

ULTRA-PRECISION BRUSHLESS MICRO-GRINDER

"ESPERT 500"

● Evolutionary New Design High-Performance Brushless Micro Grinder.

1 Ultra-Precision Micro-Grinder

The Espert 500 brushless motor takes motor technology to an even higher level. The new state of the art motor has dramatically increased efficiency and torque output. The microprocessor based control unit provides optimal control of the motors and allows for increased flexibility in this multi-function system.

Speed : 1,000~50,000 min⁻¹

Speed is steplessly variable from 1,000~50,000 min⁻¹. Smooth and powerful torque is delivered at both high and low speeds. The extremely high maximum speed of 50,000 min⁻¹ allows high precision micro-machining.

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 grinders.

2 Types of Motors

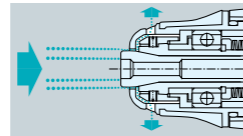
Very high torque from compact motors.

NAKANISHI Smart Switch Color

- Compact Type (ENK-500C) 140W Blue
- Torque Type (ENK-500T) 200W Gray

Special Dust-Proof Mechanism

The 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.



NAKANISHI Smart Switch

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

NAKANISHI Smart Switch



10 Types of Attachments Available

All of the Espert 500 system attachments are available for use with this system. 9 different types of attachments and 1 speed reducer making an almost infinite number of applications possible.

Wide Range of Collet Chucks Available

Collet sizes range from a tiny 0.3 mm up, with a wide variety of sizes available. Tools can be changed without the use of any spanners.

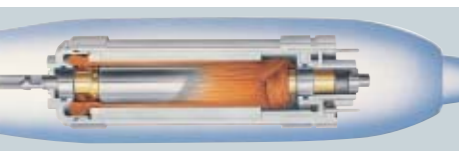
Micro Grinder & Handpiece Stand

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.



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.*1



High Precision

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

Simple Screw on Attachments



New Advanced Design Control Unit

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.

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.

Auto Cruise Function

The control unit 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.

Memory Speed Function FiXpeed®

An exclusive new feature of the Espert 500 system, the FiXpeed® 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 FiXpeed® system while motor B has variable control using a foot pedal. This function allows for unprecedented flexibility.

Simplified Hand and Foot Pedal Control

You no longer need to push a switch on the control unit 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.

Compliance with EMC and other Safety Standards

NAKANISHI has given considerable thought to 'behind the scenes' performance. The Espert 500 system complies with the world's most rigorous EMC* standards. In electromagnetic terms, it has been designed to be very safe so as to curb the generation of electromagnetic interference (noise), which may cause failure or malfunctions in other equipment. The Espert 500 system will not be affected by external electromagnetic interference. The Espert 500 system also complies with the strict European safety standard EN61010-1. Operator safety is always NAKANISHI's highest priority.

*EMC (Electromagnetic Compatibility)

A/B 2 Motors Can Be Connected

High Quality Metallic Silver Body

Other Features

- Self Check Function (Maintenance Mode)
- Smooth Operation
- Operation Check Sound
- Highly Visible and easy to operate front panel
- 2-Digit Digital Display
- Error Code Display Function

*1 NAKANISHI's internal endurance tests



ESPERT 500 Control Unit

CAT. No.	Model	Specifications
9793 (120V)	NE96	<ul style="list-style-type: none"> • Power Source : AC120/230V, 50-60Hz • Dimensions : W172 x D230 x H94 mm • Weight : 2.6 kg • Accessories : Handpiece Stand : 1 pc. Handpiece Holder : 1 pc.
9794 (230V)		

1

Espert 500 Standard Set (Ring Type)



- High Power System. Max. Output 140W
- Speed Range : 1,000~50,000 min⁻¹
- Microprocessor controlled for optimal motor control
- Hand Switch [NAKANISHI Smart Switch]
- Memory Speed Function [FixSpeed®]

CAT.No.	9881 (120V)	Model	ES50C-HR
	9882 (230V)		
Attachment	EHR-500	Motor	ENK-500C
Unit	NE96		
Standard Accessories	Control Unit (NE96) : 1 pc. Compact Motor Handpiece (ENK50C-HR) : 1 pc. Collet Chuck ø3.0 mm (CHH-3.0), ø2.35 mm (CHH-2.35) : 1 pc. each Handpiece Holder : 1 pc. Handpiece Stand : 1 pc. Spanner (7 x 5.1) : 1 pc. Pin Spanner : 1 pc. L-Spanner (9) : 1 pc.		

