NR33-6000ATC-ESD
[Antistatic] Automatic Tool Change Spindle

ESD (Electro-Static Discharge) spindle is an antistatic spindle. Prevents damage to delicate electronic components on the PCB while machining.

What is an ESD Spindle?

Performance Characteristics of the NR33-6000ATC-ESD

- Prevents to PCB electronic components due to static electricity conducted during the machining process.
- The 10 x 15 L extended spindle nose length helps to avoid interference with components mounted on the PCB.
- Tool clamping force is twice as strong as the NR50-5100 Series.
- Max. rotation speed is 60,000 min⁻¹.

- Automatic Tool Change feature allows for tool changing by supplying air to the spindles clamp/unclamp port.

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Allowable rotation speed</th>
<th>Air for collet opening</th>
<th>Spindle runout</th>
<th>Collet</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø33/Ø50 mm</td>
<td>60,000 min⁻¹</td>
<td>0.55 - 0.6 MPa</td>
<td>Within 1 µm</td>
<td>CHB Group (ø3.175)</td>
<td>1.170 g</td>
</tr>
</tbody>
</table>

Standard accessories:
- Collet Ø3.175 mm (CHB-3.175) / Spanner (6.1 x 8), (9 x 11): 1 pc each / Bar wrench (K-236): 1 pc.
- Air hose with filter (K-251): ø6 mm x 2 m

Option:
- Collet (CHB group): ø2.0, ø3.0, ø3.175, ø4.0, ø4.0 mm

Code No. 7788
Model NR33-6000ATC-ESD

Spindle Dimensions

Example of recommended combination:
- Spindle: NR33-6000ATC-ESD
- Electricmotor: EM-2060J
- Motor cord: EMCD-3000J
- Controller: E3008 CONTROLLER
De Facto

E3000 Series has become the largest product lines of electric motor spindle with the decades of effort to respond to the customer’s requests from all over the world.

- Ø30mm Spindle
  - Max. power 350w
  - Max. rpm 80,000min⁻¹

- The largest product lines
  - 25 types of spindles are available.

- Spindle runout within 1μm
  - Optimum for high-precision machining
  - Longer tool life

- Ceramic Bearing
  - Longer bearing life
  - Higher rigidity for heavy cutting

- Brushless motor
  - Maintenance free
  - Longer product life thanks to no dust from carbon brushes
### Spindle (Modular type)

- **NR-3060S**<br> 60,000min⁻¹ short type → p.9
- **NR-453E**<br> 50,000min⁻¹ → p.9
- **NR-403E**<br> 40,000min⁻¹ → p.9
- **RAX-271E / RAX-71E**<br> Angle spindle Standard angle head → p.11
- **RA-151E**<br> Angle spindle With short head → p.11
- **RAS-151E**<br> Angle spindle With long head → p.11
- **RA-273E**<br> Angle spindle With small head → p.11
- **NR50-5100 ATC**<br> Automatic tool change spindle Open/close by air cylinder → p.15
- **NR50-5100 ATC-RS**<br> Automatic tool change spindle Open/close by air cylinder → p.15
- **NR40-5100 ATC**<br> Automatic tool change spindle Open/close by air cylinder → p.17
- **NRR-3060**<br> Manual tool change spindle Open/close by lever operation → p.17
- **NR3060-AQC**<br> Air quick change spindle Clamp/unclamp by air operation → p.19
- **NRR3060-OC**<br> Lever quick change spindle Clamp/unclamp by lever operation → p.21
- **ARG-011E**<br> Reduction gear (1/4) → p.23
- **ARG-021E**<br> Reduction gear (1/16) → p.23
- **RG-3004M**<br> Oil mist type reduction gear (1/4) → p.23
- **NR-3080S**<br> Straight spindle 80,000min⁻¹ → p.25
- **NRAF-5080**<br> Air bearing spindle 80,000min⁻¹ → p.25

### Motor Spindle (One-piece type)

- **EMS-3060K**<br> Straight motor spindle e30-CHR collet-30cm joint cord → p.33
- **EMS-3060A**<br> Straight motor spindle e30-CHR collet-30cm joint cord → p.33
- **EMR-3008K**<br> Straight motor spindle Motor spindle with reduction gear → p.33
- **EMA-3020K**<br> Angle motor spindle Standard angle head → p.35
- **EMA-3020S**<br> Angle motor spindle Built-in angle head → p.35
- **EM30-S6000**<br> Straight motor spindle e30-CHR collet → p.37
- **EM25-S6000**<br> Straight motor spindle e25-CHR collet → p.37
- **EM20-S6000**<br> Straight motor spindle e20-CHR collet → p.37
- **EMSF-3060K**<br> Straight motor spindle With flange → p.39

### Motor cord

1. **EM3060**<br> 60,000min⁻¹ motor → p.27
2. **EM-3060J**<br> 60,000min⁻¹ motor with joint type motor cord → p.27
3. **EM-3030T**<br> 30,000min⁻¹ torque motor → p.29
4. **EM-3030T-J**<br> 30,000min⁻¹ torque motor with joint type motor cord → p.29
5. **EM-3080J**<br> → p.29

### Accessory

- **GR-30**<br> Grip Ring → p.43
- **AL-1204**<br> Air line kit → p.43
- **AL-1205**<br> Air line kit → p.43
- **AL-M201BL**<br> Air line kit → p.43
- **AL-A0611**<br> Air line kit → p.43
- **CHA / CHB / CHK / CHR / CHR RS / CHS / CHSS / CH8**<br> Collet → p.44
- **QC3-K / QC3-K-R / QC3-A / QC3-A-R**<br> Collet holder → p.45
# System Chart

