## Espert 500 Series

### Features of Motor Handpiece

- **Speed**: 1,000–50,000 min⁻¹
- **NAKANISHI Smart Switch**
- **Max. Output**: 200W

### Excellent Durability

High performance brushless motor eliminates the need to change carbon brushes. NAKANISHI’s internal load test has proven continuous use for more than 5,000 hours.

### Speed (1,000–50,000 min⁻¹)

NAKANISHI handpiece has a patented built-in-dust protection system to prevent the infiltration of dust and debris into the front bearings. This NAKANISHI patented design assures long-term durability.

### Wide Range of Collet Available

Collet sizes range from a tiny 0.3 mm up, with a wide variety of sizes available. (Page 55)

### Speed

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Model</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>9881</td>
<td>ES50C-HR</td>
<td>(120V)</td>
</tr>
<tr>
<td>9882</td>
<td></td>
<td>(230V)</td>
</tr>
</tbody>
</table>

### 9 Types of Attachments Available

9 different types of attachments making an almost infinite number of applications possible.

### Special Dust-Proof Mechanism

Then handpiece has a patented built-in-dust protection system to prevent the infiltration of dust and debris into the front bearings. This NAKANISHI patented design assures long-term durability.

### Micro Grinder & Handpiece Stand

This specially designed micromotor stand allows easy pick-up and set-down of the micro-grinder. Strong, but soft to the touch, the micro-grinder stand contains convenient, integrated storage compartments for adjustment spanners and a spare chuck.

### NAKANISHI Smart Switch

The switch provides a click sensation and a confirmation tone is produced by the Controller when the switch is operated. The motor type is distinguishable by the switch color.

### Order by Code No.

- Code No. 9681
  - Model: ES50C-HR
  - Voltage: 120V (110V-240V)

- Code No. 9682
  - Model: ES50C-HR
  - Voltage: 230V (110V-240V)

### NAKANISHI Smart Switch Color

- Gray
- Blue

### Collet Sizes

- Standard Size Collet: ø3.0 mm (CHH-3.0), ø2.35 mm (CHH-2.35)
- Speed: 1,000–50,000 min⁻¹

### High Performance Brushless Motor

Eliminates the need to change carbon brushes. NAKANISHI’s internal load test has proven continuous use for more than 5,000 hours.

### Low Noise, Low Vibration

The brushless motor and incorporated cooling fan have reduced the vibration and noise levels, resulting in a quieter, more comfortable work environment. Dramatically compared with conventional.

### High Precision

NAKANISHI’s ultra-precision technology ensures bur concentricity of 0.02 mm or less, which allows for very high precision finishing.

### Smooth and Powerful Torque

Delivered at both high and low speeds. The extremely high maximum speed of 50,000 min⁻¹ allows high precision micro-machining.
Features of Controller

**Optimal Control via Microcomputer**

The operation of all Espert 500 functions is controlled by a high performance microcomputer (CPU) that is programmed with NAKANISHI’s proprietary technology. NAKANISHI’s CPU has direct control of the brushless micro-grinder allowing smooth and highly precise cutting and polishing of a wide variety of materials. Bur “chatter” has been eliminated. The system automatically senses which micromotor is attached (ENK-500C or ENK-500T) and self adjusts to provide optimum micro-grinder performance.

**Auto Cruise Function**

The controller is equipped with an auto cruise function that operates the micro-grinder at a preset speed without the need to use the foot pedal. This function eliminates foot fatigue during prolonged operation.

**Simplified Hand and Foot Pedal Control**

You no longer need to push a switch on the controller to switch between hand and foot pedal control. If you want to operate the motor handpiece by hand simply push the NAKANISHI Smart Switch, if you want to use foot pedal control simply depress the foot pedal.

**Memory Speed Function Fixspeed**

An exclusive new feature of the Espert 500 system, the Fixspeed system allows the user to independently preset the speed of motor A and motor B. For example motor A can be set to maintain the speed set by the Fixspeed system while motor B has variable control using a foot pedal. This function allows for unprecedented flexibility.

**Eco-Friendly Design**

The electronic circuits are designed using NAKANISHI’s proprietary technology to meet eco-friendly expectations by minimizing power consumption. Since power demands are minimal, no significant heat is generated and no cooling fan is required.