Espert 500 Compact Motor Handpiece

Speed Range	1,000-50,000 min ⁻¹
Max. Output	140W
Weight	210 g excluding cord



CAT.No.	9091	Model	ENK50C-HR
Attachment	EHR-500	Motor	ENK-500C
Standard Accessories	Collet Chuck ø3.0 mm (CHH-3.0), ø2.35 mm (CHH-2.35) : 1 pc. each Spanner (7 x 5.1) : 1 pc. Pin Spanner : 1 pc. L-Spanner (9) : 1 pc.		

Espert 500 Torque Set (Ring Type)



- Highest Power in its Class. Max. Output 200W
- Speed Range : 1,000~50,000 min⁻¹
- Microprocessor controlled for optimal motor control
- Hand Switch [NAKANISHI Smart Switch]
- Memory Speed Function [FixSpeed®]

CAT.No.	9883 (120V)	Model	ES50T-HR
	9884 (230V)		
Attachment	EHR-500	Motor	ENK-500T
Unit	NE96		
Standard Accessories	Control Unit (NE96) : 1 pc. Compact Motor Handpiece (ENK50T-HR) : 1 pc. Collet Chuck ø3.0 mm (CHH-3.0), ø2.35 mm (CHH-2.35) : 1 pc. each Handpiece Holder : 1 pc. Handpiece Stand : 1 pc. Spanner (7 x 5.1) : 1 pc. Pin Spanner : 1 pc. L-Spanner (9) : 1 pc.		

Espert 500 Torque Motor Handpiece

Speed Range	1,000-50,000 min ⁻¹
Max. Output	200W
Weight	250 g excluding cord



CAT.No.	9092	Model	ENK50T-HR
Attachment	EHR-500	Motor	ENK-500T
Standard Accessories	Collet Chuck ø3.0 mm (CHH-3.0), ø2.35 mm (CHH-2.35) : 1 pc. each Spanner (7 x 5.1) : 1 pc. Pin Spanner : 1 pc. L-Spanner (9) : 1 pc.		

1

System Chart

CAT. No.	Model
----------	-------

Attachment

Ring Type	
9090	EHR-500
40,000 min ⁻¹ Max. (*2)	

Lever Type	
1515	EHL-401
40,000 min ⁻¹ Max. (*2)	

6 mm Torque Type	
1552	EHG-400
40,000 min ⁻¹ Max. (*1) 30,000 min ⁻¹ Max. (*2)	

90° Angle Type	
1525	EIC-300
40,000 min ⁻¹ Max. (*1) 20,000 min ⁻¹ Max. (*2)	

45° Angle Type	
1526	EKC-300
40,000 min ⁻¹ Max. (*1) 20,000 min ⁻¹ Max. (*2)	

90° Angle Torque Type	
1551	ERA-270
40,000 min ⁻¹ Max. (*1) 20,000 min ⁻¹ Max. (*2)	

LUSTER (Reciprocating motion)	
1516	ELS-100
30,000 min ⁻¹ Max. (*1)	

MINI-LUSTER (Reciprocating motion)	
1554	EML-8
30,000 min ⁻¹ Max. (*2)	

FINE BELT SANDER	
1145	EBS-101
40,000 min ⁻¹ Max. (*1) 30,000 min ⁻¹ Max. (*2)	

Speed Reducer

• 1/4 Speed Reducer	
1553	ERG-01B
40,000 min ⁻¹ Max. (*1) 30,000 min ⁻¹ Max. (*2)	
May be connected between the motor and the spindle as required for increased torque.	

