ALL SERIES

LinmaxB
LINEAR MOTOR DRIVE

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Worldwide Agents

The only professional 5-axis machine center manufacture in Asia

www.kenmnc.com

Stability
Precision
Strength
High Speed 5-axis Machine Center

Highly Dynamic

- Gantry type
- Column one-piece design
- X/Y - Axis linear motor drive
- Feed rate: 60 m/min
- Box in Box symmetrical design
- Direct-drive motor with two-axis milling head

Box in Box, Symmetrical Design

Driven by the center of gravity
Minimized crossbeam deformation after long period of usage for reliability and rigidity

Applications For:
- Aerospace Aluminum Frame
- Automotive Stamping Die
- Mechanical Component
Optimize Structural Design

High-Performing Structure

- XY axis equipped with linear motor drive
- B/C axis equipped with torque motor drive
- Z axis equipped with dual ball screw
- High rigidity one-piece column design
- Worktable fixed to the foundation
- Advanced FEM analysis and design to optimize higher rigidity, response and provide stability for high-speed cutting

Box in Box Symmetrical Design

More stability, more precision, and more strength

Our System

- Box-in-Box design has spindle located at the center of Crossbeam and Saddle.
- Symmetrical construction allows the machine less susceptible to adverse ambient conditions.
- Heat deformation will be minimized even after long period of usage.
- Box-in-Box design ensures excellent precision while performing numerous tasks.

Advantage of BOX-IN-BOX Structural Design:

- Y-axis with 4 linear guide ways with two tracks on XY plane and YZ plane to support Ram & Saddle for reaching optimized dynamic characteristics.
- Z-axis equipped with 4 linear guide ways on two side of the slider with each side undertaking the same cutting force. Its balanced design will enhance the machine lifetime and accuracy.
- Dual ball screw and dual counterbalance system equipped in Z axis allow stable structure for high speed cutting tasks.

Modular Structure to Satisfy Yours Requests

The column is one-piece design, high rigidity, high vibration resistance to ensure that the machine can reach excellent cutting and dynamic performance.

Other Manufacturers
Linear Motor Drive

The inevitable trend in the future

- Backlash free with high positioning accuracy
- Direct transmission
  Reduced number of ball screw/nut, bearings and couplings
- Free of wear due to friction free drive concept
- Simple structure / long-term accuracy / easy maintenance

Excellent Design For 5-Axis High Speed Machine

X-Axis

The Column for the X-axis uses the linear motor without the belt and coupling to increase high accuracy while maintaining high-speed.

X-axis is supported by the left and right box column. Each side has two roller linear guiderways and each guiderway has three Block to increase rigidity and keep excellent accuracy for a long time.

Brakes will immediately clamp axes in case of an emergency stop or power failure.

Linmax B-22/25 series uses one linear motor on each side and each side of the guide way has 3 blocks to support (Total 12 blocks)

Linmax B-30/35/40 uses Two linear motors on each side and each side of the guide way has 4 blocks to support (Total 16 blocks)

Y-Axis

Y-axis by symmetrical box-in box design crossbeam will reduce the thermal deformation and minimize the effect from temperature.

Y-axis uses linear motor without coupling to directly transmit force to the saddle. It can produce a high-speed response and high-positioning accuracy.

Y-axis crossbeam equipped with four roller type guide way. Each guide way encloses two slider blocks (Total eight blocks) to reach high-rigidity.

Z-Axis

Z-axis has symmetrical design to remain in the center of gravity. It ensures force to be evenly distributed while cutting and moving.

Z-axis equipped with Dual ball screw & dual counterbalance system, features high stability during high speed cutting.

Z-axis is equipped with four roller type guide way to provide the best rigidity in cutting.

Reduced thermal deformation and minimized the effects of temperature.

Ball Screw VS Linear motor

- Transmission chain length, the error is larger
- The path is less accurate
- Backlash exists

Source by Siemens laboratory testing
Two-axis Milling Heads Modular Design

- Italian modular design with 2-axis milling head; suitable for plastic injection mold
- Innovative symmetric “open frame” design made in GGG40 modular cast iron for head
- Dedicated “Direct-Drive” torque motor with integrated water-cooling system for B/C axis
- Double row crossed roller bearing support to achieve excellent rigidity and accuracy for B/C axis
- High-resolution, high-precision encoder for B/C axis