**Error Code Display Function**

Detects trouble and failures occurring within the motor or unit and displays them as one of seven types of error codes (E0-E6). This reassuring function permits the user to correct the problem. Possible errors are overload, open circuit, motor lock, controller overheat, etc.

**Other Features**

- Self Check Function (Maintenance Mode)
- Smooth Operation
- Operation Check Sound
- Highly Visible and easy to operate front panel
- 2-Digit Digital Display
- A/B 2 Motors Can Be Connected

*(Simultaneous motor operation is not allowable)*
Espert 500 Series

PRECISION BRUSHLESS MICRO-GRINDER

Espert 500 Sets

With Motor ON/OFF Switch

- Speed Range: 1,000~50,000 min⁻¹
- Microprocessor controlled for optimal motor control
- Hand Switch [NAKANISHI Smart Switch]
- Memory Speed Function [FixSpeed™]

High Power &
High Torque!!

Espert 500 Standard Set

1,000~50,000 min⁻¹

- High Power System, <Max. Output 140W>

Code No.
9881 (230V)
9882 (230V)

Model
ES50C-HR

Standard Equipment
- Controller (NE96) : 1 pc.
- Compact Motor Handpiece (ENK50C-HR) : 1 pc.

Standard Accessories
- Collet ø3.0 mm (CHH-3.0), ø2.35 mm (CHH-2.35) : 1 pc.
- Spanner (7 x 5.1) : 1 pc.  • Pin Spanner (K-233) : 1 pc.
- L Shaped Spanner (9) : 1 pc.

Espert 500 Torque Set

1,000~50,000 min⁻¹

- Highest Power in its Class, <Max. Output 200W>

Code No.
9883 (230V)
9884 (230V)

Model
ES50T-HR

Standard Equipment
- Controller (NE96) : 1 pc.
- Torque Motor Handpiece (ENK50TH-G) : 1 pc.

Standard Accessories
- Collet ø3.0 mm (CHH-3.0), ø2.25 mm (CHH-2.25) : 1 pc.
- Handpiece Holder : 1 pc.  • Handpiece Stand : 1 pc.
- Spanner (7 x 5.1) : 1 pc.  • Pin Spanner (K-233) : 1 pc.
- L Shaped Spanner (9) : 1 pc.

Espert 500 Compact Motor Handpiece

1,000~50,000 min⁻¹

- High Power System, <Max. Output 140W>

Code No.
9091
Model
ENK50C-HR

Standard Size Collet
ø3.0 mm (CHH-3.0), ø2.25 mm (CHH-2.25) : 1 pc.

Standard Accessories
- Spanner (7 x 5.1) : 1 pc.
- Pin Spanner (K-233) : 1 pc.
- L Shaped Spanner (9) : 1 pc.

Espert 500 Torque Motor Handpiece

1,000~50,000 min⁻¹

- High Power System, <Max. Output 200W>

Code No.
9092
Model
ENK50T-HR

Standard Size Collet
ø3.0 mm (CHH-3.0), ø2.25 mm (CHH-2.25) : 1 pc.

Standard Accessories
- Spanner (7 x 5.1) : 1 pc.
- Pin Spanner (K-233) : 1 pc.
- L Shaped Spanner (9) : 1 pc.

<table>
<thead>
<tr>
<th>Code No.</th>
<th>d</th>
<th>D</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>Weight</th>
<th>Max. Output</th>
<th>Speed Range</th>
<th>Collet</th>
</tr>
</thead>
<tbody>
<tr>
<td>9091</td>
<td>ø13.3</td>
<td>ø26.8</td>
<td>59.4</td>
<td>107.8</td>
<td>167.2</td>
<td>210 g (w)</td>
<td>140W</td>
<td>1,000~50,000 min⁻¹</td>
<td>ø0.3~ø1.75 mm CHH Group (P.59)</td>
</tr>
<tr>
<td>9092</td>
<td>ø13.3</td>
<td>ø26.8</td>
<td>59.4</td>
<td>121.4</td>
<td>160.8</td>
<td>250 g (w)</td>
<td>200W</td>
<td>1,000~50,000 min⁻¹</td>
<td>ø0.3~ø1.75 mm CHH Group (P.59)</td>
</tr>
</tbody>
</table>