Motor

• Compact Motor and Cord	
1,000-50,000 min ⁻¹	
9088	ENK-500C
• Torque Motor and Cord	
1,000-50,000 min ⁻¹	
9089	ENK-500T

Control Unit

• Espert 500	
9793 (120V)	NE96
9794 (230V)	

• Use ECN-011 or ERG-01 for ELECTER E-max, ROTUS attachments

Extension Adaptor	
1518	ECN-011

Speed Reducer (1/4)	
1517	ERG-01

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

*1 : Maximum Allowable Speed, intermittent use.
*2 : Maximum Allowable Speed, continuous use.

*Order by catalogue number.

CAT. No. 9088 COMPACT TYPE MOTOR ENK-500C



1,000~50,000 min⁻¹

- Small, lightweight, high-speed brushless DC motor.
- Incorporates the NAKANISHI Smart Switch for easy on/off operation.
- Very low vibration noise and maintenance.
- Weight : 115 g excluding cord

Compact Type Motor

CAT. No.	Model	Specifications
9088	ENK-500C	• Output Power : 140W • Maximum Torque : 6.0 cN·m • Cord Length : 1.5 m

CAT. No. 9089 TORQUE TYPE MOTOR ENK-500T



1,000~50,000 min⁻¹

- High-power, high-torque, high-speed brushless DC motor.
- Incorporates the NAKANISHI Smart Switch for easy on/off operation.
- Very low vibration noise and maintenance.
- Weight : 160 g excluding cord

Torque Type Motor

CAT. No.	Model	Specifications
9089	ENK-500T	• Output Power : 200W • Maximum Torque : 8.7 cN·m • Cord Length : 1.5 m

CAT. No. 9090 RING TYPE ATTACHMENT EHR-500



- Manufactured with micron level precision for high accuracy and high reliability.
- Slim, lightweight design allows for fine finishing of delicate parts.
- Ring Type one touch bur release.
- Collet Chuck
Standard Size : ø3.0 mm (CHH-3.0), ø2.35 mm (CHH-2.35) : 1 pc. each
Optional Collets : CHH-[] are shown in page (7-p3)
- Weight : 94 g
- 40,000 min⁻¹ Max. (*2)

Ring Type Attachment

CAT. No.	Model	Standard Accessories
9090	EHR-500	• Collet Chuck ø3.0 mm (CHH-3.0), ø2.35 mm (CHH-2.35) : 1 pc. each • Spanner (7 x 5.1) : 1 pc. • Pin Spanner : 1 pc. • L Spanner (9) : 1 pc.

CAT. No. 1515 LEVER TYPE ATTACHMENT EHL-401



- To attain more powerful grinding and fine polishing finish, attachment EHL-401 is designed to make it lightweight and fit to pen-grip type holding.
- Simple lever turning for bur exchange.
- Same chuck as used in EHR-500.
- Collet Chuck
Standard Size : ø3.0 mm (CHH-3.0), ø2.35 mm (CHH-2.35) : 1 pc. each
Optional Collets : CHH-[] are shown in page (7-p3)
- Weight : 70 g
- 40,000 min⁻¹ Max. (*2)

Lever Type Attachment

CAT. No.	Model	Standard Accessories
1515	EHL-401	• Collet Chuck ø3.0 mm (CHH-3.0), ø2.35 mm (CHH-2.35) : 1 pc. each • Spanner (7 x 5.1) : 1 pc.

CAT. No. 1552 6mm TORQUE TYPE ATTACHMENT EHG-400

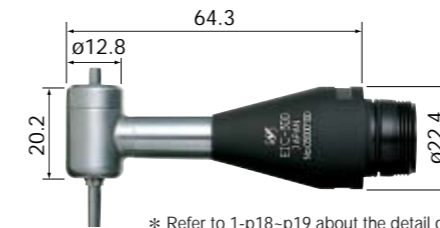


- Torque type attachment used with ø6 mm chuck diameter as standard and nicely fits in hand-grip.
- Collet Chuck
Standard Size : ø6.0 mm (CHG-6.0) : 1 pc.
Optional Collets : CHG-[] are shown in page (7-p3)
- Weight : 110 g
- 40,000 min⁻¹ Max. (*1) 30,000 min⁻¹ Max. (*2)

6mm Torque Type Attachment

CAT. No.	Model	Standard Accessories
1552	EHG-400	• Collet Chuck ø6.0 mm (CHG-6.0) : 1 pc. • Spanner (10 x 10) : 1 pc. • Bar Wrench (K-212) : 1 pc.

