iSpeed3 Series

Electric System

- **One Piece Type**
  - Shorter spindle length is suitable for compact sized automatic CNC lathes.
  - The iSpeed3 series have sensorless motors and are equipped with super precision hybrid ceramic bearings for longer spindle life.

Outside Diameter: ø0.75", ø0.79", ø0.87" and ø0.98" (ø19.05, ø20, ø22 and ø25 mm)

1,000~80,000 min⁻¹(rpm)
Output 140W / 150W
**iSpeed3 Series System Chart**

- Automatic Control System Chart
  - Sequential Operation of up to 2 Motor / Spindles
    - 2 motors cannot be operated simultaneously.

- Sensorless Motor Spindle BM-319
- Sensorless Motor Spindle BM-320
- Sensorless Motor Spindle BM-320F
- Sensorless Motor Spindle BM-322
- Sensorless Motor Spindle BM-322FL / BM-322FR
- Sensorless Motor Spindle BM-325

- Motor Cord
- Motor Cord (Cord with Quick Disconnect)
- EMCD-BM3-3M / 5M / 7M

- Control Unit NE273
- NE273 Control Unit
- ON/OFF
- R/L
- CNC / PLC

- Compressor
- Air Line Kit AL-0201
- 120V, 200V, 230V, 100V

- Air
- Motor Spindle

- Motor Spindle
- Motor Cord
- Motor Cord

- Sensorless Motor Spindle BM-319
- Sensorless Motor Spindle BM-320
- Sensorless Motor Spindle BM-320F
- Sensorless Motor Spindle BM-322
- Sensorless Motor Spindle BM-322FL / BM-322FR
- Sensorless Motor Spindle BM-325

- Collet Nut CHN-A
- Collet CHA

- Torque Characteristics Graph

- BM-319, BM-320, BM-320F
- BM-322, BM-322FL/BM-322FR, BM-325

- Torque (cN.m)
- Output (W)

- Speed (x 10^3 min⁻¹ rpm)
<Mounting Example>

**Flange Type**  Flange type for easy mounting.

<table>
<thead>
<tr>
<th>ø0.75&quot; (ø19.05mm)</th>
<th>ø0.87&quot; (ø22mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BM-319FC</td>
<td>BM-322FR</td>
</tr>
<tr>
<td>+ ø25.4 Bush</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CITIZEN Cincop BL20 mounting example
CITIZEN Cincop C16 mounting example

**Straight Type**  Straight type for flexible mounting.

<table>
<thead>
<tr>
<th>ø0.87&quot; (ø22mm)</th>
<th>ø0.98&quot; (ø25mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BM-322</td>
<td>BM-325</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

STAR SB-16 mounting example
TSUGAMI C300-Iii mounting example

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**APPLICATION EXAMPLES**

- EmaxEVO
- ESPERT
- ROTUS
- ECOMO
- IMPULSE
- PRESTO II
- SHEENUS
- SONIC CUTTER

**PRODUCTS**

- E2530
- E2550
- E3000
- E3000C
- E3000G
- E3200
- E3400
- E3600
- E3800

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**AMERICAN ROTARY TOOLS CO. (ARTCO TOOLS)**

250 WEST DUARTE ROAD, #E
MONROVIA, CA USA 91016-7464

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Toll Free USA Tel: (800) 624-2212    Fax: (800) 624-2210
Email: info@artcotools.com
“iSpeed3 SERIES” CONTROL UNIT

AMERICAN ROTARY TOOLS CO.  www.artcotools.com

1. 000–80,000 min⁻¹(rpm)  Maximum Output 150W
External Input / Output Control Signal (Refer to 7-p28–p33 page of this catalog)

CAT. No. 8478  iSpeed3 CONTROL UNIT  NE273  80,000 min⁻¹(rpm)

Power Source Required
Input power required is 120VAC for U.S. usage.

Input / Output Controls Signal Examples :
- Input Signal Examples :
  Start / Stop, Forward / Reverse, Pulse Speed Increase / Decrease,
  Speed Control, Error Code Release.
- Output Signal Examples :
  Error / Warning, At-Speed, RPM Monitoring, Motor Torque Output.

Motor Protection System
Motor Spindle is stopped safely and quickly. A Warning / Error LED is lit, Warning / Error Signal is output to an external device when a problem occurs.

Special Safety Version Available
The safety relay utilizes normally open contacts. The emergency stop signal lines must be supplied with power to hold the safety relay contacts closed and allow the control unit to supply power to the motor. Any system errors, trouble with the machining center or the connections between the iSpeed3 Series control unit and the machining center’s controller will cause the relay contacts to open and the iSpeed3 Series motor to stop.