Order by Code No. P.28
Espert 500 Series System Chart

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Attachment</td>
</tr>
<tr>
<td></td>
<td>Speed Reducer</td>
</tr>
<tr>
<td></td>
<td>Motor</td>
</tr>
<tr>
<td></td>
<td>Controller</td>
</tr>
<tr>
<td></td>
<td>Sets</td>
</tr>
<tr>
<td></td>
<td>Esprt 500 Standard Set</td>
</tr>
</tbody>
</table>

Espert 500 Series

Espert 500 Controller

- Microprocessor controlled for optimal motor control.
- Memory Speed Function F1-speed®
- Power Source: AC120/230V, 50-60 Hz
- Dimensions: W172 x D230 x H94 mm
- Weight: 2.8 kg

Standard Accessories:
- Handpiece Stand: 1 pc.
- Handpiece Holder: 1 pc.

*Please check the power source plug type (P.38).

Espert 500 Compact Type Motor

- 1,000~50,000 min⁻¹
- Incorporates the NAKANISHI Smart Switch for easy on/off operation.
- Small, lightweight, high-speed brushless DC motor.
- Output Power: 140 W
- Max. Torque: 6.0 cN·m
- Cord Length: 1.5 m
- Weight: 115 g (w/o cord)

Espert 500 Torque Type Motor

- 1,000~50,000 min⁻¹
- Incorporates the NAKANISHI Smart Switch for easy on/off operation.
- High-power, high-torque, high-speed brushless DC motor.
- Output Power: 200 W
- Max. Torque: 8.7 cN·m
- Cord Length: 1.5 m
- Weight: 140 g (w/o cord)

Details of Maximum Allowable speed on intermittent use or continuous use P31~33
90° Angle Torque Attachment

**EHL-401**

- **Code No.:** EHL-401
- **Model:** 90° Angle Torque Attachment
- **Weight:** 70 g
- **Max. Torque:** 46.8 N.m
- **Max. RPM:** 27,000

**Products:**
- **6 mm Torque Type Attachment**
- **6 mm Torque Type Attachment**

**Order by Code No.:**
- 9090
- 1515
- 1525

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50° Angle Attachment

**EKC-300**

- **Code No.:** EKC-300
- **Model:** 50° Angle Attachment
- **Weight:** 680 g
- **Max. Tool Shank Diameter:** 6.4 mm
- **Max. Torque:** 143.2 N.m
- **Max. RPM:** 30,000

**Products:**
- **Sand Paper Tip #1000**
- **Sand Paper Disk #180**
- **Rubber Pad (Lar)**
- **Rubber Pad (Med)**
- **Rubber Pad (Small)**

**Order by Code No.:**
- 64173
- 64157
- 64103
- 64101
- 64102

---

50° Angle Torque Attachment

**ERA-270**

- **Code No.:** ERA-270
- **Model:** 50° Angle Torque Attachment
- **Weight:** 107 g
- **Max. Torque:** 90 N.m
- **Max. RPM:** 25,000

**Products:**
- **Lever Type Attachment**
- **Lever Type Attachment**

**Order by Code No.:**
- 1551
- 70.7

---

LUSTER Attachment (Pistol-Type Polisher)

**ELS-100**

- **Code No.:** ELS-100
- **Model:** LUSTER Attachment (Pistol-Type Polisher)
- **Reciprocating Motion:** 0.5 to 3 mm
- **Sand Paper Disk for Large Pad**
- **Sand Paper Disk for Medium Pad**
- **Sand Paper Disk for Small Pad**

**Order by Code No.:**
- 1516
- 119

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Lever Type Attachment

**EHL-401**

- **Code No.:** EHL-401
- **Model:** Lever Type Attachment
- **Weight:** 70 g
- **Max. Torque:** 52.8 N.m
- **Max. RPM:** 30,000

**Products:**
- **Lever Type Attachment**
- **Lever Type Attachment**

**Order by Code No.:**
- 1515
- 70.7

---

6 mm Torque Type Attachment

**EHG-400**

- **Code No.:** EHG-400
- **Model:** 6 mm Torque Type Attachment
- **Weight:** 110 g
- **Max. Torque:** 11.0 N.m
- **Max. RPM:** 113.7

