Focus creates professionalism.
For our best-selling MV series, LITZ has further improved the structural design of the machines, to maximize the dependability of machining centers.

A linear guideway is applied on the 3-axes with the features of high rigidity, low noise, and low friction. Rapid speed is achieved and contour cutting precision is guaranteed.
High Rigidity and High Precision Structure Design

- High rigidity linear guideway is applied on the 3-axes
- Spindle speed up to 12,000rpm
- 3-axes pre-tension ballscrew

- The major construction parts are based on Meehanite cast iron, which is stable in structure and long-term quality is assured.
- Casting parts are calculated and analyzed by the finite element method. Proper structure strength combined with enhanced ribs provides high rigidity for the machine.
- A linear guideway is applied on the 3-axes, supporting heavy loads, rapid moving, and assuring precise positioning.

Linear Guideway with High Speed and High Precision

- A linear guideway with zero backlash ensures a consistent cutting surface on curved or tilted surfaces.
- Suitable for high speed operation and the horsepower requirement is minimized.
- By using rolling contact instead of sliding contact, the linear guide reduces the friction loss and increases the sensitivity and positioning precision.
- Capable of taking loads from all directions simultaneously. Multiple point contacts of the rail contact surface under loads, the cutting rigidity will not be compromised.
- Easy to assemble with interoperability. The lubrication mechanism is simple.
- Tiny wear and tear of linear guideways, long service time.

- The machine is equipped with a collision protection device which can absorb collisions due to machine malfunctions or mistakes made by operators. The damage caused by the collision can be minimized and still maintain the design precision.

Collision Protection Device

- The X/Y/Z-axis can be equipped with a linear scale system to detect thermal displacement due to rapid movement of the machine. The thermal displacement result will be sent to the controller for compensation, suitable for high precision parts machining.
- The linear scale system is designed with a gas protection device to prevent the linear scale from contamination by dust and oil vapor. The precision of the linear scale is assured and the service time can be extended.
Oil/Coolant Separating Design

- The oil/coolant separating design can separate lubricating oil and coolant effectively. Coolant quality will not be reduced due to mixing and the machining quality can be assured.

Spindle head and spindle coolant cooling system - completely eliminate the thermal displacement of the Z-axis

- The unique and cost-effective spindle head cooling system will remove the heat generated by high speed operation of the spindle, eliminating the thermal displacement of the spindle head.
- The system can achieve excellent cooling performance without the need of an additional pump, filter, or hydraulic oil.
- Reducing the heat generated by the high speed operation of the spindle, ensuring spindle precision, and extending the service life of the spindle.
- In case of dry cutting, the system is designed with loops to maintain the cooling efficiency.

High Speed High Precision Spindle Unit

Spindle Unit

- The spindle uses an angular contact ball bearing with high speed and high precision.
- The four jaw collet provides strong tool holding force, large contact area, low wear on the tool shank, and long service time.
- A high horsepower spindle motor is used for standard machines, suitable for high speed and heavy cutting.
- The spindle is driven by a high torque timing belt, there is no slipping, and the noise and heat generated during transmission are significantly reduced.
- Online spindle dynamic balancing is achieved through an IRD dynamic balancing system, eliminating the resonance caused by a high speed rotating spindle and assuring optimized machining precision.

Spindle Oil Cooling System

- The high speed rotating spindle with a spindle oil temperature control system can maintain the spindle at constant temperature and control the thermal displacement of the spindle effectively, to assure the high speed and precision of the spindle.

Floating Unclamping Tool Mechanism (MV-1200A)

- A floating tool unclamping mechanism is applied and the force generated by tool releasing will not be transmitted to the spindle bearing. Thus the life of the spindle bearing is extended.
### Spindle Specification and Performance

#### Spindle Dust-proof Air-sealing System
- The spindle air-sealing system can control the high-speed of the spindle to generate vacuum and suck up dust, which assures the precision of the spindle and thus extends the service life of the spindle.

