1760 x 1750 mm)</td>
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<tr>
<td>Machine weight</td>
<td>9900 lb (4500 kg)</td>
</tr>
<tr>
<td>Power capacity</td>
<td>18 kVA</td>
</tr>
<tr>
<td>CNC unit model</td>
<td>FANUC</td>
</tr>
<tr>
<td>Display</td>
<td>10&quot; x 8&quot; (260 x 200 mm)</td>
</tr>
<tr>
<td>Manual handle</td>
<td>2.1&quot; x 1.7&quot; (52 x 43 mm)</td>
</tr>
<tr>
<td>Pitch error modification</td>
<td>Standard</td>
</tr>
<tr>
<td>Number of axes</td>
<td>6 axis (simultaneous 2 axis)</td>
</tr>
</tbody>
</table>

**Options for Specific Applications**

**Auto Balancer**—This measuring instrument is used to adjust the balance of the wheel and spindle as a single unit. Perfect balancing improves the ground surface roughness.

**On-Board R-Form Dresser MRD-180**—This table-mount dresser is used for reforming the radius of the profiling wheel, and it’s easily programmed by the operator.

**Screen Loupe (P.A.T.)**—The screen loupe is used to verify the work profile by partially magnifying its enlarged image and the chart for comparison. As it fits into the screen frame, both handles can be operated at the same time. Loupes are available in 2.2x and 4x magnification.

**Circular Grinding Attachment**—This attachment is used for grinding cylindrical parts/tools, etc.
- Swing: Ø7.87" (200 mm)
- Distance between centers: 7.87" (200 mm)
- Adaptable to dead or live centers

**Automatic Work Swivel Unit** (mounts to Ø1.26" [32 mm] hole)—The automatic work swivel unit can be set to an indexable angle or to continuous feed applications. One setting can provide complete periphery processing of the work. *Reciprocation process speed is changed by the time of reciprocation process.*
DV1 Digital Profile Grinder

Take your optical profile grinding to the next level with a compact, chartless, and fully automated third-generation profile grinder.

Available with five-axis control (for superior surface finishing), the DV1 can also be specified with 16 pallet stations for automatically changing out workpieces and grinding wheels, giving you the ultimate in truly “hands-off” productivity in one compact, user-friendly package.

DV1 Features

- Compact, Fully Enclosed Design—A full cover improves operational safety and environmental performance while still allowing easy access for operators.
- Four-Sided Grinding for Maximum Efficiency—The CNC rotary table allows for full periphery processing with one chucking.
- Automatic Measurement and Compensation Processing—The fully automated DV1 incorporates a state-of-the-art CCD camera system for automatic, on-machine measurement and compensation. That means improved precision and consistency on every job.
- Process Stability—Through completely unmanned and chartless finish processing, variations in processing standards are remarkably reduced.
- Verify Very Small, Fine Shapes—The automatic inspection system can qualify very small shapes of 1-degree angles or less, which cannot be easily measured with a projector.
- IDEALY SUITeD FOR PRECISION CARBIDE PUNCH GRINDING—The DV1 can consistently deliver inside form tolerances of 0.0001”.
- CCD Camera System

Ultra-Precision Shoulder Punches

CCD Camera System
Comparing Optical Grinding to Digital Grinding

If you use two machines for one worker, our optical profile grinder GLS 150GL requires manual form measurement and program correction, resulting in idle time for a machine. In contrast, the DV1 can perform this task automatically, resulting in shorter lead times and improved productivity.

The Leader in Profile Grinding Goes Digital

Structural analysis, including 3D design, provides rigidity and compact design for the DV1. LCD displays and CCD cameras have replaced the traditional projection systems, and Mylar charts are replaced by CAD-based digital profiles. The net result is that program creation can now be based on actual digital data. Also, because the system is chartless, there’s no need for a plotter. In addition, the original image teaching program function uses the CCD camera without a projector (as standard equipment), allowing for chartless instrumentation. This also allows the use of full-enclosure guards for high-performance design characteristics without any compromise in basic work efficiency.
Productivity Made Easy

CNC Rotary Table Allows Four-Sided Grinding for Maximum Efficiency—With a CNC rotary table as standard equipment, the DV1 is capable of full periphery processing with one chucking. Multiple wheel operations for roughing all sides of the workpiece can be completed—completely unattended—before changing the wheel for finishing.

Easy-to-Use PC NC Interface—The PC NC operation software, accessed through a 12-inch color touch panel, significantly improves operability. The new layout of the operation panel organizes the function for both ease of use and clarity. Optimum usability makes this powerful grinder technology a pleasure to operate.

Optional Full Automation Available—With the addition of articulated robots for automated workpiece exchanges and wheel changes on the ATC spindle, the DV1 is capable of running completely unattended.

Automation that Drives Accuracy

The implementation of CCD camera systems puts the DV1 in a new class of grinding technology.

1. Automatic measurement of workpiece form with automatic re-grinding ensures repeatable precision.
2. The DV1 can process ultra-small workpieces below an angle of 0.04° (1 mm), which is difficult to measure with a projector. In addition, the edge compensation function ensures consistency of inspection.
3. Automated CCD camera measurement eliminates subjective manual inspection, dramatically reducing variations in processing quality.
4. Measurement data can be output, providing documented part qualification.
5. Grinding wheel form measurement can be performed.
Uncompromising Machine Design for High-Precision Form Processing

Five-Axis Controls for High-Quality Surface Finish—The DV1 employs a crank-motion elevating stand to achieve superior surface finish. The TC-20 spindle (developed by Amada for 20,000 RPM performance) supports high precision and high speed when creating small and medium shoulders. Integrated front and side clearance ensures angles that satisfy die specifications.

Precision in Part Processing

An ultra-hard workpiece 0.1” (2.5 mm) thick is precision-ground to within 1µm. Test piece is five steps of 10µm, as pictured, with grinding, measurement and compensated re-grind. A work surface finish of Rz0.16µm is achieved, showcasing the DV1’s ability to produce "tight" surface finishes.

10µm step grinding (5 steps) with automatic compensated re-grind

- Processing material: ultra-hard (G5 equivalent)
- Main spindle rotation speed: 12,000 RPM
- Reciprocation speed: 120 RPM
- Grinding wheel: TWD700R2
- Grundstone size: Ø3" x Ø0.87” (Ø75 x Ø22.23)
- Single V15º: R0.05

Straight processing (X-axis shift)

- Processing material: ultra-hard (G5 equivalent)
- Main spindle rotation speed: 12,000 RPM
- Reciprocation speed: 100 RPM
- Depth of cut: 0.0002” (0.005 mm)
- Feed speed: 0.04"/min. (1.0 mm/min.)
- Measuring machine: surface finish measuring instrument (Taylor Hobson)
- Grinding wheel: TWD700R2
- Grundstone size: Ø3" x Ø0.87” (Ø75 x Ø22.23)
- Single V15º: R0.05
- Wheel dressing device: MRD-180 dress after ~10 min. grinding time
- Dressing time: 5 min. (finish only)
The custom software on the DV1 is designed for maximum productivity. Image-based teach and playback software can create programs visually using monitor images of digital profiles, providing digital accuracy instead of projector-and-chart methods. Additionally, using digital profiles enables automatic measurement of the workpiece profile by measuring the CCD camera image of the workpiece against the actual digital image. Image teaching provides an actual, wheel-based profile by capturing digital images of the wheel profile. Then the wheel image is used to “teach” the wheel path against the digital workpiece profile. Actual teaching is done by manipulating the handle. 

Chartless Measurement—CAD data (DXF) is loaded and, based on the processing data, the position of the workpiece image is set. When the manual handle is turned, the workpiece image moves. Similarly, by moving the cursor on the NC screen, the workpiece image moves, and the software can determine the difference.

Automatic Workpiece Form Measurement/Compensation Processing—After the grind operation is finished, the standard position is confirmed and measurements are made to determine the deviation from the standard. This is done automatically—no operator intervention or programming is required. At the time of measurement, multiple points are simultaneously inspected and large deviations from the standard are disregarded. The measured image area is as small as 0.019” (0.5 mm). In order to measure areas less than 1µm, the number of pixels and dots is set.