## E3000 Modular type ø30/ø25/ø20mm

<table>
<thead>
<tr>
<th>Collet / Motor Spindle</th>
<th>Spindle</th>
<th>Motor</th>
<th>Motor Spindle</th>
<th>Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet nut K-205</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collet CHK Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special arbor for metal saw KCH-03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grinding arbor AGM-03</td>
<td></td>
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<td></td>
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<tr>
<td>Grinding arbor AGM-03</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Collet / Arbor Kit
- Refer to Accessories

### Collet / Arbor Kit
- ø0.5
- ø0.5

### Mounting example of angle spindle
- 3M
- 4M
- 8M

### Air compressor
- To supply clean and dry compressed air

## One-piece type ø30/ø25/ø20mm

<table>
<thead>
<tr>
<th>Collet / Motor Spindle</th>
<th>Motor Spindle</th>
<th>Motor</th>
<th>Motor Spindle</th>
<th>Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet nut K-205</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collet CHK Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special arbor for metal saw KCH-03</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Grinding arbor AGM-03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collet nut K-205</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collet CHK Group</td>
<td></td>
<td></td>
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<tr>
<td>Special arbor for metal saw KCH-03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grinding arbor AGM-03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Collet / Arbor Kit
- ø0.5
- ø0.5

### Mounting example of angle spindle
- 3M
- 4M
- 8M

### Air compressor
- To supply clean and dry compressed air

---

**Note:** For detailed specifications and compatibility, refer to the accessories guide.
Spindle (Modular type)

Spindle  Motor  Motor  Caster  AG

NR-3060S  p.9
NR-453E  p.9
NR-403E  p.9
RAX-271E / RAX-71E  p.11
RA-151E  p.11
RAS-151E  p.13
RA-271E  p.13

NR-3060  p.17
NR3060-AQC  p.18
NRR3060-QC  p.21
ARG-011E  p.23
ARG-021E  p.23
RG-3004M  p.23
NR-3080S  p.25
NRAF-5080  p.25

NR50-5100 ATC  p.16
NR50-5100 ATC-RS  p.16
NR40-5100 ATC  p.17

EM-3060  p.27
EM-3060J  p.27
EM-3030T  p.29
EM-3030T-J  p.29
EM-3080J  p.29
## Specifications

### NR-3060S

<table>
<thead>
<tr>
<th>Code No.</th>
<th>1583</th>
<th>Model</th>
<th>NR-3060S</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. rpm</th>
<th>Spindle runout</th>
<th>Collet</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø30mm</td>
<td>60,000min⁻¹</td>
<td>Within 1µm</td>
<td>CHK Group (Ø0.5 ~ Ø6.35mm)</td>
<td>260g</td>
</tr>
</tbody>
</table>

**Standard Accessories**
- Collet: Ø3.0mm (CHK-3.0) / Collet nut (K-265) / Spanner (12×14): 2pcs (22×27): 1pc

**Options**
- Special arbor for metal saw (KCH-03): for O.D. Ø30mm and under
- Grinding arbor (AGM-03): for grinding L.D. Ø5mm
- Grindstone flange (EGF-19): applicable grindstone L.D. Ø19.05mm × O.D. Ø40mm × 7mm

### NR-453E

<table>
<thead>
<tr>
<th>Code No.</th>
<th>1566</th>
<th>Model</th>
<th>NR-453E</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. rpm</th>
<th>Spindle runout</th>
<th>Collet</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø30mm</td>
<td>50,000min⁻¹</td>
<td>Within 1µm</td>
<td>CHK Group (Ø0.5 ~ Ø6.35mm)</td>
<td>440g</td>
</tr>
</tbody>
</table>

**Standard Accessories**
- Collet: Ø3.0mm (CHK-3.0) / Collet nut (K-265) / Spanner (12×14): 2pcs (22×27): 1pc

**Options**
- Special arbor for metal saw (KCH-03): for O.D. Ø30mm and under
- Grinding arbor (AGM-03): for grinding L.D. Ø5mm
- Grindstone flange (EGF-19): applicable grindstone L.D. Ø19.05mm × O.D. Ø40mm × 7mm

### NR-403E

<table>
<thead>
<tr>
<th>Code No.</th>
<th>1565</th>
<th>Model</th>
<th>NR-403E</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. rpm</th>
<th>Spindle runout</th>
<th>Collet</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø30mm</td>
<td>40,000min⁻¹</td>
<td>Within 1µm</td>
<td>CHK Group (Ø0.5 ~ Ø6.35mm)</td>
<td>440g</td>
</tr>
</tbody>
</table>

**Standard Accessories**
- Collet: Ø3.0mm (CHK-3.0) / Collet nut (K-265) / Spanner (12×14): 2pcs (22×27): 1pc

**Options**
- Special arbor for metal saw (KCH-03): for O.D. Ø30mm and under
- Grinding arbor (AGM-03): for grinding L.D. Ø5mm
- Grindstone flange (EGF-19): applicable grindstone L.D. Ø19.05mm × O.D. Ø40mm × 7mm
### E3000 SERIES

#### Spindle (Modular type)

**RAX-271E / RAX-71E**
- **Standard angle head**

**RA-151E**
- **With short head**

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**Specifications**

**RAX-271E / RAX-71E**
- **Code No.** 1578
- **Model** RAX-271E
- **O.D.** Ø30 mm
- **Max. speed at the cutting tool** 20,000 min⁻¹
- **Reduction ratio** 1/1.5
- **Max. rpm** 30,000 min⁻¹

**Spindle runout**
- ** CHK Group (Ø0.5 ~ Ø6.35 mm)**
- **Weight** 580 g

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**RAX-71E**
- **Code No.** 1579
- **Model** RAX-71E
- **O.D.** Ø30 mm
- **Max. speed at the cutting tool** 5,000 min⁻¹
- **Reduction ratio** 1/6
- **Max. rpm** 30,000 min⁻¹