CAT. No. 1525 90° ANGLE ATTACHMENT EIC-300

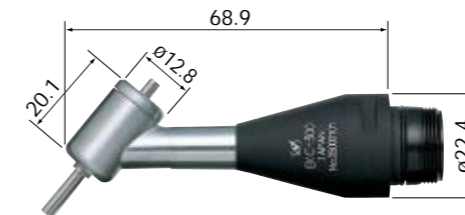


- 90° Angle Attachment with ø3 mm Collet Chuck is conveniently small and equally suitable for polishing flat surfaces with rubber pad paper disk, corner work, and grinding the inside of a pipes.
- Speed Reduction Ratio : 3/4
- Collet Chuck
Standard Size : ø3.0 mm (CHC-3.0) : 1 pc.
Optional Collets : CHC-[] are shown in page (7-p2)
- Standard Accessories : Rubber Pad, Paper Disk • Weight : 54 g
- 40,000 min⁻¹ Max. (*1) 20,000 min⁻¹ Max. (*2)

90° Angle Attachment

CAT. No.	Model	Standard Accessories
1525	EIC-300	• Collet Chuck ø3.0 mm (CHC-3.0) : 1 pc. • Chuck Wrench (K-231) : 1 pc. • Spanner (20 x 24) : 1 pc. • Standard Accessories : 1 set

CAT. No. 1526 45° ANGLE ATTACHMENT EKC-300

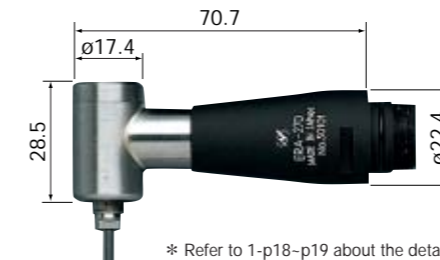


- 45° Angle Attachment is suitable for working in corners, cavities, etc.
- Reverse rotation against the motor
- Speed Reduction Ratio : 3/4
- Collet Chuck
Standard Size : ø3.0 mm (CHC-3.0) : 1 pc.
Optional Collets : CHC-[] are shown in page (7-p2)
- Standard Accessories : Rubber Pad, Paper Disk
- Weight : 54 g
- 40,000 min⁻¹ Max. (*1) 20,000 min⁻¹ Max. (*2)

45° Angle Attachment

CAT. No.	Model	Standard Accessories
1526	EKC-300	• Collet Chuck ø3.0 mm (CHC-3.0) : 1 pc. • Chuck Wrench (K-231) : 1 pc. • Spanner (20 x 24) : 1 pc. • Standard Accessories : 1 set

CAT. No. 1551 90° ANGLE TORQUE ATTACHMENT ERA-270



- 90° Angle type is suitable for the work of corner and the grinding of the inside of pipe.
- Speed Reduction Ratio : 1/1.5
- Collet Chuck
Standard Size : ø3.0 mm (CHS-3.0) : 1 pc.
Optional Collets : CHS-[] are shown in page (7-p5)
- Weight : 107 g
- 40,000 min⁻¹ Max. (*1) 20,000 min⁻¹ Max. (*2)

90° Angle Torque Attachment

CAT. No.	Model	Standard Accessories
1551	ERA-270	• Collet Chuck ø3.0 mm (CHS-3.0) : 1 pc. • Spanner (8 x 5), (7 x 5.1), (20 x 24) : 1 pc. each

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

*1 : Maximum Allowable Speed, intermittent use.
*2 : Maximum Allowable Speed, continuous use.

*Order by catalogue number.