Grinding Wheel Position and Shape Measurement—The on-board dresser unit re-trues the leading edge radius of the grinding wheel. The shape of the grinding wheel is plunged into the dummy workpiece fixtureed to the table. Through the dummy, the profile of the grindstone radius is measured at multiple points, and determined by CCM calculations. Taking measurements at multiple points minimizes errors. This procedure automatically qualifies both the wheel radius and wheel position, greatly facilitating the setup process.
Machine Specifications

**PROJECTOR**
- Screen size: 12" LCD (CCD view range 0.5 x 0.4 mm)
- Magnification: Optical magnification x10/monitor magnification x350
- Lighting: Tapping lighting 150 W

**MOTOR**
- Wheel spindle: 2 HP~4P (1.5~4 kW-P) (TC-20)
- X/Y axes: 1 HP (0.75 kW)
- Z axis: 0.67 HP (0.5 kW)
- B axis: 0.06 HP (0.05 kW)
- Reciprocating axis (W axis): 2.5 HP (1.8 kW)
- Automatic lubrication: 4 W
- POWER CAPACITY: 13 kVA

**POWER CAPACITY**
- MACHINE SIZE (WIDTH X DEPTH X HEIGHT): 64" x 93" x 67" (1630 x 2370 x 1717 mm)
- MACHINE WEIGHT: 8800 lb (4000 kg)

**TABLE**
- Reciprocating axis (W axis)
  - Reciprocating slide stroke (W axis): 0 – 3.14" (0~80*1 mm)
  - Drive system: Crank
  - Reciprocation speed: 2.18"~5.72" (50~150 mm/min) (in case of 10st)*
  - Relief angle: Travel
    - Radial relief angle (V axis): -1~2° (manual operation)
    - Axial relief angle (X axis): +3° (manual operation)

**WHEEL SPINDLE**
- Wheel size (outer diameter x width x hole diameter): Ø2.5"~3.9" x 0.15"~0.25" x Ø0.875" (Ø65~100 x 4~6 x Ø22.23 mm)
- Spindle nose: Ø1.0" (Ø25.4 mm) 1/4 taper
- Spindle speed: 20000~20001 min-1 (TC-20)

**RELIEF ANGLE**
- Travel: 6.5" (165 mm) (round table)
- Distance from the table top to focus point: 7.8" (200 mm)
- Maximum loading weight: 64 lb. (20 kg) (workpiece + fixture + chuck)

**NC Control Specifications**

**CONTROL UNIT MODEL**
- FANUC SERIES 180i-MB

**NUMBER OF CONTROL AXES**
- 5-axis control specification

**STANDARD FUNCTIONS**
- 12" color LCD (touch panel)
- Manual reference return
- PC NC (O/S: Windows XP)
- Memory-type pitch error compensation
- CNC screen display function
- Feedrate override 0 to 200%
- Wheel spindle infinitely variable-speed drive (inverter control)
- Tape memory 40m (16kB)
- Simple S command (7-speed)
- Total tool offset pairs 32
- Circuit breaker 30mA
- Tool length compensation
- Auto power off
- Warm-up timer (daily timer)
- 3 manual handles
- Memory card I/O
- Handle magnification ratio Off, x1, x10, x100
- Table setup function

**OPTIONAL FUNCTIONS**
- Additional memory (80, 160, 320, 640, 1280m)
- Run hour and parts count display
- Additional registerable programs (125, 200, 600)
- Cycle time stamp function
- Additional control blocks (3, 5, 10, 20, 200, 600)
- LAN connection (additional Ethernet function/connector for the PC part)*

* Device for LAN connection is added. The network connection for the PC part should be set by the customer.
**Software**

<table>
<thead>
<tr>
<th>DV1 SOFTWARE (APPLICATION FOR PC)</th>
<th>CONVERSATIONAL MICROSOFTWARE, ETC.</th>
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</thead>
<tbody>
<tr>
<td><strong>STANDARD FUNCTIONS</strong></td>
<td></td>
</tr>
<tr>
<td>Image teaching playback</td>
<td>Wheel data recording function</td>
</tr>
<tr>
<td>Chartless measurement</td>
<td>Fixture recording function</td>
</tr>
<tr>
<td>Processing simulation display</td>
<td>Simple 5 command (7-speed)</td>
</tr>
<tr>
<td>Workpiece standard measurement</td>
<td>Warm-up setting</td>
</tr>
<tr>
<td>Processing actual performance display</td>
<td></td>
</tr>
<tr>
<td>Wheel position measurement (wheel transcription form measurement)</td>
<td></td>
</tr>
<tr>
<td>Automatic workpiece form measurement/correction processing software</td>
<td></td>
</tr>
<tr>
<td><strong>OPTIONAL FUNCTIONS</strong></td>
<td></td>
</tr>
<tr>
<td>Rough grinding cycle</td>
<td>Taper interpolation</td>
</tr>
<tr>
<td>R-forming dress software</td>
<td>Simple circular interpolation</td>
</tr>
<tr>
<td>Outside auto programming software</td>
<td>ASSIST DV<strong>4</strong></td>
</tr>
<tr>
<td>Repeat cycle</td>
<td>Run hour display function</td>
</tr>
</tbody>
</table>

**Floor Layout DV1 Stand-Alone Specification**

**Multi-Axis Robot Stocker Specification**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>ROBOT</td>
<td>Manufacturer: FANUC</td>
<td></td>
</tr>
<tr>
<td>Number of controlled axes</td>
<td>6 axes</td>
<td></td>
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<tr>
<td>Maximum travel</td>
<td>35&quot; (892 mm)</td>
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<tr>
<td>Maximum delivery weight</td>
<td>11 lb (5 kg)</td>
<td></td>
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<tr>
<td>Machine weight</td>
<td>63 lb (29 kg)</td>
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<tr>
<td>Maximum number of stocked pallets</td>
<td>12 pieces</td>
<td>6 pallet x 3</td>
</tr>
<tr>
<td>Maximum number of stocked wheel flanges</td>
<td>4 pieces</td>
<td>6 tools x 1</td>
</tr>
<tr>
<td>Maximum workpiece size</td>
<td>4.5&quot; x 3.5&quot; (Ø115 mm x 90 mm)</td>
<td></td>
</tr>
<tr>
<td>from pallet top surface</td>
<td>(Pallet diameter 3.16&quot;)</td>
<td></td>
</tr>
<tr>
<td>(Ø80 mm) is available</td>
<td>(Ø80 mm) is available</td>
<td></td>
</tr>
<tr>
<td>Maximum wheel size</td>
<td>Ø3.15&quot;~3.3&quot; x 0.15&quot;~0.23&quot;</td>
<td></td>
</tr>
</tbody>
</table>
Meister G3 and V3

High-Precision Forming Grinders

The Meister series of grinders offers outstanding versatility for every use—from simple to complex grinding tasks.

Steel, carbide, ceramics, and other materials can be ground in manual mode or in CNC mode. The machines come equipped with dressing and continuous path grinding technology and can be used for surface and profile grinding.

The Universally Recognized Masterpieces

The Meister G3 and Meister V3 deliver ultra-precision surface and profile grinding with a fast-stroke mechanism. Advanced standard equipment includes CNC units, high-precision dressing and continuous path grinding technology for Y and X axes, spindle and hydraulic cooling, ceramic spindle bearings, and full enclosures.

The control units of the Meister Series grinders offer optimum operability. Sophisticated macros make programming extremely convenient, even for inexperienced CNC users.

A touch probe mounted on the grinding head measures the workpiece. Residual grinding allowances are automatically calculated and the machine will repeat the grinding cycle in unattended operation until the finish dimension has been reached—quickly and safely. And, the touch probe can now determine the start position of the grinding wheel on the workpiece.

Four-Fold Increase in Productivity

By way of direct comparison, users analyzed the machining time for a pair of mold and die parts made of carbide. Thanks to the convenient programming of the Amada grinding software and the fast-stroke mechanism, time savings of 75% can be reached compared to a CNC profile grinding machine.
Meister G3 and V3 Features

- Grinding area
  - Meister V3: 6" x 14" (152 mm x 355 mm)
  - Meister G3: 8" x 16" (203 mm x 406 mm)
- High-quality equipment for surface, plunge-cut, and continuous path grinding as well as dressing
- Fast-stroke system
- Spindle available with ceramic bearings and 8,000 RPM capacity (option)

- High-resolution measuring systems
- Contour dressing and contour grinding with external programming software
- Built-in touch probe technology
- Three separate hand wheels for easy setup and manual operation
- Built-in coolant system for increased thermal stability

Vertical Feed System—The column has a symmetrical structure to minimize thermal deformation and is covered with heat-insulating materials for protection against changes in temperature and other environmental factors.

The fully enclosed loop feedback system with the linear scale of 0.05µm resolution is standard for the Meister G3 (optional for others).

Wheel Spindle—The 3 HP (2.2 kW) spindle motor and inverter is standard on all models. The spindle cooling system with oil color (±1ºC) is standard on the Meister G3 (optional for others).

Table—The table features “V-V” slideways for exceptional straightness and features a servo-valve-controlled transverse drive system with teaching function.

The Meister V3 features V-flat slideways with hollow runners for high speed and high accuracy.

Bed—The position of the jack bolts and ribs on the bed are optimized to support high-speed table reciprocation.

New Model Control/Operation Panel—The space-saving control panel with original software can improve machining efficiency.

RAPID RECIPROCATION TABLE
Meister Series grinders support reciprocation speeds two to three times faster than any former model, greatly improving machining efficiency.

PROVISIONS TO PREVENT THERMAL DISPLACEMENT
The hydraulic unit is isolated from the main body and the hydraulic oil temperature is maintained at ±0.5ºC by the built-in oil temperature controller.
Original Software

The software of Meister G3 and V3 grinders enables your operators to become productive without having to know complex NC programming.