**Spindle runout**
- ** CHK Group (Ø0.5 ~ Ø6.35 mm)**
- **Weight** 580 g

---

**Standard Accessories**
- **Collet : Ø3.0 mm (CHK-3.0) / Collet nut (K-265)**
- **Spanner (12x14) : 2pcs (22x27) : 1pc / Grease for reduction gear (10ml) / Grease Dispenser : 1pc**
- **Grease nipple : 1pc**

**Options**
- **Collet (CHK group) : Ø0.5 ~ Ø6.35 mm p.44**
- **Special arbor for metal saw (KCH-03) : for O.D.Ø30mm and under**
- **Grindstone arbor (AGM-03) : for grindstone I.D.Ø5.0 mm**

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**Put grease every 70 to 100 hours to extend the life of the reduction gear.**

Grease-up prevents friction of the internal gears and degradation of the existing grease in the reducer.
**E3000 SERIES**

**Spindle (Modular type)**

**RAS-151E**

*With long head*

**RA-271E**

*With small head*

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### Specifications

**RAS-151E**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>1559</th>
<th>Model</th>
<th>RAS-151E</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. speed at the cutting tool</th>
<th>Reduction ratio</th>
<th>Max. rpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø30mm</td>
<td>7,490 min⁻¹</td>
<td>1</td>
<td>20,000 min⁻¹</td>
</tr>
</tbody>
</table>

**Spindle runout**

- Collet: CHK Group (Ø0.5 – Ø6.35mm)
- Weight: 413g
- Standard Accessories:
  - Collet: CHK Group (Ø0.5 – Ø6.35mm)
  - Spindle nut (K-265)
  - Spanner (12×14): 2pcs (22×27): 1pc

**Options**

- Special arbor for metal saw (KCH-03)
- Grinding arbor (AGM-03)

---

**RA-271E**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>1506</th>
<th>Model</th>
<th>RA-271E</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. speed at the cutting tool</th>
<th>Reduction ratio</th>
<th>Max. rpm</th>
<th>Collet</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø30mm</td>
<td>13,330 min⁻¹</td>
<td>1.5</td>
<td>20,000 min⁻¹</td>
<td>CHS Group (Ø0.8 – Ø3.175mm)</td>
<td>240g</td>
</tr>
</tbody>
</table>

**Standard Accessories**

- Collet: CHS Group (Ø0.8 – Ø3.175mm)
- Spindle nut (K-265)
- Spanner (12×14): 2pcs (22×27): 1pc each

**Options**

- Collet (CHS Group): Ø0.8 – Ø3.175mm
NR50-5100 ATC
Automatic tool change spindle

This spindle is recommended for the customers who use a big amount of cutting fluid. "RS" stands for "Rubber Seal". This Rubber Seals added in the collet prevent coolant from going into the collet. In addition, the dust-proof cover which is bigger than NR50-5100 ATC prevents coolant from going into the spindle bearing.

NR50-5100 ATC-RS
Automatic tool change spindle

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. rpm</th>
<th>Air pressure of collet open/close</th>
<th>Spindle runout</th>
<th>Collet Group</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>50mm</td>
<td>50,000 min⁻¹</td>
<td>0.55 ~ 0.6 MPa</td>
<td>Within 1 μm</td>
<td>CHR Group</td>
<td>1,370g</td>
</tr>
</tbody>
</table>

Standard Accessories:
- Collet (CHR group) : ø2.0, ø3.0, ø3.175, ø4.0, ø6.0, ø6.35
- Air hose with filter (K-251) : ø6×2m

Options:
- Collet (CHR group) : ø2.0, ø3.0, ø3.175, ø4.0, ø6.0, ø6.35

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1580</td>
<td>NR50-5100 ATC</td>
</tr>
<tr>
<td>7690</td>
<td>NR50-5100 ATC-RS</td>
</tr>
</tbody>
</table>
### Spindle (Modular type)

**NR40-5100 ATC**
Automatic tool change spindle

**NRR-3060**
Manual tool change spindle

### Specifications

**NR40-5100 ATC**

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. rpm</th>
<th>Air pressure of collet open/closed</th>
<th>Spindle runout</th>
<th>Collet</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø40㎜</td>
<td>50,000㎡</td>
<td>0.55~0.6MPa</td>
<td>Within2μm</td>
<td>CHB Group (Ø3.175㎜)</td>
<td>740g</td>
</tr>
</tbody>
</table>

**Standard Accessories**
- Collet: Ø3.175㎜ (CHB-3.175) / Spanner (6.1×8) / Bar wrench (K-236) : 1pc each
- Air hose with filter (K-251) : ø6㎜×2m

**Options**
- Collet (CHB group) : ø2.0, ø3.0, ø3.175, ø4.0

**NRR-3060**

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. rpm</th>
<th>Spindle runout</th>
<th>Collet</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø26.8㎜</td>
<td>60,000㎡</td>
<td>Within1μm</td>
<td>CHB Group (Ø3.175㎜)</td>
<td>350g</td>
</tr>
</tbody>
</table>

**Standard Accessories**
- Collet: Ø3.175㎜ (CHB-3.175) / Spanner (6.1×8) : 2pcs / (22×27) : 1pc

**Options**
- Collet (CHB group) : ø2.0, ø3.0, ø3.175, ø4.0  p.44
Spindle (Modular type)

NR3060-AQC
Air quick change spindle
- Quick and easy collet holder change with air chucking mechanism
- Enhancing productivity by enabling external tool set-up.
- 2 types of collet holders are available. (CHK 0.5mm ~ 6.35mm, CHA 0.5mm ~ 4.0mm)