**Products:**
- **Lever Type Attachment**
- **Lever Type Attachment**

**Order by Code No.:**
- 1552
- 75

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Ring Type Attachment

**EHG-400**

- **Code No.:** EHG-400
- **Model:** Ring Type Attachment
- **Weight:** 94 g
- **Max. Torque:** 10.6 N.m
- **Max. RPM:** 6,000

**Products:**
- **Ring Type Attachment**
- **Ring Type Attachment**

**Order by Code No.:**
- 64173
- 64103
- 64101

---

Reciprocating Motion

**ER-270**

- **Code No.:** ER-270
- **Model:** Reciprocating Motion
- **Weight:** 107 g
- **Max. Torque:** 90 N.m
- **Max. RPM:** 25,000

**Products:**
- **Reciprocating Motion**
- **Reciprocating Motion**

**Order by Code No.:**
- 1551
- 70.7

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Maximum Allowable Speed, continuous use may change depending on the material being cut and other application variables.
Espert 500 Series

MINI-LUSTER Attachment
(Pencil-Type Reciprocating Polishing Finisher)

Reciprocating motion

25,200 min⁻¹ Max.
- High Speed reciprocating polisher for rapid finishing of small surfaces.
- The lightweight pencil type design makes it very controllable.
- Ideal for small, tight areas such as tight corners, ribs, etc.
- Reciprocating Speed (variable) 0-8,380 strokes/min
- Weight : 130 g
- Max. tool shank diameter ø3.2 mm,
  Screw clamp type

Standard Accessories
- • Allen Wrench (1.5 mm) : 1 pc.
- • Standard Accessories : 1 set

FINE BELT SANDER Attachment

30,000 min⁻¹ Max.
- Very high belt speed, ideal for applications
  from deburring to radius finishing.
- Belt Speed : 0-720 min⁻¹
- Belt Sizes : 4, 6, 8 mm wide x 300 mm long
- Weight : 355 g

Standard Accessories
- • Standard Accessories : 1 set

1/4 Speed Reducer

30,000 min⁻¹ Max.
- Mounted between an attachment and a motor
  
- The speed is reduced to 1/4 but the torque is multiplied by 4 times.
- Suitable for high torque grinding process or drilling.
- Weight : 65 g

Standard Accessories
- • Pro Spanner (22 x 24) : 1 pc.

Extension Adaptor

40,000 min⁻¹ Max.
- The Adaptor can be used with the attachments for
  Emax EVolution, E-max and ROTUS you already have.
- Weight : 31 g

Standard Accessories
- • Spanner (20 x 24) : 1 pc.

Espert 500 Series Spare Parts

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Code No.</th>
<th>Model</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot Pedal</td>
<td>Variable Speed Control Foot Pedal</td>
<td>1440</td>
<td>FC-40</td>
<td></td>
</tr>
<tr>
<td>Espert 500 Handpiece Stand</td>
<td></td>
<td>8104</td>
<td>K-274</td>
<td></td>
</tr>
<tr>
<td>Espert 500 Compact Motor Cord</td>
<td></td>
<td>9093</td>
<td>ENKCD-50C</td>
<td>• Compact Motor Cord • 1.5 m Long</td>
</tr>
<tr>
<td>Espert 500 Torque Motor Cord</td>
<td></td>
<td>9094</td>
<td>ENKCD-50T</td>
<td>• Torque Motor Cord • 1.5 m Long</td>
</tr>
</tbody>
</table>

Espert 500 Motor

ENK-500C
ENK-500T

Ceramic Fiber Grindstone 1 x 6 x 50 #1200
Electroplated Diamond File 1.2 x 4 x 50 #100
Ceramic Fiber Grindstone Holder
Spring Holder
ø3.3
ø8
ø15
Precautions for using Nakanishi Tools

For safe use of the tools

- Please read operation manuals before using any tools.
- Please keep all operation manuals on hand for reference whenever necessary.

⚠️ Caution
Incorrect use of the tools, or ignoring ‘CAUTIONS for safety’ described in the operating manuals, could cause fatal or serious bodily injury.

CAUTIONS

Always use safety glasses, mask, face guard for your safety.

Fasten the collet firmly. Make sure the tool is fully installed in the collet to avoid tool slippage.