Contour Grinding—Molding grinding can be implemented by inputting the graphic data of arbitrary shapes. Rough grinding by plunge grinding can also be implemented, and the created data can be saved in the NC program area.

Pattern Dressing—By inputting the dimensions required for the basic shape on the screen, the grindstones perform the molding using a simple profile dresser, NC profile dresser, or high-speed wafer dresser. The grindstones can also perform the molding during processing and interrupt dressing.

Contour Grinding

Pattern Dressing

Contour Grinding

Pattern Dressing

Machine Specifications

<table>
<thead>
<tr>
<th></th>
<th>MEISTER G3</th>
<th>MEISTER V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPACITY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table working surface</td>
<td>21.6&quot; x 7.8&quot; (550 mm x 200 mm)</td>
<td>17.7&quot; x 5.9&quot; (450 mm x 150 mm)</td>
</tr>
<tr>
<td>Max. longitudinal travel</td>
<td>23.6&quot; (600 mm)</td>
<td>16.9&quot; (500 mm)</td>
</tr>
<tr>
<td>Max. cross travel</td>
<td>9.8&quot; (250 mm)</td>
<td>7.8&quot; (200 mm)</td>
</tr>
<tr>
<td>Spindle center height from table</td>
<td>15.7&quot; (400 mm)</td>
<td>15.7&quot; (400 mm)</td>
</tr>
<tr>
<td>Standard chuck size (L x W x H)</td>
<td>15.7&quot; x 7.8&quot; x 3.9&quot; (400 mm x 200 mm x 100 mm)</td>
<td>13.7&quot; x 5.9&quot; x 3.9&quot; (350 mm x 150 mm x 100 mm)</td>
</tr>
<tr>
<td>TRAVEL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longitudinal feed</td>
<td>3–113 ft/min**</td>
<td>250 min.**</td>
</tr>
<tr>
<td>Max. no. of reciprocation (15 mm stroke)</td>
<td>250 min.**</td>
<td></td>
</tr>
<tr>
<td>SADDLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid cross feed (mpm)</td>
<td>0–131.2 ft/min, 1640 ft/min, 3280 ft/min</td>
<td></td>
</tr>
<tr>
<td>Handle feed</td>
<td>Per rev.: 0.0004&quot;, 0.004&quot;, 0.04&quot;, 0.15&quot; (0.01 mm, 0.1 mm, 1.0 mm, 4.0 mm)</td>
<td></td>
</tr>
<tr>
<td>Per grad.: 0.000004&quot;, 0.00004&quot;, 0.0004&quot;, 0.0015&quot; (0.0001 mm, 0.001 mm, 0.01 mm, 0.04 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum input increment</td>
<td>0.00001&quot; (0.0001 mm)</td>
<td></td>
</tr>
<tr>
<td>Position detection system</td>
<td>Glass scale/0.05μm</td>
<td></td>
</tr>
<tr>
<td>WHEEL HEAD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid wheel head feed (mpm)</td>
<td>3.9&quot;/min, 39&quot;/min (100 mm/min, 1000 mm/min) (2 steps)</td>
<td></td>
</tr>
<tr>
<td>Handle feed</td>
<td>Per rev.: 0.0004&quot;, 0.004&quot;, 0.04&quot;, 0.15&quot; (0.01 mm, 0.1 mm, 1.0 mm, 4.0 mm)</td>
<td></td>
</tr>
<tr>
<td>Per grad.: 0.000004&quot;, 0.00004&quot;, 0.0004&quot;, 0.0015&quot; (0.0001 mm, 0.001 mm, 0.01 mm, 0.04 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum input increment</td>
<td>0.00001&quot; (0.0001 mm)</td>
<td></td>
</tr>
<tr>
<td>Position detection system</td>
<td>Linear scale 0.05 μm (standard)</td>
<td></td>
</tr>
<tr>
<td>WHEEL SPINDLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size (OD x width x bore)</td>
<td>80 x 0.25&quot;–1&quot; x Ø1.25&quot; (200 mm x 6.4 mm–25 mm x Ø31.75 mm)</td>
<td></td>
</tr>
<tr>
<td>Wheel spindle speed</td>
<td>500 min⁻¹–5000 min⁻¹</td>
<td></td>
</tr>
<tr>
<td>Motor requirement</td>
<td>3 HP, 2 kW-P</td>
<td></td>
</tr>
<tr>
<td>NC CONTROL AXIS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor space (W x L x H)</td>
<td>105&quot; x 80&quot; x 74&quot; (2670 mm x 2040 mm x 1900 mm)</td>
<td>74&quot; x 58&quot; x 74&quot; (1880 mm x 1475 mm x 1900 mm)</td>
</tr>
<tr>
<td>Machine Net Weight</td>
<td>5280 lb (2400 kg)</td>
<td>4840 lb (2200 kg)</td>
</tr>
</tbody>
</table>

* The table speed depends on work load on the table.
Winstar and Winstar SP

Ultra-High Precision Forming Grinders

The Winstar SP was specifically designed for users who push their demands for quality, dimensional accuracy, and flatness to the limits of technical feasibility.

Solutions for Today’s Grinding Needs

With a stable platform, reduced thermal displacement, and a space-saving full enclosure, the Winstar SP delivers outstanding repeatability. It also delivers short lead times and the unmatched grinding precision required in all technology-driven markets, including medical, semiconductor, and electronics.
Winstar Ultra-High Precision Forming Grinder

One of our best-selling forming grinders, the Winstar features an ultra-low vibration, oil-cooled spindle motor that delivers mirror-surface finishing for a wide range of applications.

**Proprietary Column Type, Three-Plane Independent Structure**—The Winstar’s foundation is a T-bed with an elongated slide and column base. High static accuracy is ensured through an independent moving column design that provides excellent operability. In addition, the V-V slide way is fully supported, eliminating overhang and maintaining superior straightness accuracy.

**Table Reciprocating Specifications Guarantee High Productivity**—The Winstar uses a high-speed servo valve for high-speed stroking. At a 0.59” (15 mm) stroke, it can achieve 200 SPM inverse velocity. All series models boast high stroke reversal accuracy for stop grinding and can supply accurate longitudinal processing.

**Features for a Wide Range of Grinding Needs**

- **NC Swivel Rotary Dresser**—The swivel rotary dresser achieves high-precision form dressing by means of three-axis simultaneous control with “normal” position dress capability. Together, they provide a leap in wheel-forming accuracy, from taper to straight, and radius forming. High-speed diamond disk dressing also greatly reduces inaccuracies due to diamond wear.

- **Twin Dresser TD-100**—Previously, thin wheel dressing with a conventional wheel required a high degree of skill. But, by using the TD-100, dressing efficiency has made a great leap forward. Through the use of new, thin grinding wheels, forming widths of 0.0019” (0.05 mm) can be done by operators of any skill level.

- **Vertical Rotary Dresser VRD-125**—A motorized rotary dresser with a high-rigidity spindle delivers high-performance truing. Dressing can be performed on diamond and CBN wheels.

- **Automatic Measurement System (Touch Sensor)**—The touch sensor automatically performs measurements after grinding to given dimensions within a canned cycle, enabling the machine to automatically re-grind surfaces when measurements are out of tolerance. Measurement resolution is 0.05µm (0.000002”), and it also supports multiple workpiece measurement. Automatic workpiece approach setting is an optional function.

- **High-Speed Spindle 10,000 min⁻¹**—Equipped with an ultra-low vibration (VI) 2.2 kW oil-cooled high-speed motor. It provides 2.2 kW at 2500 min⁻¹ and covers a wide range from normal grinding to the high-speed range. Both the spindle and motor use ceramic ball bearings, supporting high RPMs. While enabling wheels with smaller bores, it still provides power for high-speed grinding.

- **Canned Software Cycles Provide Simple Operation**—Canned cycles are fixed cycles that give operators full command of the technology without the need to know complicated G-code programming.
Winstar and Winstar SP ULTRA-HIGH PRECISION FORMING GRINDERS

ULTRA-LOW VIBRATION SPINDLE MOTOR FOR ULTRA-MIRROR SURFACE FINISHES

The grinding spindle achieves ultra-mirror surface finishes through a class V1 ultra-low vibration, oil-cooled spindle motor. The motor is equipped with an extra oil bath cooling function as standard equipment, which provides great thermal stability.

HYBRID GUIDE SURFACE WITH GLASS LINEAR SCALE

This system uses both a linear roller guide slideway (that achieves submicron accuracy) and a hybrid box way for sliding surfaces with enhanced vibration dampening for the vertical and cross axes. A 0.0000002" (0.05µm) resolution scale is also included as standard equipment.

Less than 0.000004" (0.1µm) backlash capability (Winstar SP).

- X axis: 0.000026"/0.000027" (0.68 µm/0.7µm)
- Y axis: 0.000028"/0.000027" (0.71 µm/0.7µm)

COLUMN TYPE THREE-FACE INDEPENDENT STRUCTURE

With Amada’s unique three-face independent structure (the column moves front-to-back), the vertical, cross, and side-to-side axes are not dynamically affected by other moving axes, thus providing stable processing accuracy.