Specifications

<table>
<thead>
<tr>
<th>Code No.</th>
<th>9220</th>
<th>Model</th>
<th>NR3060-AQC</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.D.</td>
<td>30mm</td>
<td>Max. rpm</td>
<td>60,000/min</td>
</tr>
<tr>
<td>Air pressure of collet open/close</td>
<td>0.5MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spindle runout</td>
<td>Within 1μm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collet holder</td>
<td>QC3-A / QC3-A-R (for Collet CHA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QC3-K / QC3-K-R (for Collet CHK)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>1,230g</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Standard Accessories
- Spanner (22x27) : 1pc / Air hose with filter (K-251) : ø6mm x 2m : 1pc

Parts (Optional)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>915 9</td>
<td>CHK 0.5mm ~ 6.35mm</td>
<td>9210 9223 2026</td>
<td>Spanner 12 x 14 (2pcs.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>914 9</td>
<td>CHA 0.5mm ~ 4.0mm</td>
<td>9209 9222 2012 2054</td>
<td>Spanner 8 x 5 Spanner 9 x 11 (1pcs.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Set-up outside machines

In case using a milling holder

1. Set-up holder
2. Adjusting holder
3. Fixing holder
4. Adjusting holder
5. Setting holder
6. Setting holder

In case using a vice

1. Setting holder
2. Adjusting holder
3. Fixing holder

Set-up outside machines

Convenient adjustment with Single hand type spanner

In case using a milling holder

You can choose the I.D. size (The following is an example of 20.0mm.)
NRR3060-QC
Lever quick change spindle

- Quick and easy collet holder change with lever chucking mechanism
- Enhancing productivity by enabling external tool set-up.
- 2 types of collet holders are available. (CHK 0.5mm ~ 6.35mm, CHA 0.5mm ~ 4.0mm)

Specifications

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Model</th>
<th>NRR3060-QC</th>
</tr>
</thead>
<tbody>
<tr>
<td>9208</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- O.D. Max. rpm Spindle runout Collet holders Lever operating angle Weight
- Ø30 mm
- Recommended clamping area 60,000 min⁻¹ Within 1μm
- QC3-A / QC3-A-R (for Collet CHK)
- QC3-K / QC3-K-R (for Collet CHA)
- 90°
- 570g

Parts (Optional)

- Collet holder (Collet nut included)
  - CHK (I.D. ø0.5mm ~ 6.35mm) Code No. 915 916 917 920 921 922 923
  - CHA (I.D. ø0.5mm ~ 4.0mm) Code No. 914 915 916 920 921 922 923
- Spanner
  - Spanner 12 × 14 (2pcs.) Code No. 9226
  - Spanner 8 × 5 (1pc.) Code No. 9222
  - Spanner 9 × 11 (1pc.) Code No. 9223

Order by Code No.

- In case using an milling holder
  - Preset adapter Code No. 9211
  - Collet holder
  - Collet nut
  - Height gauge

- In case using a vice
  - Preset adapter
  - Collet holder
  - Collet nut
  - Height gauge

Set-up outside machines

- Preset adapter
- Collet holder
- Collet nut
- Height gauge
**E3000 SERIES**

**Reduction gear (Modular type)**

**ARG-011E**  
Reduction gear (1:4)

**ARG-021E**  
Reduction gear (1:16)

**RG-3004M**  
Oil mist type reduction gear (1:4)

---

**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>Code No.</th>
<th>O.D. (mm)</th>
<th>Max. speed at the cutting tool</th>
<th>Reduction ratio</th>
<th>Max. rpm (min⁻¹)</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARG-011E</td>
<td>1507</td>
<td>Ø30</td>
<td>7,500min⁻¹</td>
<td>1/4</td>
<td>30,000min⁻¹</td>
<td>242</td>
</tr>
<tr>
<td>ARG-021E</td>
<td>1508</td>
<td>Ø30</td>
<td>1,870min⁻¹</td>
<td>1/16</td>
<td>30,000min⁻¹</td>
<td>325</td>
</tr>
<tr>
<td>RG-3004M</td>
<td>7348</td>
<td>Ø30</td>
<td>15,000min⁻¹</td>
<td>1/4</td>
<td>60,000min⁻¹</td>
<td>240</td>
</tr>
</tbody>
</table>

**Standard Accessories**

- Grease for reduction gear (10ml) / Grease nipple : 1pc

---

- Put grease every 70 to 100 hours to extend the life of the reduction gear. Grease-up prevents friction of the internal gears and degradation of the existing grease in the reducer.

---

- Max input speed 60,000min⁻¹ (standard type 30,000min⁻¹)
- Longer product life by oil mist lubrication
- No greasing is necessary
- Oil mist supply is necessary
- Not recommended for dry machining.

---

**Controller Motor cord Electric motor Reduction gear**

- For oil mist lubrication
- For dry cooling air supply

---

**Spindle**  
RG-3004M  
EM-3060J  
EMCD-3000J  
AL-M1201BL

---

**Motor cord**  
EM-3060J  
EMCD-3000J

---

**Controller**  
AL-C1204

---

**O.D. (mm) Max. speed at the cutting tool Reduction ratio Max. rpm (min⁻¹) Weight (g)**

<table>
<thead>
<tr>
<th>O.D. (Ø30)</th>
<th>Max. speed at the cutting tool</th>
<th>Reduction ratio</th>
<th>Max. rpm</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø30</td>
<td>15,000min⁻¹</td>
<td>1/4</td>
<td>60,000min⁻¹</td>
<td>240</td>
</tr>
</tbody>
</table>
**E3000 SERIES**