Centering Mode Switch
This switch activates the centering mode, which maintains a constant 500 min⁻¹(rpm) spindle speed for centering the tool.

Specifications
Model  : NE273
Power Source  : AC 120V 60Hz, AC 200V 50Hz-60Hz
AC 230V 50Hz, AC 100V 50Hz-60Hz (4 types)
Motor Speed  : 1,000–80,000 min⁻¹(rpm)
Max. Output Power : 150W (for ø0.87", ø0.98")
Rated Power Consumption : 1.1A
Air Flow Volume : 1.0CFM (23-50PSI)
Weight : 7 lb. 11.46 oz.
Dimensions : W5.59" x D9.21" x H2.83"

iSpeed3 Control Unit

<table>
<thead>
<tr>
<th>CAT. No.</th>
<th>Plug Type</th>
<th>Model</th>
<th>Standard Equipment / Accessories</th>
<th>Price</th>
</tr>
</thead>
</table>
| 8478     | 120V      | NE273 | • Power Cord : 6 ft
• Air Hose with filter
• Motor Connector Cap
• Connector Cap A / B (Provided)
• Bracket
• Plate nut
• M3 Screw | 2,205.00 |
| 8490     | 230V      |       |                                  |       |

*Please refer to Technical Data 7-p28–p33 in detail about External Input-Output Connector.
*Please check the power source plug type and order accordingly.

Power Source Plug

<table>
<thead>
<tr>
<th>Plug Type</th>
<th>Main Usable Area</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>For 100V</td>
<td>(A type)</td>
<td></td>
</tr>
<tr>
<td>For Japan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For 120V</td>
<td>(B type)</td>
<td></td>
</tr>
<tr>
<td>For U.S.A. and Canada</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plug Type</th>
<th>Main Usable Area</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>For 200V*</td>
<td>(C type)</td>
<td>Without Plug</td>
</tr>
<tr>
<td>For Europe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For 230V*</td>
<td>(D type)</td>
<td></td>
</tr>
</tbody>
</table>
"iSpeed3 SERIES" SENSORLESS MOTOR SPINDLE

iSpeed3 Series can be used in conjunction with water or oil based coolants.

Features

- **Maximum 60,000 / 80,000 min⁻¹(rpm)**
  A maximum motor speed 80,000 min⁻¹(rpm) (BM-319, BM-320, BM-320F) is realized by using a high performance brushless motor and ceramic bearings. A maximum motor speed 60,000 min⁻¹(rpm) (BM-322, BM-322FL/BM-322FR, BM-325) is realized by using a high performance brushless motor and ceramic bearings.

- **Maximum Motor Power Output 140W / 150W**

- **Air-Cooling System**
  Air-cooled motor uses a small volume of air (1.0 CFM) to minimize heat buildup and allow continuous operation. Air pressure required is 23-50 PSI.

- **Spindle Accuracy**
  Spindle Accuracy is within 1 μm (TIR).

- **High Rigidity, Short Body**
  iSpeed3 series uses a short body that is hardened and precision ground for excellent durability.

- **Motor Connector Attaches Directly to the Back of the Motor / Spindle.**
  Simple screw-lock connector makes changing motors extremely easy. Electric and Air feed incorporated into a single connector.

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**SENSORLESS MOTOR SPINDLE**

<table>
<thead>
<tr>
<th>CAT. No</th>
<th>Spindle</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>7626</td>
<td>BM-319</td>
<td>2,520.00</td>
</tr>
</tbody>
</table>

**Motor Cord**

- Length 10 ft, 16 ft, 22 ft

**Note:** Motor Cord is sold separately.

---

AMERICAN ROTARY TOOLS CO. Toll Free US & CA +1 (800) 645-3824

*Order by catalog number.*
“iSpeed3 SERIES” SENSORLESS MOTOR SPINDLE

**SENSORLESS MOTOR SPINDLE** BM-320

- **Outside Diameter**: Ø0.79” (Ø20mm)

<table>
<thead>
<tr>
<th>CAT. No.</th>
<th>Model</th>
<th>Standard Equipment · Accessories</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>7628</td>
<td>BM-320</td>
<td></td>
<td>2,520.00</td>
</tr>
</tbody>
</table>

**Note**: Motor Cord is sold separately.

**SENSORLESS MOTOR SPINDLE** BM-320F

- **Outside Diameter**: Ø0.79” (Ø20mm)

<table>
<thead>
<tr>
<th>CAT. No.</th>
<th>Model</th>
<th>Standard Equipment · Accessories</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>7633</td>
<td>BM-320F</td>
<td></td>
<td>2,835.00</td>
</tr>
</tbody>
</table>

**Note**: Motor Cord is sold separately.
“iSpeed3 SERIES” SENSORLESS MOTOR SPINDLE & PARTS

SENSORLESS MOTOR SPINDLE BM-322

- Motor Speed: 1,000–60,000 min⁻¹ (rpm)
- Spindle Accuracy: Within 1 μm
- Max. Output Power: 150W
- Standard Size Collet (CHA-3.175): ø1/8”
- Weight: 8.82 oz.