CAE structural analysis by 3D digital design

• Comprehensive analyses were conducted on the displacement of the structure caused by the machine’s own weight, table movement, and column movement.

• The results of these analyses led to optimized rib placement, jack placement, and mass balance for repeatable precision.

H-V SLIDING SURFACE

Superior straightness is achieved through the no-overhang design with a wide table base (Winstar SP: 52.75" [1,340 mm], Winstar: 55.11" [1,400 mm]) providing a maximum table stroke of 23.62" (600 mm) for the Winstar SP and 30.70" (780 mm) for the Winstar.
Grinding Cycle (Standard)

Surface grinding—Traverse grinding is easy when it’s digital. The front-back and side-to-side positions can be typed as dimensions or input by the electronic teaching button.

Table position setting—Table stroke position can be set on the screen. For workpieces on the chuck, end stroke positions can be set with the teaching button. The position setting screen enables changing centerline, length, and left and right position.

Taper mode—Set the taper angle, turn the handle, and the wheel moves on the angle. When re-grinding workpieces with unknown angles, the angle can be measured with a two-point teaching. Using this function, any angle can be ground or dressed quickly, with no special fixtures.

Pattern grinding—By combining the five most typical patterns, processing of complex shapes can be performed easily. Plunge/traverse can be combined for the most efficient grinding possible. (Optional on Winstar)

Pattern contouring—Contour grinding of simple shapes is as easy as inputting the required dimensions on the screen. Each shape is automatically plunge displayed after input for operator review.

Contour grinding—Complex contour grinding can be performed by conversationally inputting figure data. A rough plunge cycle can be created and displayed automatically by the machine. G-code programs can also be uploaded and displayed for grinding.

Grinding Cycle (Optional)

Tie bar grinding—Pitch data for multiple groove grinding can be edited easily. Finishing is done by grinding, leaving several µm each per groove. Creep grinding can also be supported. (Optional on Winstar)

Pattern grinding—By combining the five most typical patterns, processing of complex shapes can be performed on trapezoidal grooves. When the groove dimensions/pitch data are set, wheel forming and processing are performed automatically. Plunge, traverse, and contour grinding can be combined. Rough, medium, and fine processing are performed separately.

Table stroke—The speed switching function/plunge grinding/traverse grinding each have rough, medium, and fine grinding. Table speed and stroke length are adjusted automatically.

Trapezoidal groove grinding—Multiple groove grinding can be performed on trapezoidal grooves. When the groove dimensions/pitch data are set, wheel forming and processing are performed automatically. Plunge, traverse, and contour grinding can be combined. Rough, medium, and fine processing are performed separately.

Terraced grinding—Step forms are combined and processed with ease. Forms can be set with five steps and four processes in one pattern. Dressing cycles have been built in, and grinding wheels can be dressed to radius or taper.

Air vent grinding (WAPS-WIN required)—Multiple grooves set on a plate can be processed while determining table stroke position. This function processes by loading data created earlier with Amada’s WAPS-WIN air vent cycles.

Tie bar grinding—By combining the five most typical patterns, processing of complex shapes can be performed on trapezoidal grooves. When the groove dimensions/pitch data are set, wheel forming and processing are performed automatically. Plunge, traverse, and contour grinding can be combined. Rough, medium, and fine processing are performed separately.

Hydraulic creep grinding—Using the table scale feedback, grinding can be performed setting table stroke shift speed to low speed. Both up-cut and down-cut are supported. Groove grinding software or tie bar grinding software is required.

Winstar and Winstar SP ULTRA-HIGH PRECISION FORMING GRINDERS

Winstar and Winstar SP ULTRA-HIGH PRECISION FORMING GRINDERS

Grinding Cycle (Standard)

Surface grinding—Traverse grinding is easy when it’s digital. The front-back and side-to-side positions can be typed as dimensions or input by the electronic teaching button.

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Winstar and Winstar SP ULTRA-HIGH PRECISION FORMING GRINDERS

Grinding Cycle (Standard)

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Table position setting—Table stroke position can be set on the screen. For workpieces on the chuck, end stroke positions can be set with the teaching button. The position setting screen enables changing centerline, length, and left and right position.

Taper mode—Set the taper angle, turn the handle, and the wheel moves on the angle. When re-grinding workpieces with unknown angles, the angle can be measured with a two-point teaching. Using this function, any angle can be ground or dressed quickly, with no special fixtures.

Pattern grinding—By combining the five most typical patterns, processing of complex shapes can be performed easily. Plunge/traverse can be combined for the most efficient grinding possible. (Optional on Winstar)

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Contour grinding—Complex contour grinding can be performed by conversationally inputting figure data. A rough plunge cycle can be created and displayed automatically by the machine. G-code programs can also be uploaded and displayed for grinding.

Grinding Cycle (Optional)

Tie bar grinding—Pitch data for multiple groove grinding can be edited easily. Finishing is done by grinding, leaving several µm each per groove. Creep grinding can also be supported. (Optional on Winstar)

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Terraced grinding—Step forms are combined and processed with ease. Forms can be set with five steps and four processes in one pattern. Dressing cycles have been built in, and grinding wheels can be dressed to radius or taper.
**Unrivaled Grinding Precision by Design**

**STEP GRINDING ACCURACY**

**Grinding conditions**
- Grinding wheel: CBN170 Ø7.87" x 0.39" x Ø1.25 (Ø200 mm x 10 mm x Ø31.75 mm)
- Table stroke: 4.72" (120 mm) 57 SPM
- Stock removal: 0.0008" (0.02 mm)
- Grinding processing time: 30 seconds
- Measuring device: Digital length measuring device (Nikon)

**V GROOVE PITCH GRINDING PRECISION**

**Grinding conditions**
- Grinding wheel: Ø4A600 (Tyrolit) Ø.07" x 0.25" (V mountain forming) x Ø.25" (Ø205 mm x 6.4 mm x Ø31.75 mm)
- Table stroke: 0.79" (20 mm) 150 SPM
- Number of grooves: 18
- Stock removal: 0.019" (0.5 mm)
- Times sparked out: 5
- Grinding processing time: 85 min. (including processing dress one time per groove)
- Measuring device: Non-contact laser 3D measuring device (Mitaka Kohki Co., Ltd.)

<table>
<thead>
<tr>
<th>CUMULATIVE ERRORS</th>
<th>PITCH ERROR</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINIMUM VALUE</td>
<td>-0.000002&quot;</td>
</tr>
<tr>
<td>(-0.00002 mm)</td>
<td>-0.000002&quot;</td>
</tr>
<tr>
<td>MAXIMUM VALUE</td>
<td>0.000001&quot;</td>
</tr>
<tr>
<td>(0.00001 mm)</td>
<td>0.000001&quot;</td>
</tr>
<tr>
<td>MAXIMUM ERROR</td>
<td>0.000001&quot;</td>
</tr>
<tr>
<td>(±0.00002 mm)</td>
<td>(±0.00002 mm)</td>
</tr>
</tbody>
</table>

**MIRROR GRINDING**

**Grinding conditions**
- Grinding wheel: D2000 Ø7.87" x 0.24" x Ø1.25 (Ø200 mm x 6 mm x Ø31.75 mm)
- Wheel speed: 900 RPM (peripheral speed: 1902 ft/min. (580 m/min.)
- Table stroke: 7.87" (200 mm)
- Table speed: 32.9'/min. (10 m/min.)
- Total grinding: 0.0043" (0.008 mm)
- Rough/fine: 0.000002"/0.0000008" (0.00005 mm/0.00002 mm)
- Rough/fine in feed: 0.02"/0.008" (0.5 mm/0.2 mm) sync feeding
- Grinding time: 83 min.
- Measuring device: Surface roughness measuring device (Taylor Hobson)

<table>
<thead>
<tr>
<th>CUMULATIVE ERRORS</th>
<th>PITCH ERROR</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINIMUM VALUE</td>
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<tr>
<td>(-0.00003 mm)</td>
<td>-0.000016&quot;</td>
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<tr>
<td>MAXIMUM VALUE</td>
<td>0.000005&quot;</td>
</tr>
<tr>
<td>(0.00001 mm)</td>
<td>0.000005&quot;</td>
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<tr>
<td>MAXIMUM ERROR</td>
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</tr>
<tr>
<td>(±0.00001 mm)</td>
<td>(±0.00002 mm)</td>
</tr>
</tbody>
</table>

**CONTOUR GRINDING**

**Grinding method**
- After forming the grindstone corner radius with the rotary dresser, contour grinding is performed.

**Grinding conditions**
- Grinding wheel: 16B100 2 /VCSS Ø6.9" x 0.18" x Ø1.25 (Ø205 mm x 6.5 mm x Ø31.75 mm)
- Table stroke: 1.38" (35 mm) 120 SPM
- Number of grinding passes: 1
- Grinding time: 30 min.
- Measuring device: Non-contact laser 3D measuring device (Mitaka Kohki Co., Ltd.)