**Spindle (Modular type)**

**NR-3080S**
80,000min⁻¹

**NRAF-5080**
Air bearing spindle

---

**Specifications**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Model</th>
<th>O.D. (mm)</th>
<th>Max. rpm</th>
<th>Spindle runout</th>
<th>Collet</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1783</td>
<td>NR-3080S</td>
<td>Ø30</td>
<td>80,000</td>
<td>1μm</td>
<td>CHA Group (ø0.5 ~ ø4.0)</td>
<td>170g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ø48</td>
<td>80,000</td>
<td>1μm</td>
<td>CHK Group (ø0.5 ~ ø6.35)</td>
<td>560g</td>
</tr>
</tbody>
</table>

**Standard Accessories**

- Collet (CHA group): ø3.0/mm CHA (CHA-3.0)
- Collet nut (CHN-A)
- Spanner (22x27) / 1pc
- (8x5) / 1pc
- (9x11) / 1pc

**Options**

- Collet (CHA group): ø0.5 ~ ø4.0mm

---

**Cross section**

- Body mounting: flange mounting, M3 bolt (9 locations, equidistribution, 45° angle, PCD57)
- Bearing type: air static bearing
- Bearing load capacity: radial 20N, thrust 40N
- Useable Max. diameter of grindstone: ø8.0mm and under on ø6.0mm shank
- Hose diameter: ø4mm, for bearing air inlet
- Plug (KQ2P-04) / 1pc
- Inlet air hose (ø4mmx4m) / 1pc
- Bar wrench (K-236) / 1pc
EM-3060
60,000 min⁻¹ motor

EM-3060J
60,000 min⁻¹ motor with joint type motor cord

Motor / Motor Cord

Specifications

EM-3060

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Speed Range</th>
<th>Max. power</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>∅30</td>
<td>1,000 ~ 60,000 min⁻¹</td>
<td>350W</td>
<td>325g</td>
</tr>
</tbody>
</table>

Standard Accessories: Spanner (22×27) ; 1pc

EM-3060J

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Speed Range</th>
<th>Max. power</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>∅30</td>
<td>1,000 ~ 60,000 min⁻¹</td>
<td>350W</td>
<td>360g</td>
</tr>
</tbody>
</table>

Standard Accessories: Spanner (22×27) ; 1pc

Motor cord Code No. Model Length Standard Accessories Compatible model

<table>
<thead>
<tr>
<th>Motor cord</th>
<th>Code No.</th>
<th>Model</th>
<th>Length</th>
<th>Standard Accessories</th>
<th>Compatible model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight type</td>
<td>1748</td>
<td>EMCD-3000-4M</td>
<td>4m</td>
<td>Air hose, Connector cap (Included)</td>
<td>EM-3060, EM-3060T, EM-3060J, EM-3060K, EM-3060A</td>
</tr>
<tr>
<td>1749</td>
<td>EMCD-3000-6M</td>
<td>6m</td>
<td>Air hose, Connector cap (Included)</td>
<td>EM-3060, EM-3060T, EM-3060J, EM-3060K, EM-3060A</td>
<td></td>
</tr>
<tr>
<td>1750</td>
<td>EMCD-3000-8M</td>
<td>8m</td>
<td>Air hose, Connector cap (Included)</td>
<td>EM-3060, EM-3060T, EM-3060J, EM-3060K, EM-3060A</td>
<td></td>
</tr>
<tr>
<td>Angle type</td>
<td>1744</td>
<td>EMCD-3000A-4M</td>
<td>4m</td>
<td>Air hose, Connector cap (Included)</td>
<td>EM-3060, EM-3060T, EM-3060J, EM-3060K, EM-3060A</td>
</tr>
<tr>
<td>1743</td>
<td>EMCD-3000A-6M</td>
<td>6m</td>
<td>Air hose, Connector cap (Included)</td>
<td>EM-3060, EM-3060T, EM-3060J, EM-3060K, EM-3060A</td>
<td></td>
</tr>
<tr>
<td>1742</td>
<td>EMCD-3000A-8M</td>
<td>8m</td>
<td>Air hose, Connector cap (Included)</td>
<td>EM-3060, EM-3060T, EM-3060J, EM-3060K, EM-3060A</td>
<td></td>
</tr>
</tbody>
</table>

EM-3060J

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Speed Range</th>
<th>Max. power</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>∅30</td>
<td>1,000 ~ 60,000 min⁻¹</td>
<td>350W</td>
<td>360g</td>
</tr>
</tbody>
</table>

Joint type motor cord is necessary.

Motor cord Code No. Model Length Standard Accessories Compatible model

<table>
<thead>
<tr>
<th>Motor cord</th>
<th>Code No.</th>
<th>Model</th>
<th>Length</th>
<th>Standard Accessories</th>
<th>Compatible model</th>
</tr>
</thead>
</table>
**Specifications**

**EM-3030T**

- **30,000 min⁻¹ torque motor**
- EM-3030T torque is twice as big as EM-3060.

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Speed Range</th>
<th>Max. Power</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>7360</td>
<td>1,000 ~ 30,000 min⁻¹</td>
<td>350 W</td>
<td>340 g</td>
</tr>
</tbody>
</table>

**Standard Accessories:** Spreader (22x27) : 1pc

**EM-3030T-J**

- **30,000 min⁻¹ torque motor with joint type motor cord**
- EM-3030T-J torque is twice as big as EM-3060J.

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Length</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>7358</td>
<td>0.3m</td>
<td>EM-3030T-J</td>
</tr>
<tr>
<td>7359</td>
<td>2m</td>
<td>EM-3030T-J-2M</td>
</tr>
</tbody>
</table>

**EM-3080J**

- **80,000 min⁻¹ brushless motor with joint type motor cord**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Length</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1781</td>
<td>0.3m</td>
<td>EM-3080J</td>
</tr>
<tr>
<td>1788</td>
<td>2m</td>
<td>EM-3080J-2M</td>
</tr>
</tbody>
</table>

- Joint type motor cord is necessary.