CAT. No. 1516 Reciprocating Motion Polishing Finisher LUSTER ATTACHMENT ELS-100



- Reciprocating Stroke (variable) : 0~7,600 times/min (Max.)
- Perfect for final finishing such as lapping and honing after grinding. Streamlines conventional hand-finishing of metal molds.
- Reciprocating type compact special polisher for ESPERT motor.
- Stroke is adjustable from 0~6 mm.
- Max. tool shank diameter $\phi 6.4$ mm, Screw clamp type.
- Weight : 680 g
- 30,000 min⁻¹ Max. (*1)

Reciprocating Motion Polishing Finisher LUSTER Attachment

CAT. No.	Model	Standard Accessories
1516	ELS-100	<ul style="list-style-type: none"> • Standard Accessories • Allen Wrench (2 mm) : 1 pc. • Lubrication Oil • Lubrication Nozzle for LUSTER

CAT. No. 1554 Pencil-Type Reciprocating Polishing Finisher MINI-LUSTER ATTACHMENT EML-8



- Reciprocating Stroke (variable) : 0~10,000 times/min (Max.)
- Stroke Range : 0.8 mm
- Max. tool shank diameter $\phi 3.2$ mm, Screw clamp type.
- Weight : 130 g
- 30,000 min⁻¹ Max. (*2)

Pencil-Type Reciprocating Polishing Finisher MINI-LUSTER Attachment

CAT. No.	Model	Stroke Range	Standard Accessories
1554	EML-8	0.8 mm	<ul style="list-style-type: none"> • Standard Accessories : 1 set • Allen Wrench (1.5 mm) : 1 pc.

CAT. No. 1145 FINE BELT SANDER ATTACHMENT EBS-101



- The angle of belt section is steplessly adjustable.
- Width of Belt : 8 mm, 6 mm, 4 mm.
- Belt Speed : 0~940 m/min (Max.)
- Weight : 355 g
- 40,000 min⁻¹ Max. (*1) 30,000 min⁻¹ Max. (*2)
- * Refer to 1-p25 about the detail of Belt.

FINE BELT SANDER Attachment

CAT. No.	Model	Standard Accessories
1145	EBS-101	<ul style="list-style-type: none"> • 8 mm Belt (3 different kinds) : 2 pcs. each • 6 mm Belt (3 different kinds) : 2 pcs. each • 4 mm Belt (3 different kinds) : 2 pcs. each • Allen Wrench (3 mm) : 1 pc.

CAT. No. 1553 SPEED REDUCER (1/4) ERG-01B



- 1/4 Speed Reducer ERG-01B provides 4 times greater torque by mounting it in between the motor and the attachment.
- Weight : 65 g
- 40,000 min⁻¹ Max. (*1)
- 30,000 min⁻¹ Max. (*2)

Speed Reducer (1/4)

CAT. No.	Model	Speed Reduction Ratio
1553	ERG-01B	• Speed Reduction Ratio 1/4

CAT. No. 1517 SPEED REDUCER (1/4) ERG-01



- The Speed Reducer can be used with the attachments for E-max and ROTUS you already have.
- Reduces the speed 1/4 and multiplies the torque by 4 times.
- Weight : 62 g
- 40,000 min⁻¹ Max. (*1)
- 30,000 min⁻¹ Max. (*2)

Speed Reducer (1/4)

CAT. No.	Model	Speed Reduction Ratio
1517	ERG-01	• Speed Reduction Ratio 1/4

CAT. No. 1518 EXTENSION ADAPTOR ECN-011



- The Adaptor can be used with the attachments for E-max and ROTUS you already have.
- Weight : 31 g
- 40,000 min⁻¹ Max. (*1)
- 30,000 min⁻¹ Max. (*2)

Extension Adaptor

CAT. No.	Model	Speed Ratio
1518	ECN-011	• Speed Ratio 1 : 1

ESPERT 500 Spare Parts

Product	Description	CAT. No.	Model	Specifications
	Foot Pedal	1440	FC-40	• Variable Speed Control Foot Pedal
	Espert 500 Handpiece Stand	8104	Z095209	
	Espert 500 Compact Motor Cord	9093	ENKCD-50C	• Compact Motor Cord • 1.5 m Long
	Espert 500 Torque Motor Cord	9094	ENKCD-50T	• Torque Motor Cord • 1.5 m Long

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

*1 : Maximum Allowable Speed, intermittent use.
*2 : Maximum Allowable Speed, continuous use.

* Order by catalogue number.