<table>
<thead>
<tr>
<th>CUMULATIVE ERRORS</th>
<th>PITCH ERROR</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINIMUM VALUE</td>
<td>-0.000001&quot;</td>
</tr>
<tr>
<td>(-0.00002 mm)</td>
<td>-0.000016&quot;</td>
</tr>
<tr>
<td>MAXIMUM VALUE</td>
<td>0.000001&quot;</td>
</tr>
<tr>
<td>(0.00002 mm)</td>
<td>0.000001&quot;</td>
</tr>
<tr>
<td>MAXIMUM ERROR</td>
<td>0.000002&quot;</td>
</tr>
<tr>
<td>(±0.00003 mm)</td>
<td>(±0.00005 mm)</td>
</tr>
</tbody>
</table>
### Machine Specifications

<table>
<thead>
<tr>
<th>WINSTAR SP</th>
<th>WINSTAR SP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simultaneous 2 axis + 1 axis (hydraulic)</td>
<td>Simultaneous 2 axis + 1 axis (hydraulic)</td>
</tr>
</tbody>
</table>

**TYPE**
- **Column type**: Guide surface
- **Position detection/scale resolution**: ABS linear scale/0.05 μm
- **Minimum setting units**: 0.000010" (0.01 μm)

**CROSS**
- **Max. feedrate**: Manual
- **Feedrate**: 200 min⁻¹
- **Slight**: 0.19″ (5 mm)
- **Normal**: 3.9″ (100 mm)

**HYDRAULIC**
- **Hydraulic oil/lubrication oil/cooling oil**: (hydraulic oil not included)
- **Spindle speed**: 500~5000 (inverter)
- **Cooling medium**: HCFC R410 (zero for ozone depletion potential)
- **Hydraulic oil/lubrication oil/cooling oil**: (hydraulic oil not included)
- **Spindle speed**: 500~5000 (inverter)
- **Cooling medium**: HCFC R410 (zero for ozone depletion potential)

**FLOOR SPACE**
- **Width**: 82″ (2100 mm)
- **Length**: 106″ (2700 mm)
- **Height**: 82″ (2100 mm)

**MACHINE TOTAL WEIGHT**
- **Total weight**: 8800 lb (4000 kg)

**WINSTAR and WINSTAR SP ULTRA-HIGH PRECISION FORMING GRINDERS**

<table>
<thead>
<tr>
<th>WINSTAR SP</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Simultaneous 2 axis + 1 axis (hydraulic)</td>
<td>Simultaneous 2 axis + 1 axis (hydraulic)</td>
</tr>
</tbody>
</table>

**WHEEL HEAD**
- **Feeder**: Log feed
- **Rapid traverse**: 78"/min (2000 mm/min)
- **Grinding feed**: 0.0004~19.6"/min (0.1~500 mm/min)

**WHEEL**
- **Outer diameter x width x bore diameter**: Ø8 x 0.25+1 x Ø1.25" (Ø205 x 6.4~25 x Ø31.75 mm)
- **Slight**: 0.19″ (5 mm)
- **Normal**: 3.9″ (100 mm)

- **Automatic Feedrate**: Manual
- **Feedrate**: 200 min⁻¹
- **Slight**: 0.19″ (5 mm)
- **Normal**: 3.9″ (100 mm)

<table>
<thead>
<tr>
<th>WINSTAR SP</th>
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</thead>
<tbody>
<tr>
<td>Simultaneous 2 axis + 1 axis (hydraulic)</td>
<td>Simultaneous 2 axis + 1 axis (hydraulic)</td>
</tr>
</tbody>
</table>

**MOTOR**
- **Cooling pump**: (24/28.8L/min -1)
- **Lubrication oil**: 12
- **Hydraulic oil**: 100
- **Spindle speed**: 1000, 2000 mm/min
- **Cooling medium**: HCFC R410 (zero for ozone depletion potential)

**POWER CAPACITY**
- **Wheel spindle**: 5 HP (3.7 kW)
- **Cross feed**: 1.3 HP (1.0 kW)
- **Linear feed**: 1.6 HP (1.2 kW)
- **Reciprocation feed**: 2.6 HP (2.8 kW)

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**Machine Specifications**

**CROSS**
- **Max. feedrate**: Manual
- **Feedrate**: 200 min⁻¹
- **Slight**: 0.19″ (5 mm)
- **Normal**: 3.9″ (100 mm)

**HYDRAULIC**
- **Hydraulic oil/lubrication oil/cooling oil**: (hydraulic oil not included)
- **Spindle speed**: 500~5000 (inverter)
- **Cooling medium**: HCFC R410 (zero for ozone depletion potential)
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**FLOOR SPACE**
- **Width**: 82″ (2100 mm)
- **Length**: 106″ (2700 mm)
- **Height**: 82″ (2100 mm)

**MACHINE TOTAL WEIGHT**
- **Total weight**: 8800 lb (4000 kg)

---

**Machine Specifications**

**CROSS**
- **Max. feedrate**: Manual
- **Feedrate**: 200 min⁻¹
- **Slight**: 0.19″ (5 mm)
- **Normal**: 3.9″ (100 mm)

**HYDRAULIC**
- **Hydraulic oil/lubrication oil/cooling oil**: (hydraulic oil not included)
- **Spindle speed**: 500~5000 (inverter)
- **Cooling medium**: HCFC R410 (zero for ozone depletion potential)
- **Hydraulic oil/lubrication oil/cooling oil**: (hydraulic oil not included)
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- **Width**: 82″ (2100 mm)
- **Length**: 106″ (2700 mm)
- **Height**: 82″ (2100 mm)

**MACHINE TOTAL WEIGHT**
- **Total weight**: 8800 lb (4000 kg)
The high-accuracy ram design and servo motor-driven axes of Amada rotary grinders deliver high-precision grinding and smaller environmental impact. This series guarantees stable grinding through constant grind control.
SSR5 Rotary Surface Grinder

The proven ram structure of this machine provides enhanced usability and exceptional efficiency while the enhanced feed axis speed shortens setup time. Linear guides on both vertical and horizontal axes improve straightness, while automatic table dressing enhances accuracy. Usability is improved with teaching functions on both the right and left sides, along with a manual pulse handle.

SSR5 Features

Three-Fold Productivity Rate Increase—The SSR5 has a three-fold productivity advantage compared to a horizontal-axis, square-table surface grinder with equivalent working area.

Low Environmental Load, Non-Hydraulic Pressure—Thermal displacement is remarkably reduced by an environment-responsive structure and non-hydraulic pressure NC specification, which also enables high accuracy.

Every Spindle Shifts to NC—Amada’s dedicated rotary software allows automatic table dressing and automatic measurement functions.

Linear Guides—Both the vertical and horizontal axes feature linear guides for improved straightness.

Teaching Function—A teaching function on both the right and left sides, combined with a manual pulse handle, improves usability.

Automatic Table Dressing—Included as standard equipment, automatic table dressing functions enhance dimensional accuracy.

Servo Controlled Rotary Table—Enables superior surface finish over entire workpiece face through constant surface speed function.

Constant Surface Footage—Table rotation inverter enables synchronization of ram feed and table RPM. Feed speed and ram feed automatically increase to provide optimum surface footage across the face of the part for superior surface finish.
### Machine Specifications

**CAPACITY**
- Diameter of solenoid chuck valve: 20" (508 mm)
- Distance between chuck upper surface and grinding wheel lower surface: 4.9" (125 mm)
- Maximum swing in table cover: 21.6" (550 mm)
- Effective diameter of electromagnetic chuck: 16.7" (420 mm)
- Rotation speed/rotation speed range conversion number: 50–300 min⁻¹/21 step
- Vertical travel distance: 74.4" (1900 mm)
- Maximum angle of inclination: \( x^\circ \)

### Control Unit Specifications

**CONTROL UNIT MODEL**
- F-OiT (FANUC)

**CONTROLLED AXES**
- Single axis x 2, table rotation axis x 1 (X-axis: cross feed, Z-axis: vertical, B-axis: table rotation)

**Standard Functions**
- Automatic demagnetizing device
- Electromagnetic/permanent magnetic chuck supported
- Simplified permanent chuck demagnetizing function
- Stepless magnetic force adjustment knob
- Electric leakage breaker (sensed current: 30mA)
- 7.2-inch monochrome CD/MDI unit
- Dressing interval (in-grinding dressing)
- Z-axis (vertical) manual handle
- Manual reference point returning
- Stored stroke limit
- Table rotation override 0—100%
- Ram actuation override 0—100%
- Constant table rotation speed control
- Grinding wheel speed S command
- Self-diagnostic function
- Alarm and alarm history display
- Actual speed display
- Clock display
- Current position display
- Servo adjustment image
- Ram position teaching push button
- Operation time/number of parts display
- Chuck workpiece/workpiece reference push button
- Relative coordinate origin push button
- End message
- Buzzer (volume adjustable)
- Automatic table dressing function