If EM-3030T/J is connected to an old type non-applicable controller, it will not rotate.

**EM-3030T**

- O.D.: 30 mm
- Speed Range: 1,000 ~ 30,000 min⁻¹
- Max. Power: 350 W
- Weight: 340 g

**EM-3030T-J**

- O.D.: 30 mm
- Speed Range: 1,000 ~ 30,000 min⁻¹
- Max. Power: 350 W
- Weight: 415 g

**EM-3080J**

- O.D.: 30 mm
- Speed Range: 20,000 ~ 80,000 min⁻¹
- Max. Power: 350 W
- Weight: 360 g

**Standard Accessories:** Spreader (22x27) : 1pc
Motor spindle (One-piece type)

- EMS-3060K
- EMS-3060A
- EM-3008K
- EMA-3020K
- EMA-3020S
- EMSF-3060K
- EM30-S6000
- EM25-S6000
- EM20-S6000
Motor Spindle (One-piece type)

EMS-3060K
e30-Chek collet-30cm joint cord

EMS-3060A
e30-Cha collet-30cm joint cord

EMR-3008K
Motor spindle with reduction gear

Specifications

EMS-3060K

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. rpm</th>
<th>Spindle runout</th>
<th>Collet</th>
<th>Max. power</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>30mm</td>
<td>60,000min⁻¹</td>
<td>Within1μm</td>
<td>CHK group (ø0.5 – ø3.85mm)</td>
<td>350W</td>
<td>565g</td>
</tr>
</tbody>
</table>

Standard Accessories:
- Collet (CHK Group): ø0.5 – ø3.85mm
- Spanner (12x14): 2pcs

Options:
- Motor cord (Length 3m): 4m, 4m (1768), 6m (1767), 8m (1766)
- Special arbor for metal saw (KCH-3): for O.D. ø30mm and under
- Grinding arbor (AGM-03): for grindstone I.D. ø5mm
- Grinding flange (EGF-19): for grindstone I.D. ø19.05×Ø. ø40×7mm

EMR-3008K

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. speed at the cutting tool</th>
<th>Reduction ratio</th>
<th>Max. rpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>30mm</td>
<td>8,000min⁻¹</td>
<td>1/4</td>
<td>32,000min⁻¹</td>
</tr>
</tbody>
</table>

Spindle runout

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. power</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>30mm</td>
<td>350W</td>
<td>650g</td>
</tr>
</tbody>
</table>

Standard Accessories:
- Collet (CHK Group): ø0.5 – ø3.85mm
- Spanner (12x14): 2pcs

Options:
- Motor cord (Length 3m): 4m, 4m (1768), 6m (1767), 8m (1766)
- Special arbor for metal saw (KCH-3): for O.D. ø30mm and under
- Grinding arbor (AGM-03): for grindstone I.D. ø5mm

Motor Spindle (One-piece type)
**EM30 SERIES**

**Motor spindle** (One-piece type)

**EMA-3020K**
Standard angle head

- **Spindle runout within 2μm**
  - CHK group: 10μm (CHSS-3.0)
  - CHSS group: 10μm (CHSS-3.0)

- **Max. power**
  - 280W

- **Max. rpm**
  - 32,000/min

- **Weight**
  - 760g

**Standard Accessories**
- Collet (CHSS Group): ø0.5 - ø0.356
- Grease nipple: 1pc each
- Holes for grease nipples: 1pc

**Options**
- Special arbor for metal saw (CHSS-3.0): for ø1.0 and under
- Motor cord: Length 3m (1768) / 4m (1778) / 6m (1767) / 8m (1766)
- Special arbor for grinding stone (CHSS-3.0): for Ø5.0
- Special arbor for grinding stone (CHSS-3.0): for Ø3.0
- K-265: for Ø3.0
- Joint Type motor cord is necessary.

**EMA-3020S**
Built-in angle head

- **Spindle runout within 3μm**
  - CHK group: 10μm (CHSS-3.0)
  - CHSS group: 10μm (CHSS-3.0)

- **Max. power**
  - 275W

- **Max. rpm**
  - 32,000/min

- **Weight**
  - 605g

**Standard Accessories**
- Collet (CHSS Group): ø0.5 - ø0.375
- Grease nipple: 1pc each
- Holes for grease nipples: 1pc

**Options**
- Special arbor for metal saw (CHSS-3.0): for Ø0.5 and under
- Motor cord: Length 3m (1768) / 4m (1778) / 6m (1767) / 8m (1766)
- Special arbor for grinding stone (CHSS-3.0): for Ø5.0
- Special arbor for grinding stone (CHSS-3.0): for Ø3.0
- K-265: for Ø3.0
- Joint Type motor cord is necessary.