Do not touch the tools when in operation. Make sure the work area is neat and there is sufficient light.

Do not use damaged or broken electric cords and air hoses.

Do not use the tool where flammable liquids or gases exist.

Start at low speed and increase gradually to insure safe work. This is particularly important for the use of new tools, large cutting tools and elastic tools such as rubber grindstone, sander and brush tools.

Select proper tools and products for your application. Select tools carefully considering the performance of the tools, work procedure and type/shape of the material.

Check the tools carefully before use. Confirm that the tools are free of chips, cracks, splits, scratches, irregular bondings, and out of round shanks, etc.

Do not leave operating tools. Confirm that the tool has stopped completely after switching off.

Check the tools and machinery for mechanical defects prior to each use.

Fix the work material firmly in a vise and/or other clamping fixture.

Stop grinding or polishing immediately whenever unusual sounds, vibrations, or wear are found.

Restart the work only after the problem is found and corrected.

Do not apply high pressure to or pry with the tools. This can break and/or bend the tools. Use the tools within their design limitation. Excessive pressure will decrease the efficiency of your work and cause excessive wear of the tools.

The tools should be used by taking care of the overhang and below maximum allowable speed. The catalogue shows the maximum allowable speed at 13 mm overhang (distance between the face of the collet and the top of the tool shank).

<table>
<thead>
<tr>
<th>Overhang (mm)</th>
<th>Maximum allowable speed (mm/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 13</td>
<td>Shown in the catalogue (A)</td>
</tr>
<tr>
<td>Less than 20</td>
<td>1.1 x 0.5</td>
</tr>
<tr>
<td>Less than 25</td>
<td>1.1 x 0.3</td>
</tr>
<tr>
<td>Less than 50</td>
<td>0.4 x 0.1</td>
</tr>
</tbody>
</table>

Symbols used in NAKANISHI Tools Catalogue

Shank Diameter
Shows shank diameter of the tools. Nakanishi produces tools with several shank diameters.

- A: Micro-grinder utilizes a collet system, which insures maximum precision. Therefore, please use the collet that best corresponds to the tool shank diameter.

Standard Package
One package is the minimum shipping unit. This number shows the number of pieces in the standard package (bag, box and etc.). Please order the number of packages needed for the desired quantity.

Maximum allowable speed
Do not exceed the maximum allowable tool speed. For your safety, use the tools below the indicated allowable speed. Start at low speed and increase gradually to insure safety. The precedence is particularly important for the use of new tools and machines.

- Maximum allowable speed assumes an overhang of less than 13mm. Decrease speed if the overhang is more than 13mm.
- Refer to “Precautions for using Nakanishi Tools” on the next page.
- Check the tools and machinery for mechanical defects prior to each use.

Grit
This shows grain size of various grinding tools.

- Rough Cutting: 46, 54, 60, 70, 80, 90
- Medium Cutting: 100, 120, 150, 180
- Finishing: 220, 240, 320, 400
- Fine Finishing and Mirror Polishing: 1200, 1500, 1800, 2000, 3000, 4000, 6000, 8000...
NAKANISHI's EXCLUSIVE TOOLS

**Exclusive Tools of Electromotive Polisher**

"LUSTER", "MINI-LUSTER", "SWING-LUSTER"

**LUSTER**

Best for finishing large open work areas.

**Electroplated Diamond File**

- **Type**
  - Half Round
  - Round
  - Angular

**Diamond File Flat Type**

- Use with stone holder No.62512.

**Precision Finishing Files (Flat, Round, Angular, Triangular, Half Round)**

**Rasp for plastics and wood working (Flat, Round, Angular, Triangular, Half Round)**

**Ceramic Fiber Grindstone (Total Length 50mm)**

- Match the fiber abrasive with the strength and the flexibility for rough or fine finishing.

**Ceramic Fiber Grindstone Holder + Grindstone Holder**

**Flat Holder**

- Tip for use with abrasive sheets.

**Angular Pad Holder**

- Holder for use with abrasive tips for polishing flat surfaces.

**Abrasive Tip (For Flat Holder and Angular Pad Holder)**

- **Felt Tip**
  - **Sand Paper Tip**

**Wood Tip Holder**

**Spring Holder**

Order by Code No.