**Optional Functions**
- X-axis (ram) manual handle
- Handle interruption
- Interruption dressing
- Running timer
- Warning light (1 color [yellow])
- Warning light (3 colors [red, yellow, green])
- Operation time display
- AC100V power outlet (2P)
- Imperial units available

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- AC100V power outlet (2P)
- Imperial units available
SSR5 ROTARY SURFACE GRINDER

Special Accessories

<table>
<thead>
<tr>
<th>CHUCK</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Electromagnetic chuck table</td>
<td>(ring pole P = 8)</td>
</tr>
<tr>
<td>Electromagnetic chuck table</td>
<td>(star pole)</td>
</tr>
<tr>
<td>Electromagnetic chuck table</td>
<td>(star and ring pole)</td>
</tr>
<tr>
<td>Vacuum adsorption chuck device</td>
<td>(not including adapter plate)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COOLANT EQUIPMENT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnetic separator type dust</td>
<td>collection and coolant device (150 liters) FW-152-GK</td>
</tr>
<tr>
<td>Magnetic separator type dust</td>
<td>collection and coolant device (150 liters) FW-152-GK</td>
</tr>
<tr>
<td>Grinding fluid temperature</td>
<td>control device</td>
</tr>
</tbody>
</table>

| DRESSER                        | Electric dresser                                                |

<table>
<thead>
<tr>
<th>SPINDLE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Balancing arbor</td>
<td></td>
</tr>
<tr>
<td>Optional grinding wheel flange</td>
<td></td>
</tr>
<tr>
<td>Grinding wheel width 50 mm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTHER</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance board</td>
<td></td>
</tr>
<tr>
<td>Working Lamp</td>
<td></td>
</tr>
<tr>
<td>Specified color</td>
<td></td>
</tr>
</tbody>
</table>

External View

With the smallest footprint in their class, Amada surface grinders can boost your shop’s productivity and efficiency. Integrated operation handles and a compact control panel allow for easy accessibility, while processing efficiency is enhanced by Amada’s proven software.
Techster 52 and 52S

High-Capacity, Multi-Purpose
High-Speed CNC Surface Grinders

Techster 52 and 52S HIGH-SPEED CNC SURFACE GRINDERS

Column—Built for high rigidity and exceptional straightness, the high column (4” higher than the Meister 63) provides greater flexibility in processing.

Table—V-V sliding surface structure provides high-precision operation while the rapid reciprocation rate allows for quick stock removal.

Bed and Saddle—The optimized rib layout and high-rigidity bed structure (with a low center of gravity) were developed through extensive structural analysis. The massive bed and thick saddle support heavier workpieces with outstanding precision and flatness.

Front-Side Operation—Axis movement can be controlled from the front of the machine, making column operations easy.

Wheel Spindle—A 5 HP (3.7 kW) spindle motor supports efficient stock removal with a 10” (254 mm) wheel. An 8” (203.2 mm) wheel is optional.

User-Friendly Control Panel—The space-saving control panel with Amada software improves overall efficiency.

• Large table traverse: 23.62” x 9.84” (600 mm x 250 mm)
• Table traverse way: double-V
• Servo valve-controlled traverse drive system

TECHSTER 52 CONTROL
FANUC 32 IB

Two-axis simultaneous plus programmable table. The Meister operating system supports all canned cycle and G-code programming of the Meister series. Supports multiwork canned cycles and all dressing canned cycles.
Techster 64 and 64S

Saddle Type Precision Surface CNC Grinders

**Techster 64 and 64S**

**Column**—The unique, isolated three-way sliding column on the Techster 64 and 64S was optimized through structural analysis to deliver maximum performance while requiring minimal floor space.

**Table**—The ball screw drive and no-overhang V-V sliding surface deliver high-precision operation in both high- and low-speed use. The non-hydraulic system is extremely environmentally friendly.

**Bed and Saddle**—The optimized rib layout and high-rigidity bed structure (with a low center of gravity) were developed through extensive structural analysis. The massive bed and thick saddle support heavier workpieces with outstanding precision and flatness.

**Front-Side Operation**—Axis movement can be controlled from the front of the machine, making column operations easy.

**Wheel Spindle**—The Ø4.93” (100 mm) high-rigidity spindle with quill ensures high-efficiency grinding.

**User-Friendly Control Panel**—The space-saving control panel with Amada software improves overall efficiency.

**Techster 64 CONTROL**

*TECHSTER 64 CONTROL*  
FANUC 32 IB  
Three-axis control, two-axis simultaneous Meister operating system. Supports all canned cycles and G-code programming of the Meister series. Supports multiwork canned cycles and all dressing canned cycles. Supports creep feed canned cycle, providing high-precision, low-power creep feed.
### Machine Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>TECHSTER 52</th>
<th>TECHSTER 52S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAPACITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table working surface (L x W)</td>
<td>21.6&quot; x 7.8&quot; (550 x 200 mm)</td>
<td></td>
</tr>
<tr>
<td>Max. longitudinal travel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. cross travel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spindle center height from table</td>
<td>9.8&quot; (250 mm)</td>
<td></td>
</tr>
<tr>
<td>Standard chuck size (L x W x H)</td>
<td>15.7&quot; x 7.8&quot; x 2.7&quot; (600 x 200 x 70 mm)</td>
<td></td>
</tr>
<tr>
<td><strong>TRAVEL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longitudinal feed</td>
<td>32<del>98 ft/min (1</del>30 m/min)</td>
<td></td>
</tr>
<tr>
<td>Max. no. of reciprocation (15 mm stroke)</td>
<td>150 min¹</td>
<td></td>
</tr>
<tr>
<td><strong>Rapid cross feed (jog)</strong></td>
<td>0<del>1300, 1600, 3200 ft/min (0</del>400, 500, 1000 m/min)</td>
<td>0<del>5200 ft/min (0</del>1000 m/min)</td>
</tr>
<tr>
<td><strong>Handle feed</strong></td>
<td>0.00004&quot;, 0.00004&quot;, 0.0004&quot;, 0.0015&quot; (0.001, 0.001, 0.01, 0.04 mm)</td>
<td>0.00004&quot;, 0.00004&quot;, 0.0004&quot;, 0.0015&quot; (0.001, 0.001, 0.01, 0.04 mm)</td>
</tr>
<tr>
<td><strong>Position detection system</strong></td>
<td>Glass scale/0.05 µm (OP)</td>
<td></td>
</tr>
<tr>
<td><strong>Rapid wheel head feed (jog)</strong></td>
<td>3.9, 39&quot;/min (100, 1000 mm/min) (2 steps)</td>
<td></td>
</tr>
<tr>
<td><strong>Handle feed</strong></td>
<td>0.00004&quot;, 0.00004&quot;, 0.0004&quot;, 0.0015&quot; (0.001, 0.001, 0.01, 0.04 mm)</td>
<td>0.00004&quot;, 0.00004&quot;, 0.0004&quot;, 0.0015&quot; (0.001, 0.001, 0.01, 0.04 mm)</td>
</tr>
<tr>
<td><strong>Position detection system</strong></td>
<td>Linear scale 0.05 µm (OP)</td>
<td></td>
</tr>
<tr>
<td><strong>Size (OD x width x bore)</strong></td>
<td>810 x 0.25” x 0.025” (825 x 6.4 x 0.64 mm)</td>
<td></td>
</tr>
<tr>
<td><strong>Wheel spindle speed</strong></td>
<td>500-5000 rpm²</td>
<td></td>
</tr>
<tr>
<td><strong>Motor requirement</strong></td>
<td>5 HP-2 P (3.7-1.5 kW-P)</td>
<td></td>
</tr>
<tr>
<td><strong>NC CONTROL AXIS</strong></td>
<td>Singly 2 axis</td>
<td>Singly 1 axis</td>
</tr>
<tr>
<td><strong>FLOOR SPACE (W x L x H)</strong></td>
<td>88” x 72” x 78” (2240 x 1830 x 2000 mm)</td>
<td>88” x 60” x 78” (2240 x 1770 x 2000 mm)</td>
</tr>
<tr>
<td><strong>MACHINE NET WEIGHT</strong></td>
<td>5280 lb (2400 kg)</td>
<td></td>
</tr>
</tbody>
</table>

¹ The table speed depends on work load on the table.

### Delivering a Wide Range of Processing Features and Dressing Systems

**CNC Profile Dresser**—The built-in servo motor swivels the dresser during wheel forming. With the simultaneous three-axis control of the machine’s X and Y, the dresser angle can be kept constant for normal line control. This makes it possible to dress a wheel with only one point of the dresser, providing high-precision profiles.

**Simplified Profile Dresser**—Two forming diamond tools are fitted to perform wheel form dressing at a fixed dresser angle.

**Automatic Measuring Device** (Touch Sensor)—After grinding to the specified dimensions during automatic (canned) cycle operation, this device measures the finished work and reference block, compares the results, and automatically performs follow-up grinding for correction if the workpiece size is out of tolerance. Tolerance for the pass/fail criteria can be set arbitrarily. As the machine’s Y-axis is used for measurement, the measuring resolution of this device is 0.000002" (0.05 µm).