#### Spindle Pull Force
- The high tensile spindle provides high rigidity for tool clamping and enhances the cutting rigidity.

---

### Stable and Reliable ATC

#### Arm-type Tool Changing Mechanism
- A fast, simple, reliable, and durable tool exchange device, providing stable and reliable exchange of tools.
- A unique tool exchange device design, an advanced cam-drive mechanism capable of random tool selection can be achieved using the PLC software control.

#### Tool Magazine Unit
- The tool changer mechanism has been subject to a million times of operating tests to satisfy the requirements of high reliability.
- The rapid tool changer mechanism saves non-cutting time, and therefore increases production efficiency.
- The cam drive mechanism of the magazine ensures precise rotation and smooth operation of the magazine, even for heavy tools.
- Tool magazines with 24 stations and 32 stations are available for selection.
Highly Efficient Chip Removal Mechanism
- Resolving the chip removal problem of vertical machining

Screw-type chip removal system (standard)

- Fully enclosed sheet metal for the machining area prevents dust and oil mist from spreading into the workshop and reducing the air quality.
- Simple and efficiently design of the chip removal mechanism is applied. Chips are transported by a large amount of cutting coolant from the chip cleaning device to the screw type chip auger located on the front of the machine. The screw-type chip auger will transport the chips to the chip cart located on the left side of the machine. The Operator can clean up the chips easily and simply.

Chain type chip removal system

- Fully covered enclosure with sheet metal against chips
- Z-axis telescopic enclosure (standard)
- X/Y-axis telescopic enclosure (standard)

Advanced Control System

FANUC (Japan) Controller Series

- Highly efficient chip removal mechanism
- Resolving the chip removal problem of vertical machining
- Advanced control system

Mitsubishi Controller Series

- High end controller from Mitsubishi achieves higher productivity and comfort

CNC M800/M80 Series

- CNC dedicated CPU
  - Fine segment processing capacity
    - High capability in program processing enables a shorter cycle time.
  - PLC process capability (PCMix value)
    - High processing capability of the PLC enables large-scale ladder logic to be processed at high speed.
  - NC-to-drive communication capability
    - Optical communication speed between NC and drive has been increased. This improves the system responsiveness, leading to more accurate machining.
High efficiency

Durability

Cost-effective

Fully Meets Customer Requirements
### Accessibility

- **Extra-wide front door**
  - Extra-wide door, easy for loading/unloading the parts or jigs to/from the machine.

- **Extra-large side window**
  - Wide windows on both sides of the machine, easy for installation and cleaning.

### Worktable Accessibility

- **Wide door opening distance**
  - Ergonomic design for easy loading/unloading of workpieces to/from the worktable.

- **Easy access to the worktable**
  - Short distance between the operator and worktable, easy for operation inside the machine.
  - Shortens the distance between the front of the machine and the worktable.

### Maintainability

- **Light inside the machine**
  - Bright in the working area and tip of the tool.
  - 2 high brightness fluorescent lamps are equipped inside the machine.

- **Convenient storage compartment**
  - A compartment is located under the operation cabinet to store items such as calculators, keys and pens. Very convenient.
  - A hook is installed on the front edge of the storage compartment to place tools such as air guns and pliers.

- **Easy-to-use Air Gun**
  - A tube from the air compressing system is installed on the right-front of the machine with quick couplings for a compressed air tube and air gun.
  - Operators can use the air gun to clean the residual chips on jigs or workpieces, simple and easy.

- **Coolant gun for machine cleaning**
  - The Coolant gun for machine cleaning can remove the residual chips attached to the machine, keep the cleanliness of the machine and facilitate the maintenance works.
Convenience

- Document folder and notepads are attached on the side of the operation cabinet. Operators can put the work order or important data on the folder.
- The stationery drawer is located on the back of the document folder. Operators can put the stationery, discs, or IC card inside for easy management.