TCH-19

- A63
  - 235
  - 356
  - 400
  - 567
  - 373
  - 200
  - 173

TCH-20

- A63
  - 233
  - 420
  - 648
  - 310
  - 127
  - 183

TCH-25

- A63
  - 303
  - 471
  - 698
  - 375
  - 185
  - 190

Vertical spindle for 3-axis

**MILLING HEAD (B&C AXIS TORQUE MOTOR DRIVE)**

<table>
<thead>
<tr>
<th></th>
<th>TCH-19 (A63)</th>
<th>TCH-19 (A100)</th>
<th>TCH-20 (A63)</th>
<th>TCH-20 (A100)</th>
<th>TCH-25</th>
<th>TCH-100A</th>
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<tbody>
<tr>
<td>Rotation speed</td>
<td>rpm (360°/s)</td>
<td>50,50</td>
<td>50,50</td>
<td>50,50</td>
<td>50,50</td>
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<tr>
<td>Max. acceleration</td>
<td>rad/s²</td>
<td>30,50</td>
<td>30,50</td>
<td>30,50</td>
<td>30,50</td>
<td>30,50</td>
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<tr>
<td>Max. torque</td>
<td>Nm</td>
<td>1,180/900</td>
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<td>1,400/1000</td>
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<tr>
<td>Clamping torque</td>
<td>Nm</td>
<td>4,000/3,000</td>
<td>4,000/3,000</td>
<td>4,000/3,000</td>
<td>4,000/3,000</td>
<td>4,000/3,000</td>
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<tr>
<td>Positioning accuracy</td>
<td>μm</td>
<td>±1, ±1</td>
<td>±1, ±1</td>
<td>±1, ±1</td>
<td>±1, ±1</td>
<td>±1, ±1</td>
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<tr>
<td>Rotation angle</td>
<td>deg</td>
<td>120°±1/240°</td>
<td>120°±1/240°</td>
<td>120°±1/240°</td>
<td>120°±1/240°</td>
<td>115°±1/30°</td>
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</tbody>
</table>

**SPINDLE**

- Spindle power S1-100% (50-80%)
  - kW  | 42 (50) | 32 (50) | 42 (50) | 32 (50) | 42 (50) | 47 (50) | 47 (50)

- Spindle torque S1-100% (50-80%)
  - Nm  | 57 (124) | 46 (124) | 57 (124) | 46 (124) | 65 (124) | 150 (252) | 150 (252)

- Max. speed
  - rpm  | 24,800 | 15,000 | 24,800 | 15,000 | 12,000 | 15,000 |

- Tool shank
  - type  | HSK-A40 | HSK-A100 | HSK-A40 | HSK-A100 | HSK-A100 | HSK-A100 |
Application

Aerospace - Automotive - Mechanical Component

Working pieces

Machine Specifications

Model: Linmax B

<table>
<thead>
<tr>
<th>Specifications</th>
<th>2232</th>
<th>2240</th>
<th>2540</th>
<th>2550</th>
<th>3050</th>
<th>3650</th>
<th>3560</th>
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<td>Unit</td>
<td>Unit</td>
<td>Unit</td>
<td>Unit</td>
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<tr>
<td>Distance between column centers</td>
<td>mm</td>
<td>3,200</td>
<td>3,900</td>
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<td>5,000</td>
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</tr>
<tr>
<td>Distance between spindle nose to table surface</td>
<td>mm</td>
<td>200–1,450</td>
<td>200–1,450</td>
<td>200–1,450</td>
<td>200–1,450</td>
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<td>Table width</td>
<td>mm</td>
<td>2,000</td>
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<tr>
<td>Table length</td>
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<td>T-slot size (Width)</td>
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<tr>
<td>X/Y/Z-axis drive mode</td>
<td>Linear Motor / Linear Motor / Twin Ball-Screw</td>
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<tr>
<td>X/Y/Z-axis rapid feed rate m/min</td>
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∞ = or more

Milling head type

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<thead>
<tr>
<th>Tool changer</th>
<th>Unit</th>
<th>TCH-19 (A63)</th>
<th>TCH-20 (A63)</th>
<th>TCH-19 (A100)</th>
<th>TCH-20 (A100)</th>
<th>TCH-25 (A160)</th>
<th>TCH-100A</th>
</tr>
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<tbody>
<tr>
<td>Tool type</td>
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<td>HSK A63</td>
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<tr>
<td>Tool magazine capacity</td>
<td>pcs</td>
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<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
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<td>Max. tool weight</td>
<td>Kgs</td>
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<td>15</td>
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<tr>
<td>Max. tool length</td>
<td>mm</td>
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<td>350</td>
<td>350</td>
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<tr>
<td>Max. tool dimensions</td>
<td>mm</td>
<td>Ø75</td>
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</table>
Standard