**HIGH-PRECISION SINGLE/TWIN ROTARY DRESSERS**

- With a maximum 3,000 RPM, the high-precision single rotary dresser can be used for coarse dressing as well as for finish dressing of simple forms.
- The twin rotary dresser can accommodate two diamond rolls. One can be used for coarse and the other for fine dressing. Dresser width and form can also be changed to widen the scope of form dressing. The dresser spindle is supported on both sides for increased rigidity. It can also accommodate formed diamond rolls for wheel forming in plunge cut operations.
## Machine Specifications

<table>
<thead>
<tr>
<th></th>
<th>TECHSTER 64</th>
<th>TECHSTER 64S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAPACITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table working surface (L x W)</td>
<td>27&quot; x 15.7&quot; (700 x 400 mm)</td>
<td>23.6&quot; x 15.7&quot; x 3.9&quot; (600 x 400 x 100 mm)</td>
</tr>
<tr>
<td>Max. longitudinal travel</td>
<td>30.7&quot; (780 mm)</td>
<td>30.7&quot; (780 mm)</td>
</tr>
<tr>
<td>Max. cross travel</td>
<td>17.7&quot; (450 mm)</td>
<td>17.7&quot; (450 mm)</td>
</tr>
<tr>
<td>Spindle center height from table</td>
<td>19.6&quot; (500 mm)</td>
<td>21.5&quot; (550 mm)</td>
</tr>
<tr>
<td>Standard chuck size (L x W x H)</td>
<td>23.6&quot; x 15.7&quot; x 3.9&quot; (600 x 400 x 100 mm)</td>
<td></td>
</tr>
<tr>
<td><strong>TRAVEL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longitudinal feed</td>
<td>3.2<del>98 ft/min (1</del>30 m/min)</td>
<td>3.2<del>98 ft/min (1</del>30 m/min)</td>
</tr>
<tr>
<td>Max. no. of reciprocation (15 mm stroke)</td>
<td>150 min⁻¹</td>
<td>150 min⁻¹</td>
</tr>
<tr>
<td><strong>CROSS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid cross feed (mpg)</td>
<td>0<del>1300, 1600, 2000, 3000, 9800 ft/min (0</del>400, 500, 1000, 2000, 3000 m/min)</td>
<td>0<del>1300, 1600, 2000, 3000, 9800 ft/min (0</del>400, 500, 1000, 2000, 3000 m/min)</td>
</tr>
<tr>
<td>Handle feed</td>
<td>Per rev. 0.0004&quot;, 0.004&quot;, 0.04&quot;, 0.4&quot;, (0.01, 0.1, 1.0, 10.0 mm)</td>
<td>Per rev. 0.0004&quot;, 0.004&quot;, 0.04&quot;, 0.4&quot;, (0.01, 0.1, 1.0, 10.0 mm)</td>
</tr>
<tr>
<td></td>
<td>Per grad. 0.000004&quot;, 0.000004&quot;, 0.0001&quot;, 0.001&quot;, 0.01&quot;, 1.0&quot;, (0.0001, 0.001, 0.01, 1.0, 10.0 mm)</td>
<td>Per grad. 0.000004&quot;, 0.000004&quot;, 0.0001&quot;, 0.001&quot;, 0.01&quot;, 1.0&quot;, (0.0001, 0.001, 0.01, 1.0, 10.0 mm)</td>
</tr>
<tr>
<td>Minimum input increment</td>
<td>0.0&quot; (0.0001 mm)</td>
<td>—</td>
</tr>
<tr>
<td>Position detection system</td>
<td>Glass scale/0.05 μm (OP)</td>
<td>—</td>
</tr>
<tr>
<td><strong>WHEEL HEAD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid wheel head feed (mpg)</td>
<td>3.9, 39&quot;/min (100, 1000) (2 steps)</td>
<td>3.9, 39&quot;/min (100, 1000) (2 steps)</td>
</tr>
<tr>
<td>Handle feed</td>
<td>Per rev. 0.0004&quot;, 0.004&quot;, 0.04&quot;, 0.15&quot;, (0.01, 0.1, 1.0, 10.0 mm)</td>
<td>Per rev. 0.000001&quot;, 0.000001&quot;, 0.0001&quot;, 0.001&quot;, 0.01&quot;, 1.0&quot;, (0.0001, 0.001, 0.01, 1.0, 10.0 mm)</td>
</tr>
<tr>
<td></td>
<td>Per grad. 0.000001&quot;, 0.000001&quot;, 0.0001&quot;, 0.001&quot;, 0.01&quot;, 1.0&quot;, (0.0001, 0.001, 0.01, 1.0, 10.0 mm)</td>
<td>Per grad. 0.000001&quot;, 0.000001&quot;, 0.0001&quot;, 0.001&quot;, 0.01&quot;, 1.0&quot;, (0.0001, 0.001, 0.01, 1.0, 10.0 mm)</td>
</tr>
<tr>
<td>Minimum input increment</td>
<td>0.000001&quot; (0.0001 mm)</td>
<td>Manual 0.000001&quot; (0.0001 mm)</td>
</tr>
<tr>
<td>Position detection system</td>
<td>Linear scale 0.05 μm (OP)</td>
<td>Counter 0.000039&quot; (0.001 mm)</td>
</tr>
<tr>
<td><strong>WHEEL SPINDLE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size (OD x width x bore)</td>
<td>Ø14 x 1.5<del>2 x Ø5&quot; (Ø355 x 38</del>50 x Ø127 mm)</td>
<td>Ø14 x 1.5<del>2 x Ø5&quot; (Ø355 x 38</del>50 x Ø127 mm)</td>
</tr>
<tr>
<td>Wheel spindle speed</td>
<td>1500/1800 min⁻¹ (50/60Hz)</td>
<td>1500/1800 min⁻¹ (50/60Hz)</td>
</tr>
<tr>
<td>Motor requirement</td>
<td>3 HP<del>4P (3.7</del>4 kW-P)</td>
<td>3 HP<del>4P (3.7</del>4 kW-P)</td>
</tr>
<tr>
<td><strong>NC CONTROL AXIS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simultaneously 2 axis</td>
<td>Simultaneously 2 axis</td>
<td>Simultaneously 2 axis</td>
</tr>
<tr>
<td>Single axis</td>
<td>Single axis</td>
<td>Single axis</td>
</tr>
<tr>
<td><strong>FLOOR SPACE (W X L X H)</strong></td>
<td>94&quot; x 88&quot; x 81&quot; (2400 x 2240 x 2080 mm)</td>
<td>96&quot; x 85&quot; x 84&quot; (2440 x 2180 x 2080 mm)</td>
</tr>
<tr>
<td><strong>MACHINE NET WEIGHT</strong></td>
<td>8800 lb (4000 kg)</td>
<td>8800 lb (4000 kg)</td>
</tr>
</tbody>
</table>

*The table speed depends on work load on the table.
Techster 84 • 104 • 126

Techster Series 84, 104, and 126
Column Type Precision Surface Grinders

Techster Series Features

Economy and Ecology
• The Techster 84, 104, and 126 grinders feature ball screw drive tables as standard. This non-hydraulic drive unit reduces noise and environmental burdens, reducing power consumption while delivering high speed and accuracy for reduced grinding times.
• The vertical axis has a linear guide way with 0.000004” (0.1µm) following for the mirror.
• A powerful 20 HP (15 kW) spindle motor delivers outstanding performance. (Optional on Techster 126.)

Original Designed Structure
• The high-precision structure has increased mass for high rigidity.
• A long stroke cross axis on a T-type solid bed structure ensures maximum straightness over the life of the machine.
• A high-rigidity, C-type column reduces overhang on the wheel head.
• Table movement is fully guided by V-V slideways.

Safe and User-Friendly
• PC-type NC touchscreen.
• Interactive programming software.
• Three types of machine coverings.
• Supports all dressing cycles.

Techster Control
• Control FANUC Windows interface.
• Three-axis control, two-axis simultaneous.
• Meister operating system-compatible.
• Supports all canned cycles and G-code programming of Meister series.
• Supports multiple work cycles.
• Supports all dressing cycles.
• Supports creep feed canned cycle.
• Provides high precision mid-power creep feed.