Optional:
- Collet (CHA-[]) ø0.5 mm–ø4.0 mm

Note: Motor Cord is sold separately.

SENSORLESS MOTOR SPINDLE BM-322FL / BM-322FR

- Motor Speed: 1,000–60,000 min⁻¹ (rpm)
- Spindle Accuracy: Within 1 μm
- Max. Output Power: 150W
- Standard Size Collet (CHA-3.175): ø1/8”
- Weight: 12.70 oz.

Optional:
- Collet (CHA-[]) ø0.5 mm–ø4.0 mm

Note: Motor Cord is sold separately.

SPACER for BM-322FL / BM-322FR

- By using this spacer between the edge of flange and the edge of machine, this is possible to carry the length of the cutting tool edge 10mm forward.

SPLIT BUSHING

- Bushing to allow ø22mm (0.87”) BM-322, BM-322FL and BM-322FR to be mounted in larger dia. ø25mm (0.98”) or ø25.4mm (1.0”) holders.
“iSpeed3 SERIES” SENSORLESS MOTOR SPINDLE & PARTS

**SENSORLESS MOTOR SPINDLE**  
CAT. No. 7637  
**BM-325**  
**Outside Diameter** $0.98" (ø25mm)

- Motor Speed: 1,000–60,000 min⁻¹ (rpm)  
- Spindle Accuracy: Within 1 μm  
- Max. Output Power: 150W  
- Standard Size Collet (CHA-3.175): ø1/8"  
- Weight: 11.29 oz.  

**Optional: Collet (CHA-3.175) for ø0.5 mm–ø4.0 mm (See Page 6-p2 for details)**

**Motor Cord**

<table>
<thead>
<tr>
<th>Product</th>
<th>CAT. No.</th>
<th>Description · Model</th>
<th>Length</th>
<th>Std. Accessories</th>
<th>Fit to Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>9261</td>
<td>Motor Cord 3M EMCD-BM3-3M</td>
<td>10 ft (3.0m)</td>
<td>Air Hose, Connector, Protection Cap</td>
<td>BM-319 · BM-320 · BM-320F · BM-322 · BM-322FL · BM-322FR · BM-325</td>
<td>389.00</td>
<td></td>
</tr>
<tr>
<td>9262</td>
<td>Motor Cord 5M EMCD-BM3-5M</td>
<td>16 ft (5.0m)</td>
<td>Air Hose, Connector, Protection Cap</td>
<td>BM-319 · BM-320 · BM-320F · BM-322 · BM-322FL · BM-322FR · BM-325</td>
<td>515.00</td>
<td></td>
</tr>
<tr>
<td>9263</td>
<td>Motor Cord 7M EMCD-BM3-7M</td>
<td>22 ft (7.0m)</td>
<td>Air Hose, Connector, Protection Cap</td>
<td>BM-319 · BM-320 · BM-320F · BM-322 · BM-322FL · BM-322FR · BM-325</td>
<td>651.00</td>
<td></td>
</tr>
</tbody>
</table>

**AIR LINE KIT**  
**AL-0201**

- The AL-0201 is a Clean air supply unit for iSpeed3 Series control unit. Dust in the compressed air is eliminated by the filter in the first stage and the regulator provides accurate and stable air to the control unit.

<table>
<thead>
<tr>
<th>CAT. No.</th>
<th>Description · Model</th>
<th>Standard Equipment · Accessories</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL0201</td>
<td>AL-0201</td>
<td>Air Filter, Air Regulator, Air Pressure Gauge, Air ON-OFF Valve, Hose for Piping (K-275) : 6 ft</td>
<td>306.00</td>
</tr>
</tbody>
</table>

**NOTE:** Motor Cord is sold separately.

**Note:** Motor Cord is sold separately.

*Order by catalog number.*
**CHA Group**

- **Fit to:** K-263 : CHN-A

**CHC Group**

- **Fit to:** IC-300 · KC-300 · EIC-300 · EKC-300 · IC-E · KC-E

**CHF Group**

- **Fit to:** NR-3080

**CHG Group**

- **Fit to:** HG-200 · NR-301 · EHG-400

**CHH Group**

- **Fit to:** IH-300 · IR-310 · EHL-401 · EHR-401 · EHR-500 · VH-E