Convenient service access

- Centralized air compressing system and lubricating system is easy for repair and maintenance.
- Operators can use the tool shelf attached on the side or back of the machine to store the tools temporarily.
- A tool box is placed under the tool shelf to store the material for machine maintenance.

Disc type oil/coolant separator

- The disc-type oil/coolant separator can be attached easily without taking up space. The disc-type oil/coolant separator can separate the oil from coolant tank effectively, to assure the coolant quality, extend the life of the coolant, and guarantee the machining quality.

High Performance Configuration

- A high horsepower motor with a ZF (German) Gearbox can provide high torque output at low speed, suitable for heavy cutting.
- The ZF gearbox is stable, smooth and low noise, even at high speed.
- The ZF gearbox is equipped with an oil cooler to remove the heat generated due to high speed operation of the gearbox, to ensure the transmission performance, and extend the service life of the gearbox.

Tool shelf and tool cabinet

- Operators can use the tool shelf attached on the side or back of the machine to store the tools temporarily.
- A tool box is placed under the tool shelf to store the material for machine maintenance.

ZF (German) Gearbox and Cooler

- Spindle external programmable air blowing system

- The embedded rotating 4th axis has the features of high rotating speed, high precision, high maximum torque, high braking torque and zero backlash, suitable for precision parts machining with high performance.

- The programmable air blowing system outside the spindle device is used during dry cutting to reduce the chips on the workpiece surface, which may otherwise compromise the quality of the machining surface.
- It is possible to input specific commands into the programmable air blowing system outside the spindle to use the NC to control the air blowing.
Coolant cooling principle

Programmable coolant nozzle
- The programmable coolant nozzle can input a specific M code into the commands of the machining programs. The nozzles will adjust the angles automatically based on the length of the tools during machining.
- Simpler and more accurate control of the coolant cools the contact point between the tool tip and workpiece and removes the heat generated during machining effectively. The machining quality is improved.

Deep drilling stop block and oil-feed tool holder
- A deep drilling stop block and oil-feed tool chuck are suitable for the drilling of deep hole parts.
- The oil-feed tool chuck can be equipped with various types of coolant sprays to meet different cooling requirements.

Spindle Splash Ring
- 6 nozzles are installed around the spindle to provide the optimized cooling results for tools and workpieces and improving the machining quality.

Wash Down System
- The highly efficiently strong wash down system moves the chips to the screw-type chip auger, which is transported to the chip cart outside the machine, to maintain the tidiness of the working environment and the safety of the operators.

Safety Door System

CE Specification
- When door is open, the machining programs will not start, ensuring the safety of the operators.
- For the safety of the operators, opening the door during machining will stop the program.

Standard Specification
- The gas tank is capable of water draining manually.

Air tank system
- To avoid several machines using the same compressed air source simultaneously, which will cause a sudden significant pressure drop or insufficient pressure of the air compressing system and result in abnormal machine operation.
- The gas tank is capable of water draining manually.

Filtering and Detecting of the lubricating system
Machine Equipped Measuring Devices

Workpiece Measurement System

- The Renishaw workpiece measuring system is installed.
  - New generation OMP 60 optical probing system.
  - The OMP 60 provides simple measurement, which can reduce the time for setting up the machine by up to 90%, reduce the reject rate, and fixture costs and improve the process control.
  - The OMP 60 uses microelectronics and components, thus providing a compact structure.
  - Optionally, the probe can be equipped with an OMI-2 interface receiver. The system uses state-of-the-art modulated optical transmission with excellent light interference resistance capability.
  - The probe is equipped with a 360° infrared optical transmission system. The transmission distance is up to 6m and the probe can perform measurement from any direction.

Tool Length Measurement

- The automatic tool measuring system will measure the tool length and input the result into the controller automatically for compensation.
- Automatic tool measuring is controlled by macros, which can perform the measurement automatically and are easy to operate.

4th Axis (Rotating Worktable)

- With the 4th axis rotating worktable, it is possible to perform multi-surface machining simultaneously which can reduce the non-production time of loading/unloading workpieces.
- A worm gear and worm transmission are used for precise positioning. High precision can be maintained even during a long time of operation.
- High precision bearings are used for spindle rotating, ensuring the stability of the rotation center.
- The smallest division precision, which is frequently used in spiral cuttings and precision-required aerospace industry.

High Performance Inspection System

Circular Test, Laser Inspection, Dynamic Spindle Balancing

To have the optimized product performance and meet customer requirements, LITZ has a well-established quality control system with advanced testing equipment and technologies to assure the quality of products.

Standard Specimen Test

- In addition to the tests and inspections performed with precision instruments, each machine is subject to dynamic cutting tests in accordance with international standards.
- Upon the completion of cutting, the standard specimen shall be inspected with a 3D coordinate measuring machine (CMM) to ensure the required precision.
- In addition to the tests and inspections performed with precision instruments, each machine is subject to dynamic cutting tests in accordance with international standards.
- Upon the completion of cutting, the standard specimen shall be inspected with a 3D coordinate measuring machine (CMM) to ensure the required precision.
Machining Performance

Level Accuracy Experience
- Highly accurate parts and molds machining solution

Machining Accuracy
(the height of letters)

Machining example: embossed letter machining
Machine used: MV-1200A
Material: NAK80
Dimension: 90x40x30mm
Machining duration: 1 h 52 min
Tools: rough machining: R2 CBD ball end mill
finish machining: R1 CBD ball end mill
Cutting specifications: Rough machining: 8000rpm
Feed rate: 1600mm/min
Fine machining: 8000rpm
Feed rate: 1600mm/min

Cutting Performance

Face Milling
Drilling
Tapping

Oil Mist Removal

Remove the oil mist of the coolant from the machine to keep a clean and healthy working environment, increase working performance and achieve energy saving and environmental protection.

Oil Mist Collector OP

Advantages of the Oil Mist Collector

- Extend machine life- oil mist spreads quickly and widely. Reducing the damage of mechanical parts and components inside the electrical and control cabinet caused by oil contamination.
- Reduce the hazards to health- any form of oil mist, smoke, or pollution may be harmful to the lungs, throat, and skin and can be a risk to health.
- Reduce accidents- Spread oil mist may cause slippery floors and result in danger and accidents.
- Reduce fire risks- The accumulation of oil mist may cause a fire or make the fire more serious.
- Save production costs- Oil mist can be collected and recycled back to the machine for reusing.
- Reduce the requirements for compensation- In case the air is polluted, employees would request an increase in their salary as compensation.
- Increase the employee morale- improving the polluted environment will increase the enthusiasm and passion of the operators.

Machining Accuracy

Cutting Performance

Face Milling
Drilling
Tapping

MV-800

<table>
<thead>
<tr>
<th>Tool Type</th>
<th>Face Mill</th>
<th>Drill</th>
<th>Tap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spindle Speed</td>
<td>Feed Rate</td>
<td>Spindle Speed</td>
<td>Feed Rate</td>
</tr>
<tr>
<td>120 min&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>35 ml/min</td>
<td>1000 min&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>230 min&lt;sup&gt;-1&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

MV-1000

<table>
<thead>
<tr>
<th>Tool Type</th>
<th>Face Mill</th>
<th>Drill</th>
<th>Tap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spindle Speed</td>
<td>Feed Rate</td>
<td>Spindle Speed</td>
<td>Feed Rate</td>
</tr>
<tr>
<td>135 mm/min</td>
<td>25 ml/min</td>
<td>100 mm/min</td>
<td>300 mm/min</td>
</tr>
</tbody>
</table>

MV-1200

<table>
<thead>
<tr>
<th>Tool Type</th>
<th>Face Mill</th>
<th>Drill</th>
<th>Tap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spindle Speed</td>
<td>Feed Rate</td>
<td>Spindle Speed</td>
<td>Feed Rate</td>
</tr>
<tr>
<td>320 min&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>50 ml/min</td>
<td>1140 min&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>207 min&lt;sup&gt;-1&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Drilling

<table>
<thead>
<tr>
<th>Spindle Speed</th>
<th>Feed Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 min&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>207 min&lt;sup&gt;-1&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Tapping

<table>
<thead>
<tr>
<th>Spindle Speed</th>
<th>Feed Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 min&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>300 mm/min</td>
</tr>
</tbody>
</table>

Safe metal skid packing and smallest footprint

- Simple and compact design of the machine saves the space required, maximizing the utilization of limited space.
- Small footprint of the machine.
- The machine can be fitted into a 20 ft high cubic container. Each container can accommodate 2 machines, saving the cost for packing and shipping.
- The machine is shipped with an iron pallet, easy and safe.
- The forklift can be applied from 4 directions to the iron pallet, easy for handling. All the accessories are mounted and fixed, ensuring the handling quality.
## Machine Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>MV-800</th>
<th>MV-1000</th>
<th>MV-1200A</th>
<th>MV-1200B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travels for 3-axes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-axis Travel</td>
<td>800</td>
<td>1000</td>
<td>1200</td>
<td>1200</td>
</tr>
<tr>
<td>Y-axis Travel</td>
<td>450</td>
<td>500</td>
<td>560</td>
<td>560</td>
</tr>
<tr>
<td>Z-axis Travel</td>
<td>540</td>
<td>540</td>
<td>600</td>
<td>635</td>
</tr>
<tr>
<td>Spindle nose to worktable surface mm</td>
<td>80-620</td>
<td>100-640</td>
<td>100—700</td>
<td>60—695</td>
</tr>
</tbody>
</table>

## Equipment List

### Spindle
- Spindle speed: 6000 RPM
- Spindle speed: 8000 RPM
- Spindle speed: 10,000 RPM
- Spindle speed: 12,000 RPM

### Automatic Tool Changing System
- Number of Tools: 24
- Max. tool length: 270
- Max. tool weight: 8
- Tool changing method: ARM
- Tool specification: BT-40

### Motor
- Spindle motof (continuous/30min. rated) (kw/HP): 5.5/7.5/7.5
- Motors on X/Y/Z-axis: 1.5/1.5/2.0
- Worktable: 850x450
- T-slot (No. x Width x Distance from the center): mm

### Rapid Speed
- X-axis rapid speed: 36 M/min
- Y-axis rapid speed: 36 M/min
- Z-axis rapid speed: 24 M/min
- Cutting feed rate: 1-20000 mm/min

### Miscellaneous
- Machine Weight: 4500 kg
- Power Consumption: 15 KVA
- Coolant Tank Capacity: 200 L
- Compressed air source: 6 kg/cm²

---

### All the photos contained herein are for reference only. In case of any discrepancy with the actual machine parts, the actual machine shall prevail.

---

### Vertical Machining Centers

---

### LVIT HTC Inc

---

### LITZ reserves the rights to modify the product specifications, appearance, equipment or discontinue the products.
Total Production Solution

Highly efficient manufacturing fashion, equipped with high performance control system. The high speed contouring capability can achieve best possible surface quality under most demanding machining cycle time. Highly dynamic five axes machining provides solution for complex tasks.

Haldenlant & Siemens Control System
ITNC530 / 840D
Ideal for high-end application CNC system. Modular, open, flexible operating interfaces are the highlight of the controller. Programming and visual structure can be integrated with network systems.

Litz Hitech & Open Mind,
the CAM company
The strategic alliances

Litz Hitech LU Series
5 Axes Bories employs U shape base with dual-support A/C axes rotary swivel table's high rigidity mechanism. The machine is equipped with 12000RPM direct-drive high speed spindle. High durability roller type linear gusleways, 3 axes high precision linear scales along with other high quality components brings out the excellence of the 5 axes simultaneous control, Mill, drill, tap, spiral, irregular and other complex machining can be easily achieved.

www.litzhitech.com