T-Frame Construction

Zero Overhang
Wide Range of Optional Features

- Newly developed original software provides more efficient grinding.
- A quick and accurate on-board measuring device ensures the tightest tolerances are met.
- An automatic wheel balancer is available for Techster 104 and 126 grinders. This measuring instrument adjusts the balance of the wheel and spindle as an integral unit—perfect balancing improves the ground surface roughness.
- Each available dresser has an automatic dressing cycle program:
  - CNC swivel rotary dresser
  - High-speed rotary dresser
  - Single diamond profile dresser
  - Straight dresser

The Techster 126 in Action
The Techster Series’ combination of environmental efficiency and grinding accuracy makes mid-sized jobs easy.
## Machine Specifications

<table>
<thead>
<tr>
<th>CAPACITY</th>
<th>TECHSTER 84</th>
<th>TECHSTER 104</th>
<th>TECHSTER 126</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. longitudinal travel</td>
<td>39.3&quot; (1000 mm)</td>
<td>42.2&quot; (1060 mm)</td>
<td>59&quot; (1500 mm)</td>
</tr>
<tr>
<td>Max. cross travel</td>
<td>17.7&quot; (450 mm)</td>
<td>18.1&quot; (460 mm)</td>
<td>25.9&quot; (660 mm)</td>
</tr>
<tr>
<td>Max. spindle center height from table</td>
<td>19.6&quot; (500 mm)</td>
<td>29.5&quot; (750 mm)</td>
<td>33.4&quot; (850 mm)</td>
</tr>
<tr>
<td>Standard chuck size (L x W x H)</td>
<td>31.4&quot; x 15.7&quot; x 3.9&quot; (800 x 400 x 100 mm)</td>
<td>39.4&quot; x 23.6&quot; x 3.9&quot; (1000 x 600 x 100 mm)</td>
<td>47.2&quot; x 23.6&quot; x 3.9&quot; (1200 x 600 x 100 mm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRAVEL</th>
<th>TECHSTER 84</th>
<th>TECHSTER 104</th>
<th>TECHSTER 126</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longitudinal feed</td>
<td>10-15 ft/min (3-40 m/min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traverse guide way/drive</td>
<td>V-V sliding guide way/hall screw direct drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CROSS</td>
<td>TECHSTER 84</td>
<td>TECHSTER 104</td>
<td>TECHSTER 126</td>
</tr>
<tr>
<td>Rapid cross feed ( Jog )</td>
<td>0.15, 1.78, 19.6 ft/min (0-400, 500, 2000, 5000 m/min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handle feed</td>
<td>Per rev. 0.00004&quot;, 0.0001&quot;, 0.0004&quot;, 0.004&quot; (0.01, 0.1, 1.0, 10.0 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per grad. 0.0000004&quot;, 0.000001&quot;, 0.00004&quot;, 0.0004&quot; (0.0001, 0.001, 0.01, 0.1 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum input increment</td>
<td>0.00000010&quot; (0.0001 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position detection system</td>
<td>Linear scale/deviation: 0.05 µm (OP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross guide way/drive</td>
<td>Linear roller guide way/hall screw direct drive</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHEEL HEAD</th>
<th>TECHSTER 84</th>
<th>TECHSTER 104</th>
<th>TECHSTER 126</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid wheel head feed ( Jog )</td>
<td>3.9, 78 ft/min (100, 2000 mm/min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handle feed</td>
<td>Per rev. 0.00004&quot;, 0.0001&quot;, 0.0004&quot;, 0.004&quot; (0.01, 0.1, 1.0, 10.0 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per grad. 0.0000004&quot;, 0.000001&quot;, 0.00004&quot;, 0.0004&quot; (0.0001, 0.001, 0.01, 0.04 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum input increment</td>
<td>0.00000010&quot; (0.0001 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position detection system</td>
<td>Linear scale/deviation: 0.05 µm (OP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheel spindle speed</td>
<td>300-2500 min⁻¹</td>
<td>300-2500 min⁻¹</td>
<td>300-1500 min⁻¹</td>
</tr>
<tr>
<td>Motor requirement</td>
<td>10HP-6P (7.5-4 kW)</td>
<td>10HP-6P (7.5-4 kW)</td>
<td>15HP-6P (11-6 kW)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHEEL SPINDLE</th>
<th>TECHSTER 84</th>
<th>TECHSTER 104</th>
<th>TECHSTER 126</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size (ID x width x bore)</td>
<td>Ø5 x 5 x 0.5&quot; (Ø127 x 127 x 127 mm)</td>
<td>Ø5 x 5 x 0.5&quot; (Ø127 x 127 x 127 mm)</td>
<td>Ø8 x 38-50 x 0.85&quot; (Ø200 x 38-50 x 213 mm)</td>
</tr>
<tr>
<td>Wheel spindle speed</td>
<td>300-2500 min⁻¹</td>
<td>300-2500 min⁻¹</td>
<td>300-1500 min⁻¹</td>
</tr>
<tr>
<td>Motor requirement</td>
<td>10HP-6P (7.5-4 kW)</td>
<td>10HP-6P (7.5-4 kW)</td>
<td>15HP-6P (11-6 kW)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NC CONTROL AXIS</th>
<th>TECHSTER 84</th>
<th>TECHSTER 104</th>
<th>TECHSTER 126</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simultaneous 2 axes + Table 1 axis</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FLOOR SPACE (W X L X H)</th>
<th>TECHSTER 84</th>
<th>TECHSTER 104</th>
<th>TECHSTER 126</th>
</tr>
</thead>
<tbody>
<tr>
<td>133&quot; x 103&quot; x 81&quot; (3380 x 2615 x 2075 mm)</td>
<td>153&quot; x 131&quot; x 98&quot; (3890 x 3330 x 2495 mm)</td>
<td>179&quot; x 162&quot; x 109&quot; (4550 x 3550 x 2780 mm)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MACHINE NET WEIGHT</th>
<th>TECHSTER 84</th>
<th>TECHSTER 104</th>
<th>TECHSTER 126</th>
</tr>
</thead>
<tbody>
<tr>
<td>11,000 lb (5000 kg)</td>
<td>16,500 lb (7500 kg)</td>
<td>27,500 lb (12,500 kg)</td>
<td></td>
</tr>
</tbody>
</table>

*The table speed depends on work load on the table.

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**Multi-Function Grinding Centers**

The world-renowned precision that has made Amada Machine Tools a leader in grinder manufacturing is now available in a multifunction grinding center. The new MX 150 combines five-axis milling, turn milling, and grinding functions in one easy-to-use machine. Complete processing—from rough stock to finish surfaces—can be done in a single chucking, and the grinding feature offers super-fine finishing suitable for plastic injection molding and medical applications.
MX-150 Features

Outstanding Functionality

• Capacity to machine a wide variety of workpieces.
• Five-axis motion can be performed with a higher level of accuracy thanks to an independent structure that prevents incremental positioning errors from the pivot point.
• Very high machining accuracy is achieved by a design concept equivalent to that of a grinding machine.
• Positioning accuracy: Linear axis ±1 μm or less, rotary axis ±2° or less.

Turn Milling

• Workpieces can be machined at high speed by turning both the workpiece and the tool.
• Intermittent cutting provides a cooling effect and consequently improves tool life.

Integrated Grinding Process for Finish Machining

• The machine enclosure and way covers are designed with the grinding function in mind. This improves machine reliability and operator safety by keeping the cutting fluids contained within the machining area.
• Cutting fluid filter system designed exclusively for grinding (optional).
• The magnetic separator and the cyclone filter remove sludge and wheel grit.
• In-machine rotary dresser (optional).
• Grinding using a vitrified grinding wheel is possible.
**MX-150 Machine Specifications**

### Capacity
- Maximum workpiece size (including chuck) 5.906" x 7.874" (150 x 200 mm)
- Maximum weight (including chuck) 22.046 lb (10 kg)

### Travel
- X axis (right/left) 13.78" (350 mm)
- Y axis (up/down) 11.811" (300 mm)
- Z axis (up/down) 15.748" (400 mm)
- A axis (work rotation axis) 360°
- B axis (tool rotation axis) 110°

### Linear Axis (X/Y/Z Axis)
- Rapid traverse 131.234 ft/min (40 m/min)
- Maximum cutting feed 98.425 ft/min (30 m/min)
- Minimum setting unit .000004" (0.0001 mm)

### Work Rotation Axis (A Axis)
- Rapid traverse 300 rev/min (at rotation control: 1000)
- Maximum cutting feed 250 rev/min
- Minimum setting unit 0.0001°

### Tool Rotation Axis (B Axis)
- Rapid traverse 55 rev/min
- Maximum cutting feed 25 rev/min
- Minimum setting unit 0.0001°

### Main Spindle
- Maximum rotation speed 42,000 rpm
- Maximum output 20.115 HP (15 Kw)
- Maximum torque 6 μm
- Lubrication Oil air lubrication
- Tool interface HSK-E40
- No. of ATC 20
- Maximum tool diameter 1.999" (50 mm)
- Maximum tool length 5.906" (150 mm)
- Maximum weight 2.205 lb (1 kg)

### Floor Space (W x D x H)
- 86.614" x 130.315" x 81.102" (2200 x 3310 x 2060 mm)

### Machine Net Weight
- 11,024 lb (5000 kg)

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**Additional Features for Maximum Versatility**

- Maximum workpiece: 6" x 7.8" (150 mm x 200 mm).
- Powerful 42,000 RPM, 20 HP (15 KW) spindle handles a wide range of tasks, from milling hard-to-machine materials to micromachining with small-diameter tools.
- Sub-micron precision for maintaining the tightest tolerances.
- Full enclosures contain cutting fluids to protect the operator and the equipment.