**Order by Code No.**
- **EMA-3020K**
  - Code No.: 1759
  - Model: EMA-3020K

- **EMA-3020S**
  - Code No.: 1758
  - Model: EMA-3020S
Specifications

**EM30-S6000**

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. rpm</th>
<th>Spindle runout</th>
<th>Collet</th>
<th>Max. power</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø30m</td>
<td>60,000min⁻¹</td>
<td>Within 1μm</td>
<td>CHK group (ø0.5 ~ ø6.35mm)</td>
<td>350W</td>
<td>575g</td>
</tr>
</tbody>
</table>

Standard Accessories:
- Collet (CHK Group): ø0.5 ~ ø6.35mm
- Spanner (12x14): 2pcs

Options:
- Collet (CHA Group): ø0.5 ~ ø4.0mm
- Motor cord: Length 4m (1748), 6m (1748), 8m (1750)
- Grinding arbor: for grinding I.D. ø5.0mm
- Grindstone flange (EGF-19): for grinding I.D. ø19.05 × O.D. ø40 × 7mm

Order by Code No. 1747 Model EM30-S6000

---

**EM25-S6000**

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. rpm</th>
<th>Spindle runout</th>
<th>Collet</th>
<th>Max. power</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø25m</td>
<td>60,000min⁻¹</td>
<td>Within 1μm</td>
<td>CHA group (ø0.5 ~ ø4.0mm)</td>
<td>250W</td>
<td>375g</td>
</tr>
</tbody>
</table>

Standard Accessories:
- Collet (CHA-A group): ø0.5 ~ ø4.0mm
- Spanner (8x5) × (9x11): 1pc each

Options:
- Collet (CHA Group): ø0.5 ~ ø4.0mm
- Motor cord: Length 4m (1748), 6m (1748), 8m (1750)

Order by Code No. 1746 Model EM25-S6000

---

**EM20-S6000**

<table>
<thead>
<tr>
<th>O.D.</th>
<th>Max. rpm</th>
<th>Spindle runout</th>
<th>Collet</th>
<th>Max. power</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø20m</td>
<td>60,000min⁻¹</td>
<td>Within 1μm</td>
<td>CHA group (ø0.5 ~ ø4.0mm)</td>
<td>250W</td>
<td>230g</td>
</tr>
</tbody>
</table>

Standard Accessories:
- Collet (CHA-A group): ø0.5 ~ ø4.0mm
- Spanner (8x5) × (9x11): 1pc each

Options:
- Collet (CHA Group): ø0.5 ~ ø4.0mm
- Motor cord: Length 4m (1748), 6m (1748), 8m (1750)

Order by Code No. 1745 Model EM20-S6000

---

**Motor Spindle (One-piece type)**

**EM30-S6000**

<table>
<thead>
<tr>
<th>Spindle Guide</th>
<th>EM30-S6000</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø30-CK collet</td>
<td>139.5</td>
</tr>
</tbody>
</table>

**EM25-S6000**

<table>
<thead>
<tr>
<th>Spindle Guide</th>
<th>EM25-S6000</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø25-CHA collet</td>
<td>189.5</td>
</tr>
</tbody>
</table>

**EM20-S6000**

<table>
<thead>
<tr>
<th>Spindle Guide</th>
<th>EM20-S6000</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø20-CHA collet</td>
<td>123</td>
</tr>
</tbody>
</table>

---

**Motor cord**

- EMCD-3000A
- EMCD-3000
- E3000 CONTROLLER
- E3000 SELECTOR

---

**Controller**

Order by Code No. 1747 Model EM30-S6000

---

**Motor Spindle**

- EM20-S6000
- EM25-S6000
- EM30-S6000

---

**Standard Accessories**

- Collet (CHA-A group): ø0.5 ~ ø4.0mm
- Spanner (8x5) × (9x11): 1pc each

---

**Options**

- Collet (CHA Group): ø0.5 ~ ø4.0mm
- Motor cord: Length 4m (1748), 6m (1748), 8m (1750)
- Grinding arbor: for grinding I.D. ø5.0mm
- Grindstone flange (EGF-19): for grinding I.D. ø19.05 × O.D. ø40 × 7mm
E3000 SERIES

Motor spindle (One-piece type)

EMSF-3060K

With flange

- Easy clamping / Unclamping of the spindle, Easy mounting to the machine
- Avoid trouble by excessive tightening
- Mounting spindle at small intervals available

Specifications

EMSF-3060K

- O.D.: ∅30mm
- Max. rpm: 60,000 min⁻¹
- Spindle runout: Within 1 µm
- Collet: CHK Group (∅0.5 ~ ∅6.35mm)
- Max. power: 350W
- Weight: 620g

Standard Accessories:
- Collet: ∅3.0mm (CHK-3.0) / Collet nut (K-265)
- Spanner (12×14): 2pcs, Air hose 0.3m: 1pc
- Lock bolt (M4 hexagon socket head bolt): 4pcs

Options:
- Collet (CHK Group): ∅0.5 ~ ∅6.35mm
- Motor cord: Length 3m (1778), 4m (1768), 6m (1767), 8m (1766)

Nakanishi spindles can be mounted in various ways

3 spindle types are available in E3000 series to meet customer’s demands

- Straight type
- Straight type + Grip type Ring
- With flange

Mounting devices have to be prepared by user
Type of usage for attachment to straight spindle
Grip type Ring available
Type of spindle and mounting device integrated

How to mount to a machine tool

1. Insert motor spindle body into the holder
2. Tighten the flange with 4 lock bolt (M4)
**E3000 Controller**

**E3000 CONTROLLER**

<table>
<thead>
<tr>
<th>Plug type</th>
<th>Code No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>100V (A Type)</td>
<td>8421</td>
</tr>
<tr>
<td>120V (B Type)</td>
<td>9775</td>
</tr>
<tr>
<td>200V (C Type)</td>
<td>8422</td>
</tr>
<tr>
<td>230V (D Type)</td>
<td>9776</td>
</tr>
</tbody>
</table>

**Plug type**
- 100V (A Type) | Japan
- 120V (B Type) | USA / Canada
- 200V (C Type) | Without plug
- 230V (D Type) | Europe

**External Input / Output Control Signal Operation**

- **External Input**
  - Motor Rotating / Stopped, Error Released, Rotating Direction, Motor Speed Setting and etc.
- **External Monitor**
  - Motor Current, Error, Warning, Rotating pulse and etc.
- **Parameter Setting**
  - Maximum motor speed setting, Fix the motor speed
- For more information, please refer to the operation manual on our website.
- Equipped with safety relay break and speed point