- The HEIDENHAIN TNC-640 controller, X, Y, Z, B, C, continuous five-axis
- HEIDENHAIN handwheel-HR520
- European modular 2-axis milling head TCH-19 (A63)
- The European system of vertical spindle HSK A63 with 24,000 rpm
- HSK A63 30 tool magazine
- X/Y direct drive linear motor
- 12 roller with linear guideways (each 4 sets for X/Y/Z axis)
- 4 HEIDENHAIN linear scale (2 sets for X axis 2 sets for Y/Z axis)
- Electrical cabinet temperature control device
- X/Y linear motor with spindle cooling system
- Spindle oil-mist device
- Spiral-type chip conveyor and rear-type chip conveyor containing iron filing cans
- Front and rear door with safety interlock system (each type)
- Waterproof work light
- Machine all parts and a variety of instruments unit of measurement
- Used in all meta international system of units (IS) standards
- Guards the cabinet with variety of electrical protection, filtration, ventilation and air-conditioning system
- Machine standard color

Option

- TCH-19 (A100) Modular 2-axis Milling Head +15,000 rpm Spindle
- TCH-20 (A63) Modular 2-axis Milling Head +24,000 rpm Spindle
- TCH-20 (A100) Modular 2-axis Milling Head +15,000 rpm Spindle
- TCH-25 Modular 2-axis Milling Head +13,000 rpm Spindle
- Siemens 840D CNC control
- ATC system magazine capacity; (option) (HSK-A100)-60 tools (HSK-A63)-50 tools
- Laser tool measuring System
- Touch probe to measure workpiece
- Coolant through spindle with (CTS) 20/30/40 bar
- Transformer
- Voltage stabilizer
- GPS (Global Program Setting) hand wheel function
- Blum form control comparison software
- Automatic kinematic 5-axis compensation function
- HEIDENHAIN wireless handwheel-HR 550
- Enclosed rooftop
- Oil mist recovery system
- Chain-type chip conveyor on both side of worktable area (Suitable for aircraft industry application)
## Working Area and Layout

<table>
<thead>
<tr>
<th>Regional (mm)</th>
<th>Milling heads</th>
<th>Model</th>
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<tbody>
<tr>
<td></td>
<td>Linmax B 22</td>
<td>Linmax B 25</td>
</tr>
<tr>
<td><strong>A</strong></td>
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<tr>
<td>Distance between spindle nose to spindle nose (Y-Direction)</td>
<td>TCH-19 (A63)</td>
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<tr>
<td></td>
<td>TCH-19 (A100)</td>
<td>1484</td>
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<td>TCH-20 (A63)</td>
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<td></td>
<td>TCH-20 (A100)</td>
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<td></td>
<td>TCH-25</td>
<td>1584</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>Z-axis opening height</td>
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</tr>
<tr>
<td></td>
<td>TCH-19</td>
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<td></td>
<td>TCH-20</td>
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<td></td>
<td>TCH-25</td>
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<tr>
<td><strong>C</strong></td>
<td>(Swing axis 90°)</td>
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<tr>
<td></td>
<td>Z-Direction</td>
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<td>TCH-20 (A100)</td>
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<td>TCH-25</td>
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<tr>
<td><strong>D</strong></td>
<td>Distance between spindle nose to table surface</td>
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<td></td>
<td>TCH-19 (A63)</td>
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<td>TCH-19 (A100)</td>
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<td>TCH-20 (A100)</td>
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<td></td>
<td>TCH-25</td>
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<tr>
<td><strong>E</strong></td>
<td>Distance between spindle nose to spindle nose (X-Direction)</td>
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<td>TCH-19 (A63)</td>
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<td></td>
<td>TCH-25</td>
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<table>
<thead>
<tr>
<th>X axis travel (according to customer’s choice)</th>
<th>X</th>
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<tbody>
<tr>
<td>X axis travel</td>
<td>X axis travel</td>
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<td>X axis (according to customer’s choice)</td>
<td>X axis travel</td>
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### Table:

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<th>Model</th>
<th>Axis</th>
<th>Linmax B 22</th>
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<th>Linmax B 30</th>
<th>Linmax B 35</th>
<th>Linmax B 40</th>
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<tbody>
<tr>
<td><strong>L</strong></td>
<td>L</td>
<td>Linmax B 2230: 6570</td>
<td>Linmax B 2550: 10380</td>
<td>Linmax B 3500: 10870</td>
<td>Linmax B 3500: 10870</td>
<td>Linmax B 4050: 10870</td>
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<tr>
<td><strong>W</strong></td>
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<td>6580</td>
<td>7200</td>
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Unit: mm