**Speed Range**

1,000〜80,000/min

**Input Voltage**

AC100〜240V

**Max. power**

350W

**Power consumption**

AC1.8A

**Air consumption**

30 N/min (at 0.25〜0.3MPa)

**Weight**

2.8kg

**Standard Accessories**

- Power cord : 2m / Air hose with filter (K-251 : 2058) : 2m
- Reducer / Connector cap (Included)
- Bracket / Nylon Clip / Screw / Rubber pad
- Fuse (T6.3AL) : 250V : 2pcs

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**E3000 SELECTOR**

**Plug type**

<table>
<thead>
<tr>
<th>Plug type</th>
<th>Code No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>100V (A Type)</td>
<td>8425</td>
</tr>
<tr>
<td>120V (B Type)</td>
<td>9781</td>
</tr>
<tr>
<td>200V (C Type)</td>
<td>8426</td>
</tr>
<tr>
<td>230V (D Type)</td>
<td>9782</td>
</tr>
</tbody>
</table>

**Plug type**

- 100V (A Type) | Japan
- 120V (B Type) | USA / Canada
- 200V (C Type) | Without plug
- 230V (D Type) | Europe

**Number of motor**

4pcs

Up to 4 motors to control with connecting selector to controller

*Not simultaneously*

**Input Voltage**

AC100〜240V

**Power consumption**

AC0.15A

**Air consumption**

120 N/min (when connecting 4 motors)

**Weight**

1.9kg

**Standard Accessories**

- Power cord : 2m / Communication cable : 60cm
- Selector connecting cord : 60cm
- Connector cap (Included) / Plug to avoid air flow
- Bracket / Nylon Clip / Screw / Rubber pad
- Fuse (T1.6AL) : 250V : 2pcs
E3000 SERIES

Accessories

AL-C1204
Air line kit
0.3μm filter

AL-A1205
Air line kit (for NRAF-5080)
0.3μm filter

AL-M1201BL
Air line kit (for RG-3004M)
0.3μm filter

AL-A0611
Air line kit (for NRAF-5080)
0.01μm filter

E3000-PEX4
Control panel extension cord (4m)

Collet
Code No.
Model
I.D.
Compatible model
91494
CHA-3.0A
ø3.0A
EM30-50100 / EM30-50200
91495
CHA-3.175A
ø3.175A
EM35-50100 / EM35-50200
91498
CHA-4.0A
ø4.0A
91492
CHA-2.35
ø2.35
91430
CHA-3.0
ø3.0
91431
CHA-3.175
ø3.175
91440
CHA-4.0
ø4.0

Collet CHB Group

Collet CHS Group

Collet CHK Group

Collet CH8 Group

Recommended nominal filtration rating: 0.3μm filter

Weight: 305g

Recommendation of air filter: M2000-WS

Spindle runout within 2μm

Also available for NR50-5100 ATC

Spindle runout within 2μm

Also suitable for NRAF-5080 ATC RS

Standard Accessories
Mounting Bolt (GR-30) 55+2pcs

Recommended tightening torque: 4N

Loosen the Mounting Bolt

Tighten the Mounting Bolt

Mounting reference hole ø30 +0.02 □□

Collet CHG Group

Collet CHT Group

Collet CHT RS Group

Collet CHS Group

Collet CHK Group

Collet CHB Group

Collet CH8 Group

Recommended tightening torque: 4N

Loosen the Lock Bolt

Tighten the Mounting Bolt

Recommended tightening torque: 4N

Recommended tightening torque: 4N

Recommended tightening torque: 4N

Recommended tightening torque: 4N
### Accessories

<table>
<thead>
<tr>
<th>Bush Code No.</th>
<th>Model</th>
<th>Description</th>
<th>Compatible model</th>
</tr>
</thead>
<tbody>
<tr>
<td>2102</td>
<td>CHN-A</td>
<td>Bush holder for CHN bush</td>
<td>E3000-S6000 / E3000-S6000 / E3000-S5000</td>
</tr>
<tr>
<td>2158</td>
<td>K-205A</td>
<td>Bush holder for NRAP-5200</td>
<td>NRAP-5200</td>
</tr>
</tbody>
</table>

### Grease for reduction gear

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Model</th>
<th>Description</th>
<th>Compatible model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1547</td>
<td>—</td>
<td>Grease for reduction gear (3.5l)</td>
<td>—</td>
</tr>
<tr>
<td>1550</td>
<td>—</td>
<td>Grease for reduction gear (10l)</td>
<td>—</td>
</tr>
<tr>
<td>1549</td>
<td>—</td>
<td>Grease for reduction gear (100l)</td>
<td>—</td>
</tr>
</tbody>
</table>

### Electric Motors & Spindles

**E3000 Series**

1. **1,000 ~ 40,000 mm** Max. 1,200 W
   - For small diameter endmills and drills only
   - For high precision internal grinding

2. **1,000 ~ 80,000 mm** Max. 350 W
   - For small diameter endmills and drills only

### Air Motors & Spindles

**AM Series**

1. **1,000 ~ 60,000 mm** Max. 350 W
   - For applications requiring high speed and accuracy
   - For applications requiring high speed and accuracy

2. **5,000 ~ 30,000 mm** Max. 125 W
   - For applications requiring high speed and accuracy
   - For applications requiring high speed and accuracy

### Air Turbine Spindles

**XSpeed Series**

1. **Max. 160,000 mm**
   - For high-speed applications
   - For high-speed applications

2. **Max. 85,000 mm**
   - For high-speed applications
   - For